

The Comprehensive L^AT_EX Symbol List

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Abstract

This document lists 14283 symbols and the corresponding L^AT_EX commands that produce them. Some of these symbols are guaranteed to be available in every L^AT_EX 2_ε system; others require fonts and packages that may not accompany a given distribution and that therefore need to be installed. All of the fonts and packages used to prepare this document—as well as this document itself—are freely available from the Comprehensive T_EX Archive Network (<http://www.ctan.org/>).

Contents

Contents	1
1 Introduction	12
1.1 Document Usage	12
1.2 Frequently Requested Symbols	12
2 Body-text symbols	14
Table 1: L ^A T _E X 2 _ε Escapable “Special” Characters	14
Table 2: Predefined L ^A T _E X 2 _ε Text-mode Commands	14
Table 3: L ^A T _E X 2 _ε Commands Defined to Work in Both Math and Text Mode	15
Table 4: $\mathcal{AMS}$ Commands Defined to Work in Both Math and Text Mode	15
Table 5: Non-ASCII Letters (Excluding Accented Letters)	15
Table 6: textgreek Upright Greek Letters	15
Table 7: Letters Used to Typeset African Languages	16
Table 8: Letters Used to Typeset Vietnamese	16
Table 9: Punctuation Marks Not Found in OT1	16
Table 10: pifont Decorative Punctuation Marks	16
Table 11: tipa Phonetic Symbols	17
Table 12: tipx Phonetic Symbols	18
Table 13: wsuipa Phonetic Symbols	19
Table 14: wasysym Phonetic Symbols	19
Table 15: phonetic Phonetic Symbols	19
Table 16: t4phonet Phonetic Symbols	20
Table 17: semtrans Transliteration Symbols	20
Table 18: Text-mode Accents	20
Table 19: tipa Text-mode Accents	21
Table 20: extraipa Text-mode Accents	22
Table 21: wsuipa Text-mode Accents	22
Table 22: phonetic Text-mode Accents	23
Table 23: metre Text-mode Accents	23
Table 24: t4phonet Text-mode Accents	23
Table 25: arcs Text-mode Accents	23
Table 26: semtrans Accents	24
Table 27: ogonek Accents	24

*The original version of this document was written by David Carlisle, with several additional tables provided by Alexander Holt. See Section 10.8 on page 230 for more information about who did what.

Table 28:	combelow Accents	24
Table 29:	wsuipa Diacritics	24
Table 30:	textcomp Diacritics	24
Table 31:	marvosym Diacritics	25
Table 32:	textcomp Currency Symbols	25
Table 33:	marvosym Currency Symbols	25
Table 34:	fontawesome Currency Symbols	25
Table 35:	wasysym Currency Symbols	25
Table 36:	GpA2e Currency Symbols	26
Table 37:	teubner Currency Symbols	26
Table 38:	tfrupee Currency Symbols	26
Table 39:	eurosym Euro Signs	26
Table 40:	fourier Euro Signs	26
Table 41:	textcomp Legal Symbols	26
Table 42:	fontawesome Legal Symbols	26
Table 43:	cclicenses Creative Commons License Icons	27
Table 44:	ccicons Creative Commons License Icons	27
Table 45:	textcomp Old-style Numerals	27
Table 46:	Miscellaneous textcomp Symbols	27
Table 47:	Miscellaneous wasysym Text-mode Symbols	27

3 Mathematical symbols 28

Table 48:	Math-Mode Versions of Text Symbols	28
Table 49:	cmll Unary Operators	28
Table 50:	Binary Operators	29
Table 51:	$\mathcal{AMS}$ Binary Operators	29
Table 52:	stmaryrd Binary Operators	29
Table 53:	wasysym Binary Operators	30
Table 54:	txfonts/pxfonts Binary Operators	30
Table 55:	mathabx Binary Operators	30
Table 56:	MnSymbol Binary Operators	30
Table 57:	fdsymbol Binary Operators	31
Table 58:	boisik Binary Operators	32
Table 59:	stix Binary Operators	33
Table 60:	mathdesign Binary Operators	33
Table 61:	cmll Binary Operators	34
Table 62:	shuffle Binary Operators	34
Table 63:	ulsy Geometric Binary Operators	34
Table 64:	mathabx Geometric Binary Operators	34
Table 65:	MnSymbol Geometric Binary Operators	35
Table 66:	fdsymbol Geometric Binary Operators	35
Table 67:	boisik Geometric Binary Operators	36
Table 68:	stix Geometric Binary Operators	37
Table 69:	halloweenmath Halloween-Themed Math Operators	37
Table 70:	stix Small Integrals	38
Table 71:	stix Small Integrals with Explicit Slant	38
Table 72:	Variable-sized Math Operators	39
Table 73:	$\mathcal{AMS}$ Variable-sized Math Operators	39
Table 74:	stmaryrd Variable-sized Math Operators	39
Table 75:	wasysym Variable-sized Math Operators	39
Table 76:	mathabx Variable-sized Math Operators	40
Table 77:	txfonts/pxfonts Variable-sized Math Operators	41
Table 78:	esint Variable-sized Math Operators	42
Table 79:	bigints Variable-sized Math Operators	42
Table 80:	MnSymbol Variable-sized Math Operators	43
Table 81:	fdsymbol Variable-sized Math Operators	43
Table 82:	boisik Variable-sized Math Operators	44
Table 83:	stix Variable-sized Math Operators	45

Table 84:	stix Integrals with Explicit Slant	46
Table 85:	mathdesign Variable-sized Math Operators	47
Table 86:	prodint Variable-sized Math Operators	48
Table 87:	cmll Large Math Operators	48
Table 88:	Binary Relations	48
Table 89:	$\mathcal{AMS}$ Binary Relations	48
Table 90:	$\mathcal{AMS}$ Negated Binary Relations	49
Table 91:	stmaryrd Binary Relations	49
Table 92:	wasysym Binary Relations	49
Table 93:	txfonts/pxfonts Binary Relations	49
Table 94:	txfonts/pxfonts Negated Binary Relations	49
Table 95:	mathabx Binary Relations	50
Table 96:	mathabx Negated Binary Relations	50
Table 97:	MnSymbol Binary Relations	50
Table 98:	MnSymbol Negated Binary Relations	52
Table 99:	fdsymbol Binary Relations	53
Table 100:	fdsymbol Negated Binary Relations	54
Table 101:	boisik Binary Relations	55
Table 102:	boisik Negated Binary Relations	55
Table 103:	stix Binary Relations	56
Table 104:	stix Negated Binary Relations	57
Table 105:	mathtools Binary Relations	57
Table 106:	turnstile Binary Relations	58
Table 107:	trsym Binary Relations	59
Table 108:	trfsigns Binary Relations	59
Table 109:	cmll Binary Relations	59
Table 110:	colonequals Binary Relations	59
Table 111:	fourier Binary Relations	59
Table 112:	Subset and Superset Relations	59
Table 113:	$\mathcal{AMS}$ Subset and Superset Relations	60
Table 114:	stmaryrd Subset and Superset Relations	60
Table 115:	wasysym Subset and Superset Relations	60
Table 116:	txfonts/pxfonts Subset and Superset Relations	60
Table 117:	mathabx Subset and Superset Relations	60
Table 118:	MnSymbol Subset and Superset Relations	61
Table 119:	fdsymbol Subset and Superset Relations	61
Table 120:	boisik Subset and Superset Relations	61
Table 121:	stix Subset and Superset Relations	62
Table 122:	Inequalities	62
Table 123:	$\mathcal{AMS}$ Inequalities	62
Table 124:	wasysym Inequalities	63
Table 125:	txfonts/pxfonts Inequalities	63
Table 126:	mathabx Inequalities	63
Table 127:	MnSymbol Inequalities	64
Table 128:	fdsymbol Inequalities	65
Table 129:	boisik Inequalities	66
Table 130:	stix Inequalities	66
Table 131:	$\mathcal{AMS}$ Triangle Relations	67
Table 132:	stmaryrd Triangle Relations	67
Table 133:	mathabx Triangle Relations	67
Table 134:	MnSymbol Triangle Relations	68
Table 135:	fdsymbol Triangle Relations	69
Table 136:	boisik Triangle Relations	69
Table 137:	stix Triangle Relations	69
Table 138:	Arrows	70
Table 139:	Harpoons	70
Table 140:	textcomp Text-mode Arrows	70
Table 141:	$\mathcal{AMS}$ Arrows	70

Table 142:	$\mathcal{AMS}$ Negated Arrows	70
Table 143:	$\mathcal{AMS}$ Harpoons	70
Table 144:	stmaryrd Arrows	71
Table 145:	txfonts/pxfonts Arrows	71
Table 146:	mathabx Arrows	71
Table 147:	mathabx Negated Arrows	71
Table 148:	mathabx Harpoons	72
Table 149:	MnSymbol Arrows	72
Table 150:	MnSymbol Negated Arrows	73
Table 151:	MnSymbol Harpoons	75
Table 152:	MnSymbol Negated Harpoons	75
Table 153:	fdsymbol Arrows	76
Table 154:	fdsymbol Negated Arrows	77
Table 155:	fdsymbol Harpoons	79
Table 156:	fdsymbol Negated Harpoons	80
Table 157:	boisik Arrows	80
Table 158:	boisik Negated Arrows	81
Table 159:	boisik Harpoons	81
Table 160:	stix Arrows	82
Table 161:	stix Negated Arrows	84
Table 162:	stix Harpoons	84
Table 163:	harpoon Extensible Harpoons	85
Table 164:	chemarrow Arrows	85
Table 165:	fge Arrows	85
Table 166:	old-arrows Arrows	85
Table 167:	old-arrows Harpoons	86
Table 168:	esrelation Restrictions	86
Table 169:	MnSymbol Spoons	86
Table 170:	MnSymbol Pitchforks	86
Table 171:	MnSymbol Smiles and Frowns	87
Table 172:	fdsymbol Spoons	87
Table 173:	fdsymbol Pitchforks	88
Table 174:	fdsymbol Smiles and Frowns	88
Table 175:	ulsy Contradiction Symbols	88
Table 176:	Extension Characters	88
Table 177:	stmaryrd Extension Characters	88
Table 178:	txfonts/pxfonts Extension Characters	88
Table 179:	mathabx Extension Characters	88
Table 180:	stix Extension Characters	89
Table 181:	Log-like Symbols	89
Table 182:	$\mathcal{AMS}$ Log-like Symbols	89
Table 183:	$\mathbb{A}_{2e}$ Number Sets	89
Table 184:	Greek Letters	90
Table 185:	$\mathcal{AMS}$ Greek Letters	90
Table 186:	txfonts/pxfonts Upright Greek Letters	91
Table 187:	upgreek Upright Greek Letters	91
Table 188:	fourier Variant Greek Letters	91
Table 189:	txfonts/pxfonts Variant Latin Letters	92
Table 190:	boisik Variant Greek Letters	92
Table 191:	boisik Variant Latin Letters	92
Table 192:	stix Variant Greek Letters	92
Table 193:	stix Transformed Greek Letters	92
Table 194:	$\mathcal{AMS}$ Hebrew Letters	92
Table 195:	MnSymbol Hebrew Letters	92
Table 196:	fdsymbol Hebrew Letters	92
Table 197:	boisik Hebrew Letters	92
Table 198:	stix Hebrew Letters	93
Table 199:	Letter-like Symbols	93

Table 200:	$\mathcal{AMS}$ Letter-like Symbols	93
Table 201:	txfonts/pxfonts Letter-like Symbols	93
Table 202:	mathabx Letter-like Symbols	93
Table 203:	MnSymbol Letter-like Symbols	93
Table 204:	fdsymbol Letter-like Symbols	94
Table 205:	boisik Letter-like Symbols	94
Table 206:	stix Letter-like Symbols	94
Table 207:	trfsigns Letter-like Symbols	94
Table 208:	mathdesign Letter-like Symbols	94
Table 209:	fge Letter-like Symbols	94
Table 210:	fourier Letter-like Symbols	95
Table 211:	cmll Letter-like Symbols	95
Table 212:	$\mathcal{AMS}$ Delimiters	95
Table 213:	stmaryrd Delimiters	95
Table 214:	mathabx Delimiters	95
Table 215:	boisik Delimiters	95
Table 216:	stix Delimiters	95
Table 217:	nath Delimiters	95
Table 218:	Variable-sized Delimiters	96
Table 219:	Large, Variable-sized Delimiters	96
Table 220:	$\mathcal{AMS}$ Variable-sized Delimiters	96
Table 221:	stmaryrd Variable-sized Delimiters	96
Table 222:	mathabx Variable-sized Delimiters	97
Table 223:	MnSymbol Variable-sized Delimiters	97
Table 224:	fdsymbol Variable-sized Delimiters	98
Table 225:	stix Variable-sized Delimiters	99
Table 226:	mathdesign Variable-sized Delimiters	100
Table 227:	nath Variable-sized Delimiters (Double)	101
Table 228:	nath Variable-sized Delimiters (Triple)	101
Table 229:	fourier Variable-sized Delimiters	101
Table 230:	textcomp Text-mode Delimiters	101
Table 231:	metre Text-mode Delimiters	102
Table 232:	Math-mode Accents	102
Table 233:	$\mathcal{AMS}$ Math-mode Accents	102
Table 234:	MnSymbol Math-mode Accents	102
Table 235:	fdsymbol Math-mode Accents	103
Table 236:	boisik Math-mode Accents	103
Table 237:	stix Math-mode Accents	103
Table 238:	fge Math-mode Accents	103
Table 239:	yhmath Math-mode Accents	103
Table 240:	Extensible Accents	104
Table 241:	overrightarrow Extensible Accents	104
Table 242:	yhmath Extensible Accents	104
Table 243:	$\mathcal{AMS}$ Extensible Accents	104
Table 244:	MnSymbol Extensible Accents	105
Table 245:	fdsymbol Extensible Accents	105
Table 246:	stix Extensible Accents	105
Table 247:	mathtools Extensible Accents	106
Table 248:	mathabx Extensible Accents	106
Table 249:	fourier Extensible Accents	106
Table 250:	esvect Extensible Accents	106
Table 251:	abraces Extensible Accents	107
Table 252:	undertilde Extensible Accents	107
Table 253:	ushort Extensible Accents	107
Table 254:	mdwmath Extensible Accents	107
Table 255:	actuarialangle Extensible Accents	107
Table 256:	$\mathcal{AMS}$ Extensible Arrows	107
Table 257:	mathtools Extensible Arrows	108

Table 258:	chemarr Extensible Arrows	108
Table 259:	chemarrow Extensible Arrows	108
Table 260:	extarrows Extensible Arrows	108
Table 261:	extpfeil Extensible Arrows	109
Table 262:	DotArrow Extensible Arrows	109
Table 263:	halloweenmath Extensible Arrows	109
Table 264:	trfsigns Extensible Transform Symbols	109
Table 265:	esrelation Extensible Relations	109
Table 266:	halloweenmath Extensible Witches	110
Table 267:	halloweenmath Extensible Ghosts	110
Table 268:	holtpolt Non-commutative Division Symbols	110
Table 269:	Dots	110
Table 270:	$\mathcal{AMS}$ Dots	111
Table 271:	wasysym Dots	111
Table 272:	MnSymbol Dots	111
Table 273:	fdsymbol Dots	111
Table 274:	stix Dots	112
Table 275:	mathdots Dots	112
Table 276:	yhmath Dots	112
Table 277:	teubner Dots	112
Table 278:	begriff Begriffsschrift Symbols	112
Table 279:	frege Begriffsschrift Symbols	113
Table 280:	mathcomp Math Symbols	113
Table 281:	marvosym Math Symbols	113
Table 282:	marvosym Digits	113
Table 283:	fge Digits	113
Table 284:	dozenal Base-12 Digits	113
Table 285:	mathabx Mayan Digits	113
Table 286:	stix Infinities	114
Table 287:	stix Primes	114
Table 288:	stix Empty Sets	114
Table 289:	$\mathcal{AMS}$ Angles	114
Table 290:	MnSymbol Angles	114
Table 291:	fdsymbol Angles	114
Table 292:	boisik Angles	114
Table 293:	stix Angles	115
Table 294:	Miscellaneous $\text{\LaTeX} 2_{\epsilon}$ Math Symbols	115
Table 295:	Miscellaneous $\mathcal{AMS}$ Math Symbols	115
Table 296:	Miscellaneous wasysym Math Symbols	115
Table 297:	Miscellaneous txfonts/pxfonts Math Symbols	115
Table 298:	Miscellaneous mathabx Math Symbols	116
Table 299:	Miscellaneous MnSymbol Math Symbols	116
Table 300:	Miscellaneous Internal MnSymbol Math Symbols	116
Table 301:	Miscellaneous fdsymbol Math Symbols	116
Table 302:	Miscellaneous boisik Math Symbols	117
Table 303:	Miscellaneous stix Math Symbols	117
Table 304:	Miscellaneous textcomp Text-mode Math Symbols	117
Table 305:	Miscellaneous fge Math Symbols	118
Table 306:	Miscellaneous mathdesign Math Symbols	118
Table 307:	Math Alphabets	119
4	Science and technology symbols	121
Table 308:	gensymb Symbols Defined to Work in Both Math and Text Mode	121
Table 309:	wasysym Electrical and Physical Symbols	121
Table 310:	ifsym Pulse Diagram Symbols	121
Table 311:	ar Aspect Ratio Symbol	121
Table 312:	textcomp Text-mode Science and Engineering Symbols	121
Table 313:	steinmetz Extensible Phasor Symbol	122

Table 314:	emf Electromotive Force Symbols	122
Table 315:	wasysym Astronomical Symbols	122
Table 316:	marvosym Astronomical Symbols	122
Table 317:	fontawesome Astronomical Symbols	123
Table 318:	mathabx Astronomical Symbols	123
Table 319:	stix Astronomical Symbols	123
Table 320:	starfont Astronomical Symbols	124
Table 321:	wasysym APL Symbols	124
Table 322:	stix APL Symbols	124
Table 323:	apl APL Symbols	125
Table 324:	marvosym Computer Hardware Symbols	125
Table 325:	keystroke Computer Keys	125
Table 326:	ascii Control Characters (CP437)	126
Table 327:	logic Logic Gates	126
Table 328:	marvosym Communication Symbols	126
Table 329:	marvosym Engineering Symbols	127
Table 330:	wasysym Biological Symbols	127
Table 331:	stix Biological Symbols	127
Table 332:	marvosym Biological Symbols	127
Table 333:	fontawesome Biological Symbols	127
Table 334:	marvosym Safety-related Symbols	127
Table 335:	feyn Feynman Diagram Symbols	128
Table 336:	svrsymbols Physics Ideograms	128

5 Dingbats 130

Table 337:	bbding Arrows	130
Table 338:	pifont Arrows	130
Table 339:	adfsymbols Arrows	130
Table 340:	adorn Arrows	131
Table 341:	arev Arrows	131
Table 342:	fontawesome Arrows	131
Table 343:	fontawesome Chevrons	131
Table 344:	marvosym Scissors	131
Table 345:	bbding Scissors	131
Table 346:	pifont Scissors	131
Table 347:	dingbat Pencils	132
Table 348:	arev Pencils	132
Table 349:	fontawesome Pencils	132
Table 350:	bbding Pencils and Nibs	132
Table 351:	pifont Pencils and Nibs	132
Table 352:	dingbat Fists	132
Table 353:	bbding Fists	132
Table 354:	pifont Fists	132
Table 355:	fourier Fists	133
Table 356:	arev Fists	133
Table 357:	fontawesome Fists	133
Table 358:	bbding Crosses and Plusses	133
Table 359:	pifont Crosses and Plusses	133
Table 360:	adfsymbols Crosses and Plusses	133
Table 361:	arev Crosses	133
Table 362:	bbding Xs and Check Marks	133
Table 363:	pifont Xs and Check Marks	134
Table 364:	wasysym Xs and Check Marks	134
Table 365:	marvosym Xs and Check Marks	134
Table 366:	arev Xs and Check Marks	134
Table 367:	fontawesome Xs and Check Marks	134
Table 368:	pifont Circled Numerals	134
Table 369:	wasysym Stars	135

Table 370:	bbding Stars, Flowers, and Similar Shapes	135
Table 371:	pifont Stars, Flowers, and Similar Shapes	135
Table 372:	adfsymbols Stars, Flowers, and Similar Shapes	135
Table 373:	adorn Stars	135
Table 374:	fontawesome Stars	136
Table 375:	fourier Fleurons and Flowers	136
Table 376:	adorn Fleurons and Flowers	136
Table 377:	wasysym Geometric Shapes	136
Table 378:	MnSymbol Geometric Shapes	136
Table 379:	fdsymbol Geometric Shapes	137
Table 380:	boisik Geometric Shapes	137
Table 381:	stix Geometric Shapes	137
Table 382:	ifsym Geometric Shapes	139
Table 383:	bbding Geometric Shapes	139
Table 384:	pifont Geometric Shapes	140
Table 385:	universa Geometric Shapes	140
Table 386:	adfsymbols Geometric Shapes	140
Table 387:	fontawesome Geometric Shapes	140
Table 388:	L ^A T _E X 2 _ε Playing-Card Suits	140
Table 389:	txfonts/pxfonts Playing-Card Suits	140
Table 390:	MnSymbol Playing-Card Suits	140
Table 391:	fdsymbol Playing-Card Suits	140
Table 392:	boisik Playing-Card Suits	140
Table 393:	stix Playing-Card Suits	141
Table 394:	arev Playing-Card Suits	141
Table 395:	adorn Flourishes	141
Table 396:	Miscellaneous dingbat Dingbats	141
Table 397:	Miscellaneous bbding Dingbats	141
Table 398:	Miscellaneous pifont Dingbats	141
Table 399:	Miscellaneous adorn Dingbats	141
6	Ancient languages	142
Table 400:	phaistos Symbols from the Phaistos Disk	142
Table 401:	protosem Proto-Semitic Characters	142
Table 402:	hieroglf Hieroglyphics	143
Table 403:	linearA Linear A Script	143
Table 404:	linearb Linear B Basic and Optional Letters	146
Table 405:	linearb Linear B Numerals	146
Table 406:	linearb Linear B Weights and Measures	146
Table 407:	linearb Linear B Ideograms	147
Table 408:	linearb Unidentified Linear B Symbols	147
Table 409:	cypriot Cypriot Letters	147
Table 410:	sarabian South Arabian Letters	148
Table 411:	teubner Archaic Greek Letters and Greek Numerals	148
Table 412:	boisik Archaic Greek Letters and Greek Numerals	148
Table 413:	epiolmec Epi-Olmec Script	148
Table 414:	epiolmec Epi-Olmec Numerals	150
Table 415:	allrunes Runes	151
Table 416:	allrunes Rune Separators	151
7	Musical symbols	152
Table 417:	L ^A T _E X 2 _ε Musical Symbols	152
Table 418:	textcomp Musical Symbols	152
Table 419:	wasysym Musical Symbols	152
Table 420:	MnSymbol Musical Symbols	152
Table 421:	fdsymbol Musical Symbols	152
Table 422:	boisik Musical Symbols	152
Table 423:	stix Musical Symbols	152

Table 424:	<code>arev</code> Musical Symbols	152
Table 425:	<code>MusiX_{TEX}</code> Musical Symbols	153
Table 426:	<code>MusiX_{TEX}</code> Alternative Clefs	154
Table 427:	<code>harmony</code> Musical Symbols	154
Table 428:	<code>harmony</code> Musical Accents	154
Table 429:	<code>lily_{glyphs}</code> Single Notes	155
Table 430:	<code>lily_{glyphs}</code> Beamed Notes	155
Table 431:	<code>lily_{glyphs}</code> Clefs	156
Table 432:	<code>lily_{glyphs}</code> Time Signatures	156
Table 433:	<code>lily_{glyphs}</code> Accidentals	156
Table 434:	<code>lily_{glyphs}</code> Rests	156
Table 435:	<code>lily_{glyphs}</code> Dynamics Letters	157
Table 436:	<code>lily_{glyphs}</code> Dynamics Symbols	157
Table 437:	<code>lily_{glyphs}</code> Articulations	157
Table 438:	<code>lily_{glyphs}</code> Scripts	157
Table 439:	<code>lily_{glyphs}</code> Accordion Notation	157
Table 440:	<code>lily_{glyphs}</code> Named Time Signatures	158
Table 441:	<code>lily_{glyphs}</code> Named Scripts	158
Table 442:	<code>lily_{glyphs}</code> Named Rests	159
Table 443:	<code>lily_{glyphs}</code> Named Pedals	159
Table 444:	<code>lily_{glyphs}</code> Named Flags	160
Table 445:	<code>lily_{glyphs}</code> Named Custodes	160
Table 446:	<code>lily_{glyphs}</code> Named Clefs	161
Table 447:	<code>lily_{glyphs}</code> Named Noteheads	162
Table 448:	<code>lily_{glyphs}</code> Named Accordion Symbols	166
Table 449:	<code>lily_{glyphs}</code> Named Accidentals	167
Table 450:	<code>lily_{glyphs}</code> Named Arrowheads	167
Table 451:	<code>lily_{glyphs}</code> Named Alphanumerics and Punctuation	168
Table 452:	Miscellaneous <code>lily_{glyphs}</code> Named Musical Symbols	168

8 Other symbols 169

Table 453:	<code>textcomp</code> Genealogical Symbols	169
Table 454:	<code>wasysym</code> General Symbols	169
Table 455:	<code>manfnt</code> Dangerous Bend Symbols	169
Table 456:	Miscellaneous <code>manfnt</code> Symbols	169
Table 457:	<code>marvosym</code> Media Control Symbols	169
Table 458:	<code>marvosym</code> Laundry Symbols	170
Table 459:	<code>marvosym</code> Information Symbols	170
Table 460:	Other <code>marvosym</code> Symbols	170
Table 461:	Miscellaneous <code>universa</code> Symbols	170
Table 462:	Miscellaneous <code>fourier</code> Symbols	170
Table 463:	<code>ifsym</code> Weather Symbols	171
Table 464:	<code>ifsym</code> Alpine Symbols	171
Table 465:	<code>ifsym</code> Clocks	171
Table 466:	Other <code>ifsym</code> Symbols	171
Table 467:	<code>clock</code> Clocks	172
Table 468:	<code>epsdice</code> Dice	172
Table 469:	<code>hhcount</code> Dice	172
Table 470:	<code>stix</code> Dice	172
Table 471:	<code>bullcntr</code> Tally Markers	173
Table 472:	<code>hhcount</code> Tally Markers	173

Table 473:	dozenal Tally Markers	173
Table 474:	skull Symbols	174
Table 475:	Non-Mathematical <code>mathabx</code> Symbols	174
Table 476:	skak Chess Informator Symbols	174
Table 477:	skak Chess Pieces and Chessboard Squares	175
Table 478:	igo Go Symbols	175
Table 479:	go Go Symbols	176
Table 480:	metre Metrical Symbols	176
Table 481:	metre Small and Large Metrical Symbols	176
Table 482:	teubner Metrical Symbols	177
Table 483:	dictsym Dictionary Symbols	177
Table 484:	simpsons Characters from <i>The Simpsons</i>	177
Table 485:	pmboxdraw Box-Drawing Symbols	178
Table 486:	staves Magical Staves	178
Table 487:	pigpen Cipher Symbols	179
Table 488:	$\mathbb{A}2e$ Phases of the Moon	179
Table 489:	$\mathbb{A}2e$ Recycling Symbols	179
Table 490:	marvosym Recycling Symbols	180
Table 491:	recycle Recycling Symbols	180
Table 492:	Other $\mathbb{A}2e$ Symbols	180
Table 493:	soyombo Soyombo Symbols	180
Table 494:	knitting Knitting Symbols	181
Table 495:	CountriesOfEurope Country Maps	181
Table 496:	Miscellaneous arev Symbols	183
Table 497:	cookingsymbols Cooking Symbols	183
Table 498:	tikzsymbols Cooking Symbols	184
Table 499:	tikzsymbols Emoticons	184
Table 500:	tikzsymbols 3D Emoticons	184
Table 501:	tikzsymbols Trees	184
Table 502:	Miscellaneous tikzsymbols Symbols	185
Table 503:	Miscellaneous bclogo Symbols	185
Table 504:	fontawesome Web-Related Icons	186
Table 505:	rubikcube Rubik’s Cube Rotations	190
9 Fonts with minimal L^AT_EX support		191
Table 506:	hands Fists	191
Table 507:	greenpoint Recycling Symbols	191
Table 508:	nkarta Map Symbols	191
Table 509:	moonphase Astronomical Symbols	193
Table 510:	astrosym Astronomical Symbols	193
Table 511:	webomints Decorative Borders	196
Table 512:	umranda Decorative Borders	197
Table 513:	umrandb Decorative Borders	198
Table 514:	dingbat Decorative Borders	199
Table 515:	knot Celtic Knots	199
Table 516:	dancers Dancing Men	203
Table 517:	semaphor Semaphore Alphabet	205
Table 518:	cryst Crystallography Symbols	207
Table 519:	dice Dice	208
Table 520:	magic Trading Card Symbols	209
Table 521:	bartel-chess-fonts Chess Pieces and Chessboard Squares	209
10 Additional Information		211
10.1	Symbol Name Clashes	211
10.2	Resizing symbols	211
10.3	Where can I find the symbol for ...?	211
10.4	Math-mode spacing	224
10.5	Bold mathematical symbols	224

10.6 ASCII and Latin 1 quick reference	225
10.7 Unicode characters	228
10.8 About this document	230
10.9 Copyright and license	232
References	233
Index	234

1 Introduction

Welcome to the Comprehensive L^AT_EX Symbol List! This document strives to be your primary source of L^AT_EX symbol information: font samples, L^AT_EX commands, packages, usage details, caveats—everything needed to put thousands of different symbols at your disposal. All of the fonts covered herein meet the following criteria:

1. They are freely available from the Comprehensive T_EX Archive Network (<http://www.ctan.org/>).
2. All of their symbols have L^AT_EX 2_ε bindings. That is, a user should be able to access a symbol by name (e.g., `\bigtriangleup`).

As of version 12 of the Comprehensive L^AT_EX Symbol List, that second restriction has been relaxed with the inclusion of Section 9, which showcases fonts that provide, at a minimum, either T_EX font-metric files (`.tfm`) or the METAFONT sources (`.mf`) that produce those font-metric files. Some of the Section 9 fonts do include L^AT_EX font-definition files (`.fd`). However, what sets the fonts in Section 9 apart from the fonts in rest of the document is that they lack a L^AT_EX style file (`.sty`) that individually names each of the glyphs.

The restrictions listed above are not particularly limiting criteria; the Comprehensive L^AT_EX Symbol List contains samples of 14283 symbols—quite a large number. Some of these symbols are guaranteed to be available in every L^AT_EX 2_ε system; others require fonts and packages that may not accompany a given distribution and that therefore need to be installed. See <http://www.tex.ac.uk/cgi-bin/texfaq2html?label=instpackages+wherefiles> for help with installing new fonts and packages.

1.1 Document Usage

Each section of this document contains a number of font tables. Each table shows a set of symbols, with the corresponding L^AT_EX command to the right of each symbol. A table’s caption indicates what package needs to be loaded in order to access that table’s symbols. For example, the symbols in Table 45, “textcomp Old-Style Numerals”, are made available by putting “`\usepackage{textcomp}`” in your document’s preamble. “*AMS*” means to use the *AMS* packages, viz. `amssymb` and/or `amsmath`. Notes below a table provide additional information about some or all the symbols in that table.

One note that appears a few times in this document, particularly in Section 2, indicates that certain symbols do not exist in the OT1 font encoding (Donald Knuth’s original, 7-bit font encoding, which is the default font encoding for L^AT_EX) and that you should use `fontenc` to select a different encoding, such as T1 (a common 8-bit font encoding). That means that you should put “`\usepackage[encoding]{fontenc}`” in your document’s preamble, where *encoding* is, e.g., T1 or LY1. To limit the change in font encoding to the current group, use “`\fontencoding{encoding}\selectfont`”.

Section 10 contains some additional information about the symbols in this document. It discusses how certain mathematical symbols can vary in height, shows which symbol names are not unique across packages, gives examples of how to create new symbols out of existing symbols, explains how symbols are spaced in math mode, compares various schemes for boldfacing symbols, presents L^AT_EX ASCII and Latin 1 tables, shows how to input and output Unicode characters, and provides some information about this document itself. The Comprehensive L^AT_EX Symbol List ends with an index of all the symbols in the document and various additional useful terms.

1.2 Frequently Requested Symbols

There are a number of symbols that are requested over and over again on `comp.text.tex`. If you’re looking for such a symbol the following list will help you find it quickly.

␣, as in “Spaces_are_significant.”	14	ℳ	41
ī, î, ĩ, ı, ȩ, etc. (versus ī, î, ĩ, ı, and ȩ)	20	∴	48
¢	25	ℳ and ℳ	49
€	25	ℳ and ℳ	62
©, ®, and ™	26	∴	112
%	27	°, as in “180°” or “15°C”	117

$\mathcal{L}, \mathcal{F}$, etc.	119	$\grave{\text{a}}, \grave{\text{e}}$, etc. (i.e., several accents per character)	
$\mathbb{N}, \mathbb{Z}, \mathbb{R}$, etc.	119		219
$\mathfrak{z}$	119	$<, >$, and $ $ (instead of $\mathfrak{j}, \mathfrak{i}$, and $—$) . . .	226
f	217	$\hat{}$ and $\tilde{}$ (or $\sim$)	226

2 Body-text symbols

This section lists symbols that are intended for use in running text, such as punctuation marks, accents, ligatures, and currency symbols.

TABLE 1: L^AT_EX 2_ε Escapable “Special” Characters

\$	\\$	%	\%	-	_*	}	\}	&	\&	#	\#	{	\{
----	-----	---	----	---	-----	---	----	---	----	---	----	---	----

* The `underscore` package redefines “_” to produce an underscore in text mode (i.e., it makes it unnecessary to escape the underscore character).

TABLE 2: Predefined L^AT_EX 2_ε Text-mode Commands

^	\textasciicircum*	<	\textless
~	\textasciitilde*	ª	\textordfeminine
*	\textasteriskcentered	º	\textordmasculine
\	\textbackslash	¶	\textparagraph [†]
	\textbar	·	\textperiodcentered
	\textbardbl	‰	\textpertenthousand
○	\textbigcircle	‰	\textperthousand
{	\textbraceleft [†]	¿	\textquestiondown
}	\textbraceright [†]	“	\textquotedblleft
•	\textbullet	”	\textquotedblright
©	\textcopyright [†]	‘	\textquoteleft
†	\textdagger [†]	,’	\textquoteright
‡	\textdaggerdbl [†]	®	\textregistered
\$	\textdollar [†]	§	\textsection [†]
...	\textellipsis [†]	£	\textsterling [†]
—	\textemdash	™	\texttrademark
-	\textendash	-	\textunderscore [†]
¡	\textexclamdown	˘	\textvisiblespace
>	\textgreater		

The first symbol column represents the—sometimes “faked”—symbol that L^AT_EX 2_ε provides by default. The second symbol column represents the symbol as redefined by `textcomp` (if `textcomp` redefines it). The `textcomp` package is generally required to typeset Table 2’s symbols in italic, and some symbols additionally require the T1 font encoding for italic.

* `\^{}` and `\~{}` can be used instead of `\textasciicircum` and `\textasciitilde`. See the discussion of “~” on page 226.

[†] It’s generally preferable to use the corresponding symbol from Table 3 on the following page because the symbols in that table work properly in both text mode and math mode.

TABLE 3: L^AT_EX 2_ε Commands Defined to Work in Both Math and Text Mode

{	\{	-	_	‡	‡	\ddag	£	\pounds
}	\}	©	©	\copyright	...	\dots	§	\S
\$	\$	\\$	†	†	\dag	¶	¶	\P

The first symbol column represents the—sometimes “faked”—symbol that L^AT_EX 2_ε provides by default. The second symbol column represents the symbol as redefined by `textcomp` (if `textcomp` redefines it). The `textcomp` package is generally required to typeset Table 3’s symbols in italic, and some symbols additionally require the T1 font encoding for italic.

TABLE 4: $\mathcal{AMS}$ Commands Defined to Work in Both Math and Text Mode

✓	\checkmark	®	\circledR	✕	\maltese
---	------------	---	-----------	---	----------

TABLE 5: Non-ASCII Letters (Excluding Accented Letters)

å	\aa	Ð	\DH*	Ł	\L	ø	\o	þ	\th*
Å	\AA	Đ	\DJ*	ł	\l	œ	\oe	Þ	\TH*
Æ	\AE	đ	\dj*	Ŭ	\NG*	Œ	\OE		
æ	\ae	IJ	\IJ	ŋ	\ng*	ß	\ss		
ð	\dh*	ij	\ij	Ø	\O	SS	\SS		

* Not available in the OT1 font encoding. Use the `fontenc` package to select an alternate font encoding, such as T1.

TABLE 6: `textgreek` Upright Greek Letters

α	\textalpha	η	\texteta	ν	\textnu	τ	\texttau
β	\textbeta	θ	\texttheta	ξ	\textxi	υ	\textupsilon
γ	\textgamma	ι	\textiota	ο	\textomikron	φ	\textphi
δ	\textdelta	κ	\textkappa	π	\textpi	χ	\textchi
ε	\textepsilon	λ	\textlambda	ρ	\textrho	ψ	\textpsi
ζ	\textzeta	μ	\textmu*	σ	\textsigma	ω	\textomega
A	\textAlpha	H	\textEta	N	\textNu	T	\textTau
B	\textBeta	Θ	\textTheta	Ξ	\textXi	Υ	\textUpsilon
Γ	\textGamma	I	\textIota	O	\textOmikron	Φ	\textPhi
Δ	\textDelta	K	\textKappa	Π	\textPi	X	\textChi
E	\textEpsilon	Λ	\textLambda	P	\textRho	Ψ	\textPsi
Z	\textZeta	M	\textMu	Σ	\textSigma	Ω	\textOmega

* Synonyms for `\textmu` include `\textmicro` and `\textmugreek`.

`textgreek` tries to use a Greek font that matches the body text. As a result, the glyphs may appear slightly different from the above.

Unlike `upgreek` (Table 187 on page 91), `textgreek` works in text mode.

The symbols in this table are intended to be used sporadically throughout a document (e.g., in phrases such as “β-decay”). In contrast, Greek body text can be typeset using the `babel` package’s `greek` (or `polutonikogreek`) option—and, of course, a font that provides the glyphs for the Greek alphabet.

TABLE 7: Letters Used to Typeset African Languages

Đ	\B{D}	ċ	\m{c}	f	\m{f}	ḳ	\m{k}	ṭ	\M{t}	Ƶ	\m{Z}
đ	\B{d}	Đ	\m{D}	F	\m{F}	Ḷ	\m{N}	Ṭ	\M{T}	Ɛ̃	\T{E}
H	\B{H}	Ḷ	\M{d}	Ƴ	\m{G}	ṅ	\m{n}	ṭ	\m{t}	ɛ̃	\T{e}
h	\B{h}	Đ	\M{D}	Ƴ	\m{g}	ṅ	\m{o}	Ṭ	\m{T}	Ɛ̃	\T{O}
ṭ	\B{t}	đ	\m{d}	Ḷ	\m{I}	Ṭ	\m{O}	ṽ	\m{u}*	Ƶ	\T{o}
T	\B{T}	Ɛ̃	\m{E}	ı	\m{i}	Ṗ	\m{P}	U	\m{U}*		
Ḷ	\m{b}	ɛ̃	\m{e}	Ḷ	\m{J}	Ṗ	\m{p}	Y	\m{Y}		
Ḷ	\m{B}	Ɛ̃	\M{E}	Ḷ	\m{j}	Ṗ	\m{s}	y	\m{y}		
Ċ	\m{C}	ə	\M{e}	K	\m{K}	Ƶ	\m{S}	Ƶ	\m{z}		

These characters all need the T4 font encoding, which is provided by the `fc` package.

* `\m{v}` and `\m{V}` are synonyms for `\m{u}` and `\m{U}`.

TABLE 8: Letters Used to Typeset Vietnamese

Ơ	\OHORN	ơ	\ohorn	Ư	\UHORN	ư	\uhorn
---	--------	---	--------	---	--------	---	--------

These characters all need the T5 font encoding, which is provided by the `vntex` package.

TABLE 9: Punctuation Marks Not Found in OT1

«	\guillemotleft	<	\guilsinglleft	„	\quotedblbase	"	\textquotedbl
»	\guillemotright	>	\guilsinglright	,	\quotesinglbase		

To get these symbols, use the `fontenc` package to select an alternate font encoding, such as T1.

TABLE 10: pifont Decorative Punctuation Marks

•	\ding{123}	“	\ding{125}	¶	\ding{161}	•	\ding{163}
•	\ding{124}	”	\ding{126}	¶	\ding{162}		

TABLE 11: tipa Phonetic Symbols

ɤ	\textbabygamma	ʔ	\textglotstop	ɳ	\textrtailn
ḃ	\textbarb	˙	\texthalflength	ɽ	\textrtailr
Ḅ	\textbarc	ᵇ	\texthardsign	ɿ	\textrtails
ḅ	\textbard	˘	\texthooktop	ʈ	\textrtailt
Ḇ	\textbardotlessj	Ḅ	\texthtb	ʌ	\textrtailz
ḇ	\textbarg	f	\texthtbardotlessj	˘	\texttrthook
ʔ	\textbarglotstop	Ḅ	\texthtc	A	\texttsca
i	\textbari	Ḅ	\texthtd	B	\texttscb
ḥ	\textbarl	Ḅ	\texthtg	E	\texttsce
ḋ	\textbaro	Ḅ	\texthtth	G	\texttscg
Ḍ	\textbarrevglotstop	Ḅ	\texthttheng	H	\texttsch
ḥ	\textbaru	Ḅ	\texthttk	ə	\texttschwa
ḭ	\textbeltl	Ḅ	\texthtp	I	\texttscl
β	\textbeta	Ḅ	\texthtq	J	\texttscl
⊙	\textbullseye	Ḅ	\texthttrtaild	L	\texttscl
˘	\textceltpal	Ḅ	\texthtscg	N	\texttscl
χ	\textchi	f	\texthttt	œ	\texttscoelig
ɐ	\textcloseepsilon	ḅ	\texthtvlig	Ω	\texttscomega
ω	\textcloseomega	ḅ	\textinvglotstop	R	\texttscri
ɜ	\textcloserevepsilon	ḅ	\textinvscr	α	\texttscripta
z	\textcommatailz	ι	\textiota	g	\texttscriptg
˘	\textcorner	λ	\textlambda	υ	\texttscriptv
ḃ	\textcrb	:	\textlengthmark	U	\texttscl
ḅ	\textcrd	ḅ	\textlhookt	Y	\texttscl
ḇ	\textcrg	l	\textlhtlongi	,	\textsecstress
ḥ	\textcrh	q	\textlhtlongy	ḅ	\textsoftsign
ḭ	\textcrinvglotstop	r	\textlongleg	Ĉ	\textstretchc
λ	\textcrlambda	˘	\textlptr	ḅ	\texttctclig
2	\textcrtwo	ŋ	\textltailm	ḅ	\texttctclig
Ḅ	\textctc	ɳ	\textltailn	ḅ	\texttctclig
ḅ	\textctd	ḅ	\textltilde	ḅ	\texttctclig
ḅ	\textctdctzlig	ḅ	\textlyoghlig	ḅ	\texttctclig
ḅ	\textctesh	J	\text0bardotlessj	ts	\textttslig
j	\textctj	ḅ	\text0lyoghlig	ḅ	\texttturna
ḅ	\textctn	ω	\textomega	æ	\texttturncelig
ḅ	\textctt	˘	\textopencorner	q	\texttturnh
ḅ	\textcttctclig	ɔ	\textopeno	ḅ	\texttturnk
ḅ	\textcttyogh	˘	\textpalhook	I	\texttturnlongleg
z	\textctz	φ	\textphi	uu	\texttturnm
ḅ	\textdctzlig		\textpipe	uu	\texttturnmrlig
f	\textdoublebaresh	˘	\textprimstress	˘	\texttturnr
ḅ	\textdoublebarpipe	ʔ	\textraiseplotstop	ḅ	\texttturnrrtail
≠	\textdoublebarslash	l	\textraiseviby	ḅ	\texttturnscripta
	\textdoublepipe	˘	\texttramshorns	ḅ	\texttturnt
	\textdoublevertline	˘	\textrevapostrophe	Λ	\texttturnv
↓	\textdownstep	ə	\textreve	Λ	\texttturnw
ḅ	\textdyoghlig	3	\textrevepsilon	Λ	\texttturny
ḅ	\textdzlig	ḅ	\textrevglotstop	U	\texttupsilon
ε	\textepsilon	ḅ	\textrevyogh	˘	\texttupstep
ḅ	\textesh	3	\texttrhookrevepsilon		\texttvertline
r	\textfishhookr	æ	\texttrhookschwa	ḅ	\texttviby

(continued on next page)

(continued from previous page)

g	\textg	˘	\textrhoticity	ʉ	\textvibyy
γ	\textgamma	>	\textrptr	p	\textwynn
↘	\textglobfall	ɔ	\textrtaild	ʒ	\textyogh
↗	\textglobrise	l	\textrtail		

tipa defines shortcut characters for many of the above. It also defines a command \tone for denoting tone letters (itches). See the tipa documentation for more information.

TABLE 12: tipx Phonetic Symbols

æ	\texttaolig	f	\texthtbardotlessjvar	ɬ	\textrthooklong
ɛ	\textbenttailyogh	ω	\textinvomega	ʌ	\textscaolig
γ	\textbktailgamma	v	\textinvsc	Δ	\textscdelta
ɔ	\textctinvglotstop	σ	\textinvscripta	F	\textscf
j	\textctjvar	ʃ	\textlfishhookrlig	K	\textscK
ɓ	\textctstretchc	ʒ	\textlhookfour	M	\textscM
ɕ	\textctstretchcvar	p	\textlhookp	P	\textscP
ɹ	\textctturnt	ɿ	\textlhti	Q	\textscQ
ɔ	\textdblig	ɿ	\textlooptoprevesh	←	\textspleftarrow
≠	\textdoublebarpipevar	η	\textnrleg	↗	\textstretchcvar
	\textdoublepipevar	⊙	\textObullseye	↔	\textsubdoublearrow
↓	\textdownfullarrow	ɹ	\textpalhooklong	→	\textsubbrightarrow
♀	\textfemale	ɹ	\textpalhookvar	þ	\textthornvari
n	\textfrbarn		\textpipevar	þ	\textthornvarii
ɔ	\textfrhookd	q	\textqplig	þ	\textthornvariii
ɔ	\textfrhookdvar	◻	\textrectangle	þ	\textthornvariv
ɔ	\textfrhookt	↵	\textretractingvar	ɿ	\textturnglotstop
γ	\textfrtailgamma	ɿ	\textrevscl	ɿ	\textturnsck
?	\textglotstopvari	ɿ	\textrevscr	ɿ	\textturnscu
?	\textglotstopvarii	ɿ	\textrho	ɿ	\textturnthree
?	\textglotstopvariii	ɿ	\textrho	ɿ	\textturntwo
γ	\textgrgamma	ɿ	\textrho	ɿ	\textuncrfemale
h	\textheng	ɿ	\textrho	↑	\textupfullarrow
h	\texthmlig	ɿ	\textrtailhth		

TABLE 13: wsuipa Phonetic Symbols

ɤ	\babygamma	ŋ	\eng	ɱ	\labdentalnas	ə	\schwa
ḃ	\barb	ʄ	\er	ɮ	\latfric	ɪ	\sci
ḅ	\bard	ʃ	\esh	ɯ	\legm	ɲ	\scn
ḇ	\bari	ḍ	\eth	ɾ	\legr	ɹ	\scr
Ḉ	\barl	ɽ	\flapr	ɿ	\lz	ɑ	\scripta
Ḋ	\baro	ʔ	\glotstop	α	\nialpha	ɡ	\scriptg
Ḣ	\barp	ḅ	\hookb	β	\nibeta	ʋ	\scriptv
Ḥ	\barsci	ḁ	\hookd	χ	\nich	ʊ	\scu
Ḧ	\barscu	ḡ	\hookg	ε	\niepsilon	ʏ	\scy
Ḩ	\baru	ḥ	\hookh	γ	\nigamma	ɸ	\slashb
Ḭ	\clickb	ḵ	\hookheng	ι	\niiota	ϕ	\slashc
Ḯ	\clickc	ʕ	\hookrepsilon	λ	\nilambda	ϑ	\slashd
Ḱ	\clickt	Ḳ	\hv	ω	\niomega	ϕ	\slashu
Ḳ	\closedniomega	ɛ	\inva	φ	\niphi	ɖ	\taild
Ḵ	\closedrepsilon	ɟ	\invf	σ	\nisigma	ɹ	\tailinvr
Ḷ	\crossb	ɬ	\invglotstop	θ	\nitheta	ɭ	\taill
Ḹ	\crossd	ɰ	\invh	ʊ	\niupsilon	ɳ	\tailn
Ḻ	\crossh	ɭ	\invlegr	ɲ	\nj	ɽ	\tailr
Ḽ	\crossnilambda	ɯ	\invm	∞	\oo	ɸ	\tails
Ḷ	\curlyc	ɹ	\invr	ɔ	\openo	ɽ	\tailt
Ḹ	\curlyesh	ʃ	\invscr	ə	\reve	ɹ	\tailz
Ḻ	\curlyyogh	ɽ	\invscripta	ɣ	\reveject	ʃ	\tesh
Ḻ	\curlyz	Λ	\invv	ɜ	\revepsilon	ɸ	\thorn
Ḻ	\dlbari	Λ	\invw	ɿ	\revglotstop	ɽ	\tildel
Ḻ	\dz	Λ	\invy	ɽ	\scd	ɜ	\yogh
Ḻ	\ejective	ɣ	\ipagamma	ɽ	\scg		

TABLE 14: wasysym Phonetic Symbols

Ḭ	\DH	Ḭ	\dh	ɔ	\openo
Ḭ	\Thorn	ə	\inve	ɸ	\thorn

TABLE 15: phonetic Phonetic Symbols

ɟ	\barj	ɽ	\flap	ɨ	\libar	ɽ	\rotvara	ɨ	\vari
λ	\barlambda	ʔ	\glottal	ɔ	\openo	Λ	\rotw	ω	\varomega
ɱ	\emgma	Ḃ	\hausab	ḥ	\planck	Λ	\roty	ɔ	\varopeno
ɱ	\engma	ḅ	\hausab	Λ	\pwedge	ə	\schwa	ʏ	\vod
ɲ	\enya	ḁ	\hausad	ɽ	\revD	ɸ	\thorn	fi	\voicedh
ε	\epsi	Ḋ	\hausad	ɨ	\riota	ɸ	\ubar	ɜ	\yogh
ʃ	\esh	ḥ	\hausak	ɯ	\rotr	ɱ	\udesc		
ḍ	\eth	Ḭ	\hausak	ʊ	\rotOmega	ɑ	\vara		
ḵ	\fj	ḁ	\hookd	ɹ	\rotr	ɽ	\varg		

TABLE 16: t4phonet Phonetic Symbols

đ	\textcrd	d'	\texthtd		\textpipe
h	\textcrh	k	\texthtk	d	\textrtaild
ε	\textepsilon	p	\texthtp	t	\textrtailt
ʃ	\textesh	f	\texthtt	d'	\textschwa
fj	\textfjlig	ι	\textiota	ʃ	\textscriptv
β	\texthtb	ɲ	\textltailn	ʒ	\texttेशlig
℄	\texthtc	ɔ	\textopeno	ʒ	\textyogh

The idea behind the **t4phonet** package’s phonetic symbols is to provide an interface to some of the characters in the T4 font encoding (Table 7 on page 16) but using the same names as the **tipa** characters presented in Table 11 on page 17.

TABLE 17: semtrans Transliteration Symbols

ʾ	\Alif	ʿ	\Ayn
---	-------	---	------

TABLE 18: Text-mode Accents

Ää	\{"A}\{a}	Áá	\ {A}\ {a}†	Ââ	\f{A}\f{a}¶	Ââ	\t{A}\t{a}
Áá	\' {A}\' {a}	Ãã	\~ {A}\~ {a}	Ää	\G{A}\G{a}‡	Ää	\u{A}\u{a}
Àà	\. {A}\. {a}	Àà	\b{A}\b{a}	Åå	\h{A}\h{a}§	Ää	\U{A}\U{a}‡
Āā	\={A}\={a}	Ạạ	\c{A}\c{a}	Ǻǻ	\H{A}\H{a}	Ǻǻ	\U{A}\U{a}¶
Ââ	\^ {A}\^ {a}	Ǻǻ	\C{A}\C{a}¶	Ạạ	\k{A}\k{a}†	Ǻǻ	\v{A}\v{a}
Àà	\‘ {A}\‘ {a}	Ạạ	\d{A}\d{a}	Ảả	\r{A}\r{a}		

Ââ \newtie{A}\newtie{a}* ⒶⒶ \textcircled{A}\textcircled{a}

* Requires the **textcomp** package.

† Not available in the OT1 font encoding. Use the **fontenc** package to select an alternate font encoding, such as T1.

‡ Requires the T4 font encoding, provided by the **fc** package.

§ Requires the T5 font encoding, provided by the **vtex** package.

¶ Requires one of the Cyrillic font encodings (T2A, T2B, T2C, or X2). Use the **fontenc** package to select an encoding.

Also note the existence of **\i** and **\j**, which produce dotless versions of “i” and “j” (viz., “i” and “j”). These are useful when the accent is supposed to replace the dot in encodings that need to composite (i.e., combine) letters and accents. For example, “**na\{"i}ve**” always produces a correct “naïve”, while “**na\{"i}ve**” yields the rather odd-looking “naïve” when using the OT1 font encoding and older versions of L^AT_EX. Font encodings other than OT1 and newer versions of L^AT_EX properly typeset “**na\{"i}ve**” as “naïve”.

TABLE 19: tipa Text-mode Accents

Áá	\textacutemacron{A}\textacutemacron{a}
Ăă	\textacutewedge{A}\textacutewedge{a}
Ȧȧ	\textadvancing{A}\textadvancing{a}
ⒶⓂ	\textbottomtiebar{A}\textbottomtiebar{a}
Ȧȧ	\textbreve{A}\textbreve{a}
Ȧȧ	\textcirc{A}\textcirc{a}
Ââ	\textcirc{A}\textcirc{a}
Ǻǻ	\textdot{A}\textdot{a}
Ǻǻ	\textdot{A}\textdot{a}
Ǻǻ	\textdot{A}\textdot{a}
Ǻǻ	\textdoublegrave{A}\textdoublegrave{a}
Ǻǻ	\textdoublebaraccent{A}\textdoublebaraccent{a}
Ǻǻ	\textfallrise{A}\textfallrise{a}
Ǻǻ	\textgravecircum{A}\textgravecircum{a}
Ǻǻ	\textgravedot{A}\textgravedot{a}
Ǻǻ	\textgravemacron{A}\textgravemacron{a}
Ǻǻ	\textgravemid{A}\textgravemid{a}
Ǻǻ	\texthighrise{A}\texthighrise{a}
Ǻǻ	\textinvsubbridge{A}\textinvsubbridge{a}
Ǻǻ	\textlowering{A}\textlowering{a}
Ǻǻ	\textlowrise{A}\textlowrise{a}
Ǻǻ	\textmidacute{A}\textmidacute{a}
Ǻǻ	\textovercross{A}\textovercross{a}
Ǻǻ	\textoverw{A}\textoverw{a}
Ǻǻ	\textpolhook{A}\textpolhook{a}
Ǻǻ	\textraising{A}\textraising{a}
Ǻǻ	\textretracting{A}\textretracting{a}
Ǻǻ	\textringmacron{A}\textringmacron{a}
Ǻǻ	\textrisefall{A}\textrisefall{a}
Ǻǻ	\textroundcap{A}\textroundcap{a}
Ǻǻ	\textseagull{A}\textseagull{a}
Ǻǻ	\textsubacute{A}\textsubacute{a}
Ǻǻ	\textsubarch{A}\textsubarch{a}
Ǻǻ	\textsubbar{A}\textsubbar{a}
Ǻǻ	\textsubbridge{A}\textsubbridge{a}
Ǻǻ	\textsubcircum{A}\textsubcircum{a}
Ǻǻ	\textsubdot{A}\textsubdot{a}
Ǻǻ	\textsubgrave{A}\textsubgrave{a}
Ǻǻ	\textsublhalfring{A}\textsublhalfring{a}
Ǻǻ	\textsubplus{A}\textsubplus{a}
Ǻǻ	\textsubrhalfring{A}\textsubrhalfring{a}
Ǻǻ	\textsubring{A}\textsubring{a}

(continued on next page)

(continued from previous page)

$\text{\AA}_{\square}$	<code>\textsubsquare{A}\textsubsquare{a}</code>
$\text{\AA}_{\sim}$	<code>\textsubtilde{A}\textsubtilde{a}</code>
$\text{\AA}_{\grave{}}$	<code>\textsubumlaut{A}\textsubumlaut{a}</code>
$\text{\AA}_{\omega}$	<code>\textsubw{A}\textsubw{a}</code>
$\text{\AA}_{\triangle}$	<code>\textsubwedge{A}\textsubwedge{a}</code>
$\text{\AA}_{\text{\AA}}$	<code>\textsuperimposetilde{A}\textsuperimposetilde{a}</code>
$\text{\AA}_{\text{\AA}}$	<code>\textsyllabic{A}\textsyllabic{a}</code>
$\text{\AA}_{\text{\AA}}$	<code>\texttildedot{A}\texttildedot{a}</code>
$\text{\AA}_{\text{\AA}}$	<code>\texttoptiebar{A}\texttoptiebar{a}</code>
$\text{\AA}_{\text{\AA}}$	<code>\textvbaraccent{A}\textvbaraccent{a}</code>

`tipa` defines shortcut sequences for many of the above. See the `tipa` documentation for more information.

TABLE 20: `extraipa` Text-mode Accents

$\text{\AA}_{\text{\AA}}$	<code>\bibridge{A}\bibridge{a}</code>	$\text{\AA}_{\text{\AA}}$	<code>\partvoiceless{A}\partvoiceless{a}</code>
$\text{\AA}_{\text{\AA}}$	<code>\crtilde{A}\crtilde{a}</code>	$\text{\AA}_{\text{\AA}}$	<code>\sliding{A}\sliding{a}</code>
$\text{\AA}_{\text{\AA}}$	<code>\dottedtilde{A}\dottedtilde{a}</code>	$\text{\AA}_{\text{\AA}}$	<code>\spreadlips{A}\spreadlips{a}</code>
$\text{\AA}_{\text{\AA}}$	<code>\doubletilde{A}\doubletilde{a}</code>	$\text{\AA}_{\text{\AA}}$	<code>\subcorner{A}\subcorner{a}</code>
$\text{\AA}_{\text{\AA}}$	<code>\finpartvoice{A}\finpartvoice{a}</code>	$\text{\AA}_{\text{\AA}}$	<code>\subdoublebar{A}\subdoublebar{a}</code>
$\text{\AA}_{\text{\AA}}$	<code>\finpartvoiceless{A}\finpartvoiceless{a}</code>	$\text{\AA}_{\text{\AA}}$	<code>\subdoublevert{A}\subdoublevert{a}</code>
$\text{\AA}_{\text{\AA}}$	<code>\inipartvoice{A}\inipartvoice{a}</code>	$\text{\AA}_{\text{\AA}}$	<code>\sublptr{A}\sublptr{a}</code>
$\text{\AA}_{\text{\AA}}$	<code>\inipartvoiceless{A}\inipartvoiceless{a}</code>	$\text{\AA}_{\text{\AA}}$	<code>\subrprr{A}\subrprr{a}</code>
$\text{\AA}_{\text{\AA}}$	<code>\overbridge{A}\overbridge{a}</code>	$\text{\AA}_{\text{\AA}}$	<code>\whistle{A}\whistle{a}</code>
$\text{\AA}_{\text{\AA}}$	<code>\partvoice{A}\partvoice{a}</code>		

TABLE 21: `wsuipa` Text-mode Accents

$\text{\AA}_{\text{\AA}}$	<code>\dental{A}\dental{a}</code>
$\text{\AA}_{\text{\AA}}$	<code>\underarch{A}\underarch{a}</code>

TABLE 22: phonetic Text-mode Accents

$\underset{\cdot}{A}\underset{\cdot}{a}$	<code>\hill{A}\hill{a}</code>	$\underset{\cdot}{A}\underset{\cdot}{a}$	<code>\rc{A}\rc{a}</code>	$\underset{\cdot}{A}\underset{\cdot}{a}$	<code>\ut{A}\ut{a}</code>
$\underset{\circ}{A}\underset{\circ}{a}$	<code>\od{A}\od{a}</code>	$\underset{\cdot}{A}\underset{\cdot}{a}$	<code>\syl{A}\syl{a}</code>		
$\overset{\cdot}{A}\overset{\cdot}{a}$	<code>\ohill{A}\ohill{a}</code>	$\underset{\cdot}{A}\underset{\cdot}{a}$	<code>\td{A}\td{a}</code>		

The `phonetic` package provides a few additional macros for linguistic accents. `\acbar` and `\acarc` compose characters with multiple accents; for example, `\acbar{'}{a}` produces “ $\acute{a}$ ” and `\acarc{"}{e}` produces “ $\ddot{e}$ ”. `\labvel` joins two characters with an arc: `\labvel{mn}` $\rightarrow$ “ $\widehat{mn}$ ”. `\upbar` is intended to go between characters as in “ $x\upbar{y}$ ” $\rightarrow$ “ x^y ”. Lastly, `\uplett` behaves like `\textsuperscript` but uses a smaller font. Contrast “ $p\uplett{h}$ ” $\rightarrow$ “ p^h ” with “ p^{h} ” $\rightarrow$ “ p^h ”.

TABLE 23: metre Text-mode Accents

$\acute{A}\acute{a}$	<code>\acutus{A}\acutus{a}</code>
$\breve{A}\breve{a}$	<code>\breve{A}\breve{a}</code>
$\tilde{A}\tilde{a}$	<code>\circumflexus{A}\circumflexus{a}</code>
$\ddot{A}\ddot{a}$	<code>\diaeresis{A}\diaeresis{a}</code>
$\grave{A}\grave{a}$	<code>\gravis{A}\gravis{a}</code>
$\bar{A}\bar{a}$	<code>\macron{A}\macron{a}</code>

TABLE 24: t4phonet Text-mode Accents

$\ddot{A}\ddot{a}$	<code>\textdoublegrave{A}\textdoublegrave{a}</code>
$\dot{A}\dot{a}$	<code>\textvbaraccent{A}\textvbaraccent{a}</code>
$\ddot{A}\ddot{a}$	<code>\textdoublevbaraccent{A}\textdoublevbaraccent{a}</code>

The idea behind the `t4phonet` package’s text-mode accents is to provide an interface to some of the accents in the T4 font encoding (accents marked with “ $\ddot{}$ ” in Table 18 on page 20) but using the same names as the `tipa` accents presented in Table 19 on page 21.

TABLE 25: arcs Text-mode Accents

$\widehat{A}\widehat{a}$	<code>\overarc{A}\overarc{a}</code>	$\underline{A}\underline{a}$	<code>\underarc{A}\underarc{a}</code>
--------------------------	-------------------------------------	------------------------------	---------------------------------------

The accents shown above scale only to a few characters wide. An optional macro argument alters the effective width of the accented characters. See the `arcs` documentation for more information.

At the time of this writing (2015/11/12), there exists an incompatibility between the `arcs` package and the `resize` package, upon which `arcs` depends. As a workaround, one should apply the patch proposed by Michael Sharpe on the X_YTeX mailing list (Subject: “The arcs package”, dated 2013/08/25) to prevent spurious text from being added to the document (as in, “5.0pt $\widehat{A}$ ” when “ $\widehat{A}$ ” is expected).

TABLE 26: semtrans Accents

$\mathring{A}\mathring{a}$	<code>\D{A}\D{a}</code>	$\mathring{A}\mathring{a}$	<code>\U{A}\U{a}</code>
$\forall e$	<code>\T{A}\T{a}</code>	*	

`\T` is not actually an accent but a command that rotates its argument 180° using the `graphicx` package’s `\rotatebox` command.

TABLE 27: ogonek Accents

$\mathring{A}\mathring{a}$	<code>\k{A}\k{a}</code>
----------------------------	-------------------------

TABLE 28: combelow Accents

$\mathring{A}\mathring{a}$	<code>\cb{A}\cb{a}</code>
----------------------------	---------------------------

`\cb` places a comma *above* letters with descenders. Hence, while “`\cb{s}`” produces “š”, “`\cb{g}`” produces “ġ”.

TABLE 29: wsuipa Diacritics

ˆ	<code>\ain</code>	<	<code>\leftp</code>	ˆ	<code>\overring</code>	ˆ	<code>\stress</code>	ˆ	<code>\underwedge</code>
⌞	<code>\corner</code>	⌞	<code>\leftt</code>	ˆ	<code>\polishhook</code>	ˆ	<code>\syllabic</code>	ˆ	<code>\upp</code>
˘	<code>\downp</code>	ˆ	<code>\length</code>	>	<code>\rightp</code>	ˆ	<code>\underdots</code>	ˆ	<code>\upt</code>
ˆ	<code>\downt</code>	ˆ	<code>\midtilde</code>	ˆ	<code>\rightt</code>	ˆ	<code>\underring</code>		
ˆ	<code>\halflength</code>	ˆ	<code>\open</code>	ˆ	<code>\secstress</code>	ˆ	<code>\undertilde</code>		

The `wsuipa` package defines all of the above as ordinary characters, not as accents. However, it does provide `\diatop` and `\diaunder` commands, which are used to compose diacritics with other characters. For example, `\diatop[\overring|a]` produces “å”, and `\diaunder[\underdots|a]` produces “ä”. See the `wsuipa` documentation for more information.

TABLE 30: textcomp Diacritics

ˆ	<code>\textacutedbl</code>	ˆ	<code>\textasciicaron</code>	ˆ	<code>\textasciimacron</code>
ˆ	<code>\textasciiacute</code>	ˆ	<code>\textasciidieresis</code>	ˆ	<code>\textgravedbl</code>
ˆ	<code>\textasciibreve</code>	ˆ	<code>\textasciigrave</code>		

The `textcomp` package defines all of the above as ordinary characters, not as accents. You can use `\llap` or `\rlap` to combine them with other characters. See the discussion of `\llap` and `\rlap` on page 218 for more information.

TABLE 31: marvosym Diacritics

$\overrightarrow{}$	<code>\arrowOver</code>	$\overline{}$	<code>\barOver</code>	$\text{\text{ / }}$	<code>\StrikingThrough</code>
$\overleftarrow{}$	<code>\ArrowOver</code>	$\overline{}$	<code>\BarOver</code>		

The `marvosym` package defines all of the above as ordinary characters, not as accents. You can use `\llap` or `\rlap` to combine them with other characters. See the discussion of `\llap` and `\rlap` on page 218 for more information.

TABLE 32: textcomp Currency Symbols

฿	<code>\textbaht</code>	\$	<code>\textdollar*</code>	₵	<code>\textguarani</code>	₩	<code>\textwon</code>
¢	<code>\textcent</code>	\$	<code>\textdollaroldstyle</code>	£	<code>\textlira</code>	¥	<code>\textyen</code>
¢	<code>\textcentoldstyle</code>	₮	<code>\textdong</code>	₦	<code>\textnaira</code>		
₯	<code>\textcolonmonetary</code>	€	<code>\texteuro</code>	₱	<code>\textpeso</code>		
₧	<code>\textcurrency</code>	f	<code>\textflorin</code>	£	<code>\textsterling*</code>		

* It's generally preferable to use the corresponding symbol from Table 3 on page 15 because the symbols in that table work properly in both text mode and math mode.

TABLE 33: marvosym Currency Symbols

₴	<code>\Denarius</code>	€	<code>\EURcr</code>	€	<code>\EURtm</code>	₧	<code>\Pfund</code>
€	<code>\Ecommerce</code>	€	<code>\EURdig</code>	\$	<code>\EyesDollar</code>	β	<code>\Shilling</code>
€	<code>\EUR</code>	€	<code>\EURhv</code>	₯	<code>\Florin</code>		

The different euro signs are meant to be visually compatible with different fonts—Courier (`\EURcr`), Helvetica (`\EURhv`), Times Roman (`\EURtm`), and the `marvosym` digits listed in Table 282 (`\EURdig`). The `mathdesign` package redefines `\texteuro` to be visually compatible with one of three additional fonts: Utopia (€), Charter (€), or Garamond (€).

TABLE 34: fontawesome Currency Symbols

₿	<code>\faBtc</code>	₹	<code>\faIls</code>	₩	<code>\faKrw</code>	\$	<code>\faUsd</code>
€	<code>\faEur</code>	₹	<code>\faInr</code>	₱	<code>\faRub</code>	₿	<code>\faViacoin</code>
£	<code>\faGbp</code>	¥	<code>\faJpy</code>	₯	<code>\faTry</code>		

`fontawesome` defines `\faBitcoin` as a synonym for `\faBtc`; `\faCny`, `\faYen`, and `\faRmb` as synonyms for `\faJpy`; `\faDollar` as a synonym for `\faUsd`; `\faEuro` as a synonym for `\faEur`; `\faRouble` and `\faRuble` as synonyms for `\faRub`; `\faRupee` as a synonym for `\faInr`; `\faShekel` and `\faSheqel` as synonyms for `\faIls`; `\faTurkishLira` as a synonym for `\faTry`; and `\faWon` as a synonym for `\faKrw`.

TABLE 35: wasysym Currency Symbols

¢	<code>\cent</code>	₧	<code>\currency</code>
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TABLE 36: GpA2e Currency Symbols

€	<code>\Euro</code>	£	<code>\Pound</code>
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TABLE 37: teubner Currency Symbols

✕	<code>\denarius</code>	c	<code>\hemiobelion</code>	▷	<code>\tetartemorion</code>
⊢	<code>\dracma</code>	⋄	<code>\stater</code>		

TABLE 38: tfruppee Currency Symbols

₹	<code>\rupee</code>
---	---------------------

TABLE 39: eurosym Euro Signs

€	<code>\geneuro</code>	€	<code>\geneuronarrow</code>	€	<code>\geneurowide</code>	€	<code>\officiaeuro</code>
---	-----------------------	---	-----------------------------	---	---------------------------	---	---------------------------

`\euro` is automatically mapped to one of the above—by default, `\officiaeuro`—based on a `eurosym` package option. See the `eurosym` documentation for more information. The `\geneuro...` characters are generated from the current body font’s “C” character and therefore may not appear exactly as shown.

TABLE 40: fourier Euro Signs

€	<code>\eurologo</code>	€	<code>\texteuro</code>
---	------------------------	---	------------------------

TABLE 41: textcomp Legal Symbols

⒫	<code>\textcircledP</code>	©	©	<code>\textcopyright</code>	SM	<code>\textservicemark</code>
Ⓒ	<code>\textcircleft</code>	®	®	<code>\textregistered</code>	TM	<code>\texttrademark</code>

The first symbol column represents the—sometimes “faked”—symbol that $\text{\LaTeX}2_{\epsilon}$ provides by default. The second symbol column represents the symbol as redefined by `textcomp`. The `textcomp` package is generally required to typeset Table 41’s symbols in italic.

See <http://www.tex.ac.uk/cgi-bin/texfaq2html?label=tradesyms> for solutions to common problems that occur when using these symbols (e.g., getting a “Ⓘ” when you expected to get a “®”).

TABLE 42: fontawesome Legal Symbols

©	<code>\faCopyright</code>	®	<code>\faRegistered</code>
cc	<code>\faCreativeCommons</code>	TM	<code>\faTrademark</code>

TABLE 43: ccllicenses Creative Commons License Icons

	<code>\cc</code>		<code>\ccnc*</code>		<code>\ccsa*</code>
	<code>\ccbby</code>		<code>\ccnd</code>		

* These symbols utilize the `rotating` package and therefore display improperly in some DVI viewers.

TABLE 44: ccicons Creative Commons License Icons

	<code>\ccAttribution</code>		<code>\ccNonCommercialEU</code>		<code>\ccShare</code>
	<code>\ccCopy</code>		<code>\ccNonCommercialJP</code>		<code>\ccShareAlike</code>
	<code>\ccLogo</code>		<code>\ccPublicDomain</code>		<code>\ccZero</code>
	<code>\ccNoDerivatives</code>		<code>\ccRemix</code>		
	<code>\ccNonCommercial</code>		<code>\ccSampling</code>		

`ccicons` additionally defines a set of commands for typesetting many complete Creative Commons licenses (i.e., juxtapositions of two or more of the preceding icons). For example, the `\ccbbyncnd` command typesets the “Attribution–Noncommercial–No Derivative Works” license (“”). See the `ccicons` documentation for more information.

TABLE 45: textcomp Old-style Numerals

0	<code>\textzerooldstyle</code>	4	<code>\textfouroldstyle</code>	8	<code>\texteightoldstyle</code>
1	<code>\textoneoldstyle</code>	5	<code>\textfiveoldstyle</code>	9	<code>\textnineoldstyle</code>
2	<code>\texttwooldstyle</code>	6	<code>\textsixoldstyle</code>		
3	<code>\textthreeoldstyle</code>	7	<code>\textsevenoldstyle</code>		

Rather than use the bulky `\textoneoldstyle`, `\texttwooldstyle`, etc. commands shown above, consider using `\oldstylenums{...}` to typeset an old-style number.

TABLE 46: Miscellaneous textcomp Symbols

<code>\textblank</code>		<code>\textpilcrow</code>
<code>\textbrokenbar</code>	<code>'</code>	<code>\textquotesingle</code>
<code>\textdblhyphen</code>	<code>,</code>	<code>\textquotestraightbase</code>
<code>\textdblhyphenchar</code>	<code>„</code>	<code>\textquotestraightdblbase</code>
<code>\textdiscount</code>	<code>R</code>	<code>\textrecipe</code>
<code>\textestimated</code>	<code>*</code>	<code>\textreferencemark</code>
<code>\textinterrobang</code>	<code>—</code>	<code>\textthreequartersemdash</code>
<code>\textinterrobangdown</code>	<code>~</code>	<code>\texttildelow</code>
<code>\textnumero</code>	<code>—</code>	<code>\texttwelveudash</code>
<code>\textopenbullet</code>		

TABLE 47: Miscellaneous wasysym Text-mode Symbols

<code>%o</code>	<code>\permil</code>
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3 Mathematical symbols

Most, but not all, of the symbols in this section are math-mode only. That is, they yield a “Missing \$ inserted” error message if not used within `$. . $`, `\[. . \]`, or another math-mode environment. Operators marked as “variable-sized” are taller in displayed formulas, shorter in in-text formulas, and possibly shorter still when used in various levels of superscripts or subscripts.

Alphanumeric symbols (e.g., “ $\mathcal{L}$ ” and “ $\mathbb{Z}$ ”) are usually produced using one of the math alphabets in Table 307 rather than with an explicit symbol command. Look there first if you need a symbol for a transform, number set, or some other alphanumeric.

Although there have been many requests on `comp.text.tex` for a contradiction symbol, the ensuing discussion invariably reveals innumerable ways to represent contradiction in a proof, including “ $\blacksquare$ ” (`\blitza`), “ $\Rightarrow\Leftarrow$ ” (`\Rightarrow\Leftarrow`), “ $\perp$ ” (`\bot`), “ $\nleftrightarrow$ ” (`\nletrightarrow`), and “ $\text{\textcircled{X}}$ ” (`\textcircled{X}`). Because of the lack of notational consensus, it is probably better to spell out “Contradiction!” than to use a symbol for this purpose. Similarly, discussions on `comp.text.tex` have revealed that there are a variety of ways to indicate the mathematical notion of “is defined as”. Common candidates include “ $\triangleq$ ” (`\triangleq`), “ $\equiv$ ” (`\equiv`), “ $\overset{\text{def}}{=}$ ” (`\stackrel{\text{def}}{=}`), and “ $\stackrel{\text{def}}{=}$ ” (`\stackrel{\text{def}}{=}`). See also the example of `\equalsfill` on page 219. Depending upon the context, disjoint union may be represented as “ $\coprod$ ” (`\coprod`), “ $\sqcup$ ” (`\sqcup`), “ $\dot{\cup}$ ” (`\dotcup`), “ $\oplus$ ” (`\oplus`), or any of a number of other symbols.² Finally, the average value of a variable x is written by some people as “ $\overline{x}$ ” (`\overline{x}`), by some people as “ $\langle x \rangle$ ” (`\langle x \rangle`), and by some people as “ $\varnothing x$ ” or “ $\emptyset x$ ” (`\diameter x` or `\varnothing x`). The moral of the story is that you should be careful always to explain your notation to avoid confusing your readers.

TABLE 48: Math-Mode Versions of Text Symbols

\$	<code>\mathdollar</code>	¶	<code>\mathparagraph</code>	£	<code>\mathsterling</code>
...	<code>\mathellipsis</code>	§	<code>\mathsection</code>	-	<code>\mathunderscore</code>

It’s generally preferable to use the corresponding symbol from Table 3 on page 15 because the symbols in that table work properly in both text mode and math mode.

TABLE 49: `cmll` Unary Operators

!	<code>\oc*</code>	↑	<code>\shneg</code>	?	<code>\wn*</code>
⇕	<code>\shift</code>	↓	<code>\shpos</code>		

* `\oc` and `\wn` differ from “!” and “?” in terms of their math-mode spacing:
`$A=!B$` produces “ $A =!B$ ”, for example, while `$A=\oc B$` produces “ $A =!B$ ”.

¹In `txfonts`, `pxfonts`, and `mathtools` the symbol is called `\coloneqq`. In `mathabx` and `MnSymbol` it’s called `\coloneq`. In `colonequals` it’s called `\colonequals`.

²Bob Tennent listed these and other disjoint-union symbol possibilities in a November 2007 post to `comp.text.tex`.

TABLE 50: Binary Operators

$\amalg$	<code>\amalg</code>	$\cup$	<code>\cup</code>	$\oplus$	<code>\oplus</code>	$\times$	<code>\times</code>
$\ast$	<code>\ast</code>	$\dagger$	<code>\dagger</code>	$\oslash$	<code>\oslash</code>	$\triangleleft$	<code>\triangleleft</code>
$\bigcirc$	<code>\bigcirc</code>	$\ddagger$	<code>\ddagger</code>	$\otimes$	<code>\otimes</code>	$\triangleright$	<code>\triangleright</code>
$\bigtriangledown$	<code>\bigtriangledown</code>	$\diamond$	<code>\diamond</code>	$\pm$	<code>\pm</code>	$\leqslant$	<code>\leqslant</code>
$\bigtriangleup$	<code>\bigtriangleup</code>	$\div$	<code>\div</code>	$\rhd$	<code>\rhd</code>	$\unrhd$	<code>\unrhd</code>
$\bullet$	<code>\bullet</code>	$\lhd$	<code>\lhd</code>	$\setminus$	<code>\setminus</code>	$\uplus$	<code>\uplus</code>
$\cap$	<code>\cap</code>	$\mp$	<code>\mp</code>	$\sqcap$	<code>\sqcap</code>	$\vee$	<code>\vee</code>
$\cdot$	<code>\cdot</code>	$\odot$	<code>\odot</code>	$\sqcup$	<code>\sqcup</code>	$\wedge$	<code>\wedge</code>
$\circ$	<code>\circ</code>	$\ominus$	<code>\ominus</code>	$\star$	<code>\star</code>	$\wr$	<code>\wr</code>

* Not predefined by the $\text{\LaTeX} 2_{\epsilon}$ core. Use the `latexsym` package to expose this symbol.

TABLE 51: $\mathcal{AMS}$ Binary Operators

$\bar{\wedge}$	<code>\barwedge</code>	$\odot$	<code>\circledcirc</code>	$\intercal$	<code>\intercal*</code>
$\boxdot$	<code>\boxdot</code>	$\ominus$	<code>\circleddash</code>	$\leftthreetimes$	<code>\leftthreetimes</code>
$\boxminus$	<code>\boxminus</code>	$\cup$	<code>\Cup</code>	$\ltimes$	<code>\ltimes</code>
$\boxplus$	<code>\boxplus</code>	$\curlyvee$	<code>\curlyvee</code>	$\rightthreetimes$	<code>\rightthreetimes</code>
$\boxtimes$	<code>\boxtimes</code>	$\curlywedge$	<code>\curlywedge</code>	$\rtimes$	<code>\rtimes</code>
$\Cap$	<code>\Cap</code>	$\divideontimes$	<code>\divideontimes</code>	$\smallsetminus$	<code>\smallsetminus</code>
$\centerdot$	<code>\centerdot</code>	$\dotplus$	<code>\dotplus</code>	$\veebar$	<code>\veebar</code>
$\circledast$	<code>\circledast</code>	$\doublebarwedge$	<code>\doublebarwedge</code>		

* Some people use a superscripted `\intercal` for matrix transpose: “ $A^{\intercal}$ ” $\mapsto$ “ A^T ”. (See the May 2009 `comp.text.tex` thread, “raising math symbols”, for suggestions about altering the height of the superscript.) `\top` (Table 199 on page 93), `T`, and `\mathsf{T}` are other popular choices: “ A^T ”, “ A^T ”, “ A^T ”.

TABLE 52: `stmaryrd` Binary Operators

$\bar{\phi}$	<code>\baro</code>	$\parallel$	<code>\interleave</code>	$\otimes$	<code>\varoast</code>
$\parallel$	<code>\bbslash</code>	$\triangleleft$	<code>\leftslice</code>	$\oplus$	<code>\varobar</code>
$\&$	<code>\binampersand</code>	$\M$	<code>\merge</code>	$\oslash$	<code>\varobslash</code>
$\wp$	<code>\bindnasrepma</code>	$\ominus$	<code>\minuso</code>	$\odot$	<code>\varocircle</code>
$\boxast$	<code>\boxast</code>	$\pm$	<code>\moo</code>	$\odot$	<code>\varodot</code>
$\boxbar$	<code>\boxbar</code>	$\oplus$	<code>\nplus</code>	$\oslash$	<code>\varogreaterthan</code>
$\boxbox$	<code>\boxbox</code>	$\oplus$	<code>\obar</code>	$\oslash$	<code>\varolessthan</code>
$\boxbslash$	<code>\boxbslash</code>	$\square$	<code>\oblong</code>	$\ominus$	<code>\varominus</code>
$\boxcircle$	<code>\boxcircle</code>	$\oslash$	<code>\obslash</code>	$\oplus$	<code>\varoplus</code>
$\boxdot$	<code>\boxdot</code>	$\oslash$	<code>\ogreaterthan</code>	$\oslash$	<code>\varoslash</code>
$\boxempty$	<code>\boxempty</code>	$\oslash$	<code>\olessthan</code>	$\otimes$	<code>\varotimes</code>
$\boxslash$	<code>\boxslash</code>	$\oslash$	<code>\ovee</code>	$\oslash$	<code>\varovee</code>
$\curlyvee\downarrow$	<code>\curlyveedownarrow</code>	$\oslash$	<code>\owedge</code>	$\oslash$	<code>\varowedge</code>
$\curlyvee\uparrow$	<code>\curlyveeuparrow</code>	$\oslash$	<code>\rightslice</code>	$\times$	<code>\vartimes</code>
$\curlywedgedownarrow$	<code>\curlywedgedownarrow</code>	$\oslash$	<code>\sslash</code>	Υ	<code>\Ydown</code>
$\curlywedgeuparrow$	<code>\curlywedgeuparrow</code>	$\oslash$	<code>\talloblong</code>	Υ	<code>\Yleft</code>
$\fatbslash$	<code>\fatbslash</code>	$\oslash$	<code>\varbigcirc</code>	Υ	<code>\Yright</code>
$\fatsemi$	<code>\fatsemi</code>	$\oslash$	<code>\varcurlyvee</code>	Υ	<code>\Yup</code>
$\fatslash$	<code>\fatslash</code>	$\oslash$	<code>\varcurlywedge</code>		

TABLE 53: wasysym Binary Operators

$\triangleleft$	<code>\lhd</code>	$\bigcirc$	<code>\ocircle</code>	$\blacktriangleright$	<code>\RHD</code>	$\trianglerighteq$	<code>\unrhd</code>
$\blacktriangleleft$	<code>\LHD</code>	$\triangleright$	<code>\rhd</code>	$\trianglelefteq$	<code>\unlhd</code>		

TABLE 54: txfonts/pxfonts Binary Operators

$\textcircled{\text{D}}$	<code>\circledbar</code>	$\textcircled{\text{W}}$	<code>\circledwedge</code>	$\textcircled{\text{M}}$	<code>\medcirc</code>
$\textcircled{\text{S}}$	<code>\circledbslash</code>	$\textcircled{\text{I}}$	<code>\invamp</code>	$\textcircled{\text{P}}$	<code>\sqcapplus</code>
$\textcircled{\text{V}}$	<code>\circledvee</code>	$\textcircled{\text{f}}$	<code>\medbullet</code>	$\textcircled{\text{H}}$	<code>\sqcupplus</code>

TABLE 55: mathabx Binary Operators

$*$	<code>\ast</code>	$\wedge$	<code>\curlywedge</code>	$\sqcap$	<code>\sqcap</code>
$*$	<code>\Asterisk</code>	$\div$	<code>\divdot</code>	$\sqcup$	<code>\sqcup</code>
$\bar{\wedge}$	<code>\barwedge</code>	$*$	<code>\divideontimes</code>	$\sqcap\sqcup$	<code>\sqdoublecap</code>
$\star$	<code>\bigstar</code>	$\dot{\div}$	<code>\dotdiv</code>	$\sqcup\sqcup$	<code>\sqdoublecup</code>
$\star$	<code>\bigvarstar</code>	$\dot{+}$	<code>\dotplus</code>	$\square$	<code>\square</code>
$\blacklozenge$	<code>\blackdiamond</code>	$\dot{\times}$	<code>\dottimes</code>	$\boxplus$	<code>\squplus</code>
$\cap$	<code>\cap</code>	$\overline{\wedge}$	<code>\doublebarwedge</code>	$\cdot$	<code>\udot</code>
$\dot{+}$	<code>\circplus</code>	$\cap\cap$	<code>\doublecap</code>	$\oplus$	<code>\uplus</code>
$*$	<code>\coasterisk</code>	$\cup\cup$	<code>\doublecup</code>	$*$	<code>\varstar</code>
$*$	<code>\coAsterisk</code>	$\times$	<code>\ltimes</code>	$\vee$	<code>\vee</code>
$*$	<code>\convolution</code>	$\oplus$	<code>\pluscirc</code>	$\veebar$	<code>\veebar</code>
$\cup$	<code>\cup</code>	$\rtimes$	<code>\rtimes</code>	$\veedoublebar$	<code>\veedoublebar</code>
$\curlyvee$	<code>\curlyvee</code>	$\blacksquare$	<code>\sqbullet</code>	$\wedge$	<code>\wedge</code>

Many of the preceding glyphs go by multiple names. `\centerdot` is equivalent to `\sqbullet`, and `\ast` is equivalent to `*`. `\asterisk` produces the same glyph as `\ast`, but as an ordinary symbol, not a binary operator. Similarly, `\bigast` produces a large-operator version of the `\Asterisk` binary operator, and `\bigcoast` produces a large-operator version of the `\coAsterisk` binary operator.

TABLE 56: MnSymbol Binary Operators

$\amalg$	<code>\amalg</code>	$\sqcup\sqcup$	<code>\doublecup</code>	$\therefore$	<code>\righttherefore</code>
$*$	<code>\ast</code>	$\vee\vee$	<code>\doublevee</code>	$\times$	<code>\rightthreetimes</code>
$\backslash$	<code>\backslash</code>	$\wedge\wedge$	<code>\doublewedge</code>	$\succ$	<code>\rightY</code>
$\bowtie$	<code>\bowtie</code>	$\therefore$	<code>\downtherefore</code>	$\times$	<code>\rtimes</code>
$\bullet$	<code>\bullet</code>	γ	<code>\downY</code>	$\%$	<code>\slashdiv</code>
$\cap$	<code>\cap</code>	$\times$	<code>\dtimes</code>	$\prod$	<code>\smallprod</code>
$\cap\cap$	<code>\capdot</code>	$\therefore$	<code>\fivedots</code>	$\sqcap$	<code>\sqcap</code>
$\cap\cap$	<code>\capplus</code>	∞	<code>\hbipropto</code>	$\cap\cap$	<code>\sqcapdot</code>
$\cdot$	<code>\cdot</code>	$\cdots$	<code>\hdotdot</code>	$\cap\cap$	<code>\sqcapplus</code>
$\circ$	<code>\circ</code>	$\sqcap$	<code>\lefthalfcap</code>	$\sqcup$	<code>\sqcup</code>

(continued on next page)

(continued from previous page)

$\curlyvee$	<code>\closedcurlyvee</code>	$\leftthreetimes$	<code>\lefthalfcup</code>	$\sqcup$	<code>\sqcupdot</code>
$\curlywedge$	<code>\closedcurlywedge</code>	$\leftthreetimes$	<code>\lefttherefore</code>	$\sqcupplus$	<code>\sqcupplus</code>
$\cup$	<code>\cup</code>	$\leftthreetimes$	<code>\leftthreetimes</code>	$\ddots$	<code>\squaredots</code>
$\cupdot$	<code>\cupdot</code>	$\leftY$	<code>\leftY</code>	$\times$	<code>\times</code>
$\cupplus$	<code>\cupplus</code>	$\ltimes$	<code>\ltimes</code>	$\cdot$	<code>\udotdot</code>
$\curlyvee$	<code>\curlyvee</code>	$\backslash$	<code>\medbackslash</code>	$\therefore$	<code>\uptherefore</code>
$\curlyveedot$	<code>\curlyveedot</code>	$\bigcirc$	<code>\medcircle</code>	$\upY$	<code>\upY</code>
$\curlywedge$	<code>\curlywedge</code>	$\diagup$	<code>\medslash</code>	$\times$	<code>\utimes</code>
$\curlywedgedot$	<code>\curlywedgedot</code>	$\mid$	<code>\medvert</code>	$\bowtie$	<code>\vbipropto</code>
$\ddot{\cdot}$	<code>\ddot{\cdot}</code>	$\vdash$	<code>\medvertdot</code>	$:$	<code>\vdotdot</code>
$\diamonddot$	<code>\diamonddot</code>	$-$	<code>\minus</code>	$\vee$	<code>\vee</code>
$\div$	<code>\div</code>	$\dot{-}$	<code>\minusdot</code>	$\vee$	<code>\veedot</code>
$\dot{\mid}$	<code>\dotmedvert</code>	$\mp$	<code>\mp</code>	$\bowtie$	<code>\vertbowtie</code>
$\dot{-}$	<code>\dotminus</code>	$\oslash$	<code>\neswbipropto</code>	$\cdot$	<code>\vertdiv</code>
$\doublecap$	<code>\doublecap</code>	$\oslash$	<code>\nwsebipropto</code>	$\wedge$	<code>\wedge</code>
$\doublecup$	<code>\doublecup</code>	$+$	<code>\plus</code>	$\wedge$	<code>\wedgedot</code>
$\doublecurlyvee$	<code>\doublecurlyvee</code>	$\pm$	<code>\pm</code>	$\wr$	<code>\wreath</code>
$\doublecurlywedge$	<code>\doublecurlywedge</code>	$\lrcorner$	<code>\righthalfcap</code>		
$\doublelesqcap$	<code>\doublelesqcap</code>	$\lrcorner$	<code>\righthalfcup</code>		

MnSymbol defines `\setminus` and `\smallsetminus` as synonyms for `\medbackslash`; `\Join` as a synonym for `\bowtie`; `\wr` as a synonym for `\wreath`; `\shortmid` as a synonym for `\medvert`; `\Cap` as a synonym for `\doublecap`; `\Cup` as a synonym for `\doublecup`; and, `\uplus` as a synonym for `\cupplus`.

TABLE 57: fdsymbol Binary Operators

$\amalg$	<code>\amalg</code>	$\doublevee$	<code>\doublevee</code>	$\rtimes$	<code>\rtimes</code>
$\ast$	<code>\ast</code>	$\doublewedge$	<code>\doublewedge</code>	$\setminus$	<code>\setminus</code>
$\bar{\wedge}$	<code>\barwedge</code>	$\downY$	<code>\downY</code>	$\sqcap$	<code>\sqcap</code>
$\cap$	<code>\cap</code>	$\times$	<code>\dtimes</code>	$\sqcapdot$	<code>\sqcapdot</code>
$\capdot$	<code>\capdot</code>	$\cdots$	<code>\hdotdot</code>	$\sqcapplus$	<code>\sqcapplus</code>
$\capplus$	<code>\capplus</code>	$\intercal$	<code>\intercal</code>	$\sqcup$	<code>\sqcup</code>
$\cdot$	<code>\cdot</code>	$\int$	<code>\intprod</code>	$\sqcupdot$	<code>\sqcupdot</code>
$\centerdot$	<code>\centerdot</code>	$\int$	<code>\intprodr</code>	$\sqcupplus$	<code>\sqcupplus</code>
$\cup$	<code>\cup</code>	$\leftthreetimes$	<code>\leftthreetimes</code>	$\times$	<code>\times</code>
$\cupdot$	<code>\cupdot</code>	$\leftY$	<code>\leftY</code>	$\times$	<code>\timesbar</code>
$\cupplus$	<code>\cupplus</code>	$\ltimes$	<code>\ltimes</code>	$\cdot$	<code>\udotdot</code>
$\curlyvee$	<code>\curlyvee</code>	$\backslash$	<code>\medbackslash</code>	$\bowtie$	<code>\upbowtie</code>
$\curlywedge$	<code>\curlywedge</code>	$\diagup$	<code>\medslash</code>	$\upY$	<code>\upY</code>
$\ddot{\cdot}$	<code>\ddot{\cdot}</code>	$-$	<code>\minus</code>	$\times$	<code>\utimes</code>
$\div$	<code>\div</code>	$\dot{-}$	<code>\minusdot</code>	$\amalg$	<code>\varamalg</code>
$\div$	<code>\divideontimes</code>	$\dot{-}$	<code>\minusfdots</code>	$:$	<code>\vdotdot</code>
$/$	<code>\divslash</code>	$\dot{-}$	<code>\minusrdots</code>	$:$	<code>\vdots</code>
$\dot{-}$	<code>\dotminus</code>	$\mp$	<code>\mp</code>	$\vee$	<code>\vee</code>
$\dot{+}$	<code>\dotplus</code>	$+$	<code>\plus</code>	$\veebar$	<code>\veebar</code>

(continued on next page)

$\times$	<code>\dottimes</code>	$+$	<code>\plusdot</code>	$\vee$	<code>\veedot</code>
$\bar{\wedge}$	<code>\doublebarwedge</code>	$\pm$	<code>\pm</code>	$\underline{\vee}$	<code>\veedoublebar</code>
$\cap$	<code>\doublecap</code>	$\lrcorner$	<code>\pullback</code>	$\wedge$	<code>\wedge</code>
$\cup$	<code>\doublecup</code>	$\lhd$	<code>\pushout</code>	$\wedge\cdot$	<code>\wedgedot</code>
$\sqcap$	<code>\doublesqcap</code>	$\times$	<code>\rightthreetimes</code>	$\wr$	<code>\wreath</code>
$\sqcup$	<code>\doublesqcup</code>	$\succ$	<code>\rightY</code>		

TABLE 58: boisik Binary Operators

32

TABLE 59: stix Binary Operators

$\amalg$	<code>\amalg</code>	$\; \;$	<code>\fcmp</code>	$\sqcup$	<code>\sqcup</code>
$\ast$	<code>\ast</code>	$\frac{\;}{\;}$	<code>\fracslash</code>	$\sqcup$	<code>\Sqcup</code>
$\bar{\cap}$	<code>\barcap</code>	$\intercal$	<code>\intercal</code>	$\parallel$	<code>\sslash</code>
$\bar{\cup}$	<code>\barcup</code>	$\interleave$	<code>\interleave</code>	$\vdots$	<code>\threedotcolon</code>
∇	<code>\barvee</code>	$\int$	<code>\intprod</code>	$\times$	<code>\times</code>
$\bar{\wedge}$	<code>\barwedge</code>	$\int$	<code>\intprodr</code>	$\times$	<code>\timesbar</code>
$\slopedvee$	<code>\bigslowedvee</code>	$\sim$	<code>\invlazys</code>	$-$	<code>\tminus</code>
$\slopedwedge$	<code>\bigslowedwedge</code>	λ	<code>\leftthreetimes</code>	$+$	<code>\tplus</code>
$\times$	<code>\btimes</code>	$\triangleleft$	<code>\lhd</code>	$\#$	<code>\tripleplus</code>
$\cap$	<code>\cap</code>	$\ltimes$	<code>\ltimes</code>	$\parallel$	<code>\trslash</code>
$\Cap$	<code>\Cap</code>	$\bar{\vee}$	<code>\midbarvee</code>	$\cap$	<code>\twocaps</code>
$\capbarcup$	<code>\capbarcup</code>	$\bar{\wedge}$	<code>\midbarwedge</code>	$\cup$	<code>\twocups</code>
$\capdot$	<code>\capdot</code>	$\dot{-}$	<code>\minusdot</code>	$\circ$	<code>\typecolon</code>
$\capovercup$	<code>\capovercup</code>	$\dot{-}$	<code>\minusfdots</code>	$\ominus$	<code>\uminus</code>
$\capwedge$	<code>\capwedge</code>	$\dot{-}$	<code>\minusrdots</code>	$\triangleleft$	<code>\unlhd</code>
$\closedvarcap$	<code>\closedvarcap</code>	$\mp$	<code>\mp</code>	$\triangleleft$	<code>\unrhd</code>
$\closedvarcup$	<code>\closedvarcup</code>	$\equiv$	<code>\nhVvert</code>	$\bowtie$	<code>\upand</code>
$\closedvarcupsmashprod$	<code>\closedvarcupsmashprod</code>	$\oplus$	<code>\opluslhrim</code>	$\oplus$	<code>\uplus</code>
$\commaminus$	<code>\commaminus</code>	$\oplus$	<code>\oplusrhrim</code>	$\bar{\wedge}$	<code>\varbarwedge</code>
$\cup$	<code>\cup</code>	$\otimes$	<code>\otimeslhrim</code>	$\bar{\wedge}$	<code>\vardoublebarwedge</code>
$\Cup$	<code>\Cup</code>	$\otimes$	<code>\otimesrhrim</code>	$\vee$	<code>\varveebar</code>
$\cupbarcap$	<code>\cupbarcap</code>	$\dot{+}$	<code>\plusdot</code>	$\times$	<code>\vectimes</code>
$\cupdot$	<code>\cupdot</code>	$\pm$	<code>\pluseqq</code>	$\vee$	<code>\Vee</code>
$\cupleftarrow$	<code>\cupleftarrow</code>	$\hat{+}$	<code>\plushat</code>	$\vee$	<code>\vee</code>
$\cupovercap$	<code>\cupovercap</code>	$\pm$	<code>\plussim</code>	$\vee$	<code>\veebar</code>
$\cupvee$	<code>\cupvee</code>	$\pm$	<code>\plussubtwo</code>	$\vee$	<code>\veedot</code>
$\curlyvee$	<code>\curlyvee</code>	$\pm$	<code>\plustrif</code>	$\vee$	<code>\veedoublebar</code>
$\curlywedge$	<code>\curlywedge</code>	$\pm$	<code>\pm</code>	$\vee$	<code>\veemidvert</code>
$\dagger$	<code>\dagger</code>	$\triangleright$	<code>\rhd</code>	$\dot{\vee}$	<code>\veeodot</code>
$\ddagger$	<code>\ddagger</code>	$\times$	<code>\rightthreetimes</code>	$\mathbb{W}$	<code>\veeonvee</code>
$\div$	<code>\div</code>	$\dagger$	<code>\ringplus</code>	$\wedge$	<code>\Wedge</code>
$\divideontimes$	<code>\divideontimes</code>	$\dagger$	<code>\rsolbar</code>	$\wedge$	<code>\wedge</code>
$\dot{-}$	<code>\dotminus</code>	$\times$	<code>\rtimes</code>	$\triangle$	<code>\wedgebar</code>
$\dot{+}$	<code>\dotplus</code>	$\backslash$	<code>\setminus</code>	$\wedge$	<code>\wedgedot</code>
$\dot{\times}$	<code>\dottimes</code>	$\sqcup$	<code>\shuffle</code>	$\triangle$	<code>\wedgedoublebar</code>
$\bar{\vee}$	<code>\doublebarvee</code>	$\dagger$	<code>\simplus</code>	$\wedge$	<code>\wedgemidvert</code>
$\bar{\wedge}$	<code>\doublebarwedge</code>	$\smallsetminus$	<code>\smallsetminus</code>	$\wedge$	<code>\wedgeodot</code>
$\#$	<code>\doubleplus</code>	$\ast$	<code>\smashtimes</code>	$\wedge$	<code>\wedgeonwedge</code>
$/$	<code>\dsol</code>	$\sqcap$	<code>\sqcap</code>	$\wr$	<code>\wr</code>
$\dot{+}$	<code>\eqqplus</code>	$\equiv$	<code>\Sqcap</code>		

stix defines `\land` as a synonym for `\wedge`, `\lor` as a synonym for `\vee`, `\doublecap` as a synonym for `\Cap`, and `\doublecup` as a synonym for `\Cup`.

TABLE 60: mathdesign Binary Operators

$\times$ `\dtimes` $\times$ `\udtimes` $\times$ `\utimes`

The `mathdesign` package additionally provides versions of each of the binary operators shown in Table 51 on page 29.

TABLE 61: cml Binary Operators

 $\P$ `\parr*` $\&$ `\with`[†]

* cml defines `\invamp` as a synonym for `\parr`.

[†] `\with` differs from `\&` in terms of its math-mode spacing: `$A \& B$` produces “ $A \& B$ ”, for example, while `$A \with B$` produces “ $A \& B$ ”.

TABLE 62: shuffle Binary Operators

 $\sqcup$ `\cshuffle` $\sqcup$ `\shuffle`

TABLE 63: ulsy Geometric Binary Operators

 $\oplus$ `\odplus`

TABLE 64: mathabx Geometric Binary Operators

$\blacktriangledown$	<code>\blacktriangledown</code>	$\boxright$	<code>\boxright</code>	$\ominus$	<code>\ominus</code>
$\blacktriangleleft$	<code>\blacktriangleleft</code>	$\boxslash$	<code>\boxslash</code>	$\oplus$	<code>\oplus</code>
$\blacktriangleright$	<code>\blacktriangleright</code>	$\boxtimes$	<code>\boxtimes</code>	$\otimes$	<code>\otimes</code>
$\blacktriangleup$	<code>\blacktriangleup</code>	$\boxtop$	<code>\boxtop</code>	$\oslash$	<code>\oslash</code>
$\boxast$	<code>\boxast</code>	$\boxtriangleup$	<code>\boxtriangleup</code>	$\otimes$	<code>\otimes</code>
$\boxbackslash$	<code>\boxbackslash</code>	$\boxvoid$	<code>\boxvoid</code>	$\otop$	<code>\otop</code>
$\boxbot$	<code>\boxbot</code>	$\oasterisk$	<code>\oasterisk</code>	$\otriangleup$	<code>\otriangleup</code>
$\boxcirc$	<code>\boxcirc</code>	$\obackslash$	<code>\obackslash</code>	$\ovoid$	<code>\ovoid</code>
$\boxcoasterisk$	<code>\boxcoasterisk</code>	$\obot$	<code>\obot</code>	$\smalltriangledown$	<code>\smalltriangledown</code>
$\boxdiv$	<code>\boxdiv</code>	$\ocirc$	<code>\ocirc</code>	$\smalltriangleleft$	<code>\smalltriangleleft</code>
$\boxdot$	<code>\boxdot</code>	$\ocoasterisk$	<code>\ocoasterisk</code>	$\smalltriangleright$	<code>\smalltriangleright</code>
$\boxleft$	<code>\boxleft</code>	$\odiv$	<code>\odiv</code>	$\smalltriangleup$	<code>\smalltriangleup</code>
$\boxminus$	<code>\boxminus</code>	$\odot$	<code>\odot</code>		
$\boxplus$	<code>\boxplus</code>	$\oleft$	<code>\oleft</code>		

TABLE 65: MnSymbol Geometric Binary Operators

$\boxbackslash$	$\backslashboxbackslash$	$\blacktriangledown$	$\backslashfilledmedtriangledown$	$\odot$	$\backslashocirc$
$\boxbox$	$\backslashboxbox$	$\blacktriangleleft$	$\backslashfilledmedtriangleleft$	$\odot$	$\backslashodot$
$\boxdot$	$\backslashboxdot$	$\blacktriangleright$	$\backslashfilledmedtriangleright$	$\ominus$	$\backslashominus$
$\boxminus$	$\backslashboxminus$	$\blacktriangleup$	$\backslashfilledmedtriangleup$	$\oplus$	$\backslashoplus$
$\boxplus$	$\backslashboxplus$	$\blacksquare$	$\backslashfilledsquare$	$\oslash$	$\backslashoslash$
$\boxslash$	$\backslashboxslash$	$\star$	$\backslashfilledstar$	$\otimes$	$\backslashostar$
$\boxtimes$	$\backslashboxtimes$	$\blacktriangledown$	$\backslashfilledtriangledown$	$\otimes$	$\backslashotimes$
$\boxvert$	$\backslashboxvert$	$\blacktriangleleft$	$\backslashfilledtriangleleft$	$\otimes$	$\backslashotriangle$
$\diamondbackslash$	$\backslashdiamondbackslash$	$\blacktriangleright$	$\backslashfilledtriangleright$	$\oslash$	$\backslashovert$
$\diamondddiamond$	$\backslashdiamondddiamond$	$\blacktriangleup$	$\backslashfilledtriangleup$	$\star$	$\backslashpentagram$
$\diamondddot$	$\backslashdiamondddot$	$\diamond$	$\backslashmeddiamond$	$\diamond$	$\backslashsmalldiamond$
$\diamondminus$	$\backslashdiamondminus$	$\square$	$\backslashmedsquare$	$\square$	$\backslashsmallsquare$
$\diamondplus$	$\backslashdiamondplus$	$\star$	$\backslashmedstar$	$\star$	$\backslashsmallstar$
$\diamondslash$	$\backslashdiamondslash$	$\blacktriangledown$	$\backslashmedtriangledown$	$\blacktriangledown$	$\backslashsmalltriangledown$
$\diamondtimes$	$\backslashdiamondtimes$	$\blacktriangleleft$	$\backslashmedtriangleleft$	$\blacktriangleleft$	$\backslashsmalltriangleleft$
$\diamondvert$	$\backslashdiamondvert$	$\blacktriangleright$	$\backslashmedtriangleright$	$\blacktriangleright$	$\backslashsmalltriangleright$
$\downslice$	$\backslashdownslice$	$\blacktriangleup$	$\backslashmedtriangleup$	$\blacktriangleup$	$\backslashsmalltriangleup$
$\filleddiamond$	$\backslashfilleddiamond$	$\otimes$	$\backslashoast$	$\star$	$\backslashthinstar$
$\filledmedsquare$	$\backslashfilledmedsquare$	$\oslash$	$\backslashobackslash$	Δ	$\backslashupslice$

MnSymbol defines $\blacksquare$ as a synonym for $\backslashfilledmedsquare$; $\square$ and $\Box$ as synonyms for $\backslashmedsquare$; $\diamond$ as a synonym for $\backslashsmalldiamond$; $\Diamond$ as a synonym for $\backslashmeddiamond$; $\star$ as a synonym for $\backslashthinstar$; $\circledast$ as a synonym for $\backslashoast$; $\circledcirc$ as a synonym for $\backslashocirc$; and, $\circleddash$ as a synonym for $\backslashominus$.

TABLE 66: fdsymbol Geometric Binary Operators

$\boxbackslash$	$\backslashboxbackslash$	$\blacktriangledown$	$\backslashmedblacktriangledown$	$\oplus$	$\backslashoplus$
$\boxbox$	$\backslashboxbox$	$\blacktriangleleft$	$\backslashmedblacktriangleleft$	$\oslash$	$\backslashoslash$
$\boxdot$	$\backslashboxdot$	$\blacktriangleright$	$\backslashmedblacktriangleright$	$\otimes$	$\backslashotimes$
$\boxminus$	$\backslashboxminus$	$\blacktriangleup$	$\backslashmedblacktriangleup$	$\oslash$	$\backslashovert$
$\boxplus$	$\backslashboxplus$	$\bigcirc$	$\backslashmedcircle$	$\bullet$	$\backslashsmallblackcircle$
$\boxslash$	$\backslashboxslash$	$\diamond$	$\backslashmeddiamond$	$\blacklozenge$	$\backslashsmallblackdiamond$
$\boxtimes$	$\backslashboxtimes$	$/$	$\backslashmedslash$	$\blacksquare$	$\backslashsmallblacksquare$
$\boxvert$	$\backslashboxvert$	$\square$	$\backslashmedsquare$	$\star$	$\backslashsmallblackstar$
$\diamondbackslash$	$\backslashdiamondbackslash$	$\blacktriangledown$	$\backslashmedtriangledown$	$\blacktriangledown$	$\backslashsmallblacktriangledown$
$\diamondddiamond$	$\backslashdiamondddiamond$	$\blacktriangleleft$	$\backslashmedtriangleleft$	$\blacktriangleleft$	$\backslashsmallblacktriangleleft$
$\diamondddot$	$\backslashdiamondddot$	$\blacktriangleright$	$\backslashmedtriangleright$	$\blacktriangleright$	$\backslashsmallblacktriangleright$
$\diamondminus$	$\backslashdiamondminus$	$\blacktriangleup$	$\backslashmedtriangleup$	$\blacktriangleup$	$\backslashsmallblacktriangleup$
$\diamondplus$	$\backslashdiamondplus$	$\star$	$\backslashmedwhitestar$	$\circ$	$\backslashsmallcircle$
$\diamondslash$	$\backslashdiamondslash$	$\otimes$	$\backslashoast$	$\diamond$	$\backslashsmalldiamond$
$\diamondtimes$	$\backslashdiamondtimes$	$\oslash$	$\backslashobackslash$	$\square$	$\backslashsmallsquare$
$\diamondvert$	$\backslashdiamondvert$	$\odot$	$\backslashocirc$	$\blacktriangledown$	$\backslashsmalltriangledown$
$\medblackcircle$	$\backslashmedblackcircle$	$\ominus$	$\backslashodash$	$\blacktriangleleft$	$\backslashsmalltriangleleft$
$\medblackdiamond$	$\backslashmedblackdiamond$	$\odot$	$\backslashodot$	$\blacktriangleright$	$\backslashsmalltriangleright$
$\medblacksquare$	$\backslashmedblacksquare$	$\ominus$	$\backslashoequal$	$\blacktriangleup$	$\backslashsmalltriangleup$
$\medblackstar$	$\backslashmedblackstar$	$\ominus$	$\backslashominus$	$\star$	$\backslashsmallwhitestar$

fdsymbol defines synonyms for most of the preceding symbols:

◆	\blackdiamond	◇	\diamond	●	\smbkcircle
▲	\blacktriangle	◇	\Diamond	◆	\smbkdiamond
▼	\blacktriangledown	◇	\diamondbslash	■	\smbksquare
◀	\blacktriangleleft	◇	\diamondcdot	☆	\smwhitestar
▶	\blacktriangleright	◆	\mdblkdiamond	◦	\smwhtcircle
□	\Box	■	\mdblksquare	◇	\smwhtdiamond
▣	\boxbar	●	\mdlgbkcircle	◻	\smwhtsquare
▤	\boxbslash	◆	\mdlgbkdiamond	□	\square
▥	\boxdiag	■	\mdlgbksquare	★	\star
•	\bullet	○	\mdlgwhtcircle	△	\triangle
◦	\circ	◇	\mdlgwhtdiamond	▽	\triangledown
⊗	\circledast	◻	\mdlgwhtsquare	◁	\triangleleft
⊙	\circledcirc	◇	\mdwhtdiamond	▷	\triangleright
⊖	\circleddash	◻	\mdwhtsquare	△	\vartriangle
⊕	\circledequal	★	\medstar		
⊖	\circledvert	⊗	\obslash		

TABLE 67: boisik Geometric Binary Operators

◆	\blacklozenge	▣	\boxright	◻	\oblong
■	\blacksquare	▤	\boxslash	⊕	\obot
▲	\blacktriangle	▥	\boxtimes	⊗	\obslash
▼	\blacktriangledown	▣	\boxtop	⊗	\ogreaterthan
◀	\blacktriangleleft	▤	\boxtriangle	⊕	\oleft
▶	\blacktriangleright	⊗	\circledast	⊗	\olessthan
⊗	\boxast	⊙	\circledcirc	⊖	\ominus
▣	\boxbar	⊖	\circleddash	⊕	\oplus
▤	\boxbot	◇	\diamond	⊕	\oright
▥	\boxbox	⬮	\diamondbar	⊗	\oslash
▤	\boxbslash	⬮	\diamondcircle	⊗	\otimes
▥	\boxcircle	⬮	\diamondminus	⊕	\otop
▤	\boxdivision	◇	\diamondop	⊗	\otriangle
▥	\boxdot	⬮	\diamondplus	⊗	\ovee
▣	\boxleft	⬮	\diamondtimes	⊗	\owedge
▤	\boxminus	⬮	\diamondtriangle	★	\star
▥	\boxplus	⊖	\obar	⌐	\talloblong

TABLE 68: stix Geometric Binary Operators

	<code>\blackhourglass</code>		<code>\concavediamondtickleft</code>		<code>\oplus</code>
	<code>\boxast</code>		<code>\concavediamondtickright</code>		<code>\oslash</code>
	<code>\boxbar</code>		<code>\diamond</code>		<code>\otimes</code>
	<code>\boxbox</code>		<code>\dsup</code>		<code>\otimes</code>
	<code>\boxbslash</code>		<code>\hourglass</code>		<code>\otimeshat</code>
	<code>\boxcircle</code>		<code>\lozengeminus</code>		<code>\rsub</code>
	<code>\boxdiag</code>		<code>\mdlgblklozenge</code>		<code>\smbllkcicle</code>
	<code>\boxdot</code>		<code>\mdlgwhtcircle</code>		<code>\star</code>
	<code>\boxminus</code>		<code>\obar</code>		<code>\talloblong</code>
	<code>\boxplus</code>		<code>\obot*</code>		<code>\triangle</code>
	<code>\boxtimes</code>		<code>\obslash</code>		<code>\triangleleftminus</code>
	<code>\circledast</code>		<code>\odiv</code>		<code>\triangleplus</code>
	<code>\circledcirc</code>		<code>\odot</code>		<code>\triangleserifs</code>
	<code>\circleddash</code>		<code>\odotslashdot*</code>		<code>\trianglelefttimes</code>
	<code>\circledequal</code>		<code>\ogreaterthan</code>		<code>\vysmbllkcicle†</code>
	<code>\circledparallel</code>		<code>\olcross*</code>		<code>\vysmwhtcicle</code>
	<code>\circledvert</code>		<code>\olessthan</code>		<code>\whitesquaretickleft</code>
	<code>\circlehbar</code>		<code>\ominus</code>		<code>\whitesquaretickright</code>
	<code>\concavediamond</code>		<code>\operp</code>		

* Defined as an ordinary character, not as a binary relation. However, these symbols more closely resemble the other symbols in this table than they do the geometric shapes presented in Table 381, which is why they are included here.

† stix defines `\bullet` as a synonym for `\vysmbllkcicle`.

TABLE 69: halloweenmath Halloween-Themed Math Operators

	<code>\bigpumpkin†</code>		<code>\mathrightghost</code>		<code>\reversemathcloud</code>
	<code>\mathcloud</code>		<code>\mathwitch†</code>		<code>\reversemathwitch†</code>
	<code>\mathghost</code>		<code>\mathwitch*†</code>		<code>\reversemathwitch*†</code>
	<code>\mathleftghost</code>		<code>\pumpkin</code>		

† These symbols accept limits. For example, `\mathwitch*_{i=0}^{\infty} f(x)` produces “ $f(x)$ ” in text mode and

$$\mathwitch*_{i=0}^{\infty} f(x)$$

in display mode.

‡ `\greatpumpkin` is a synonym for `\bigpumpkin`.

TABLE 70: stix Small Integrals

$\int$	<code>\smallawint</code>	$\int$	<code>\smallintcap</code>	$\oint$	<code>\smalloint</code>
$\oint$	<code>\smallcirfnint</code>	$\oint$	<code>\smallintclockwise</code>	$\oint$	<code>\smallointctrcklockwise</code>
$\int$	<code>\smallfint</code>	$\int$	<code>\smallintcup</code>	$\oint$	<code>\smallpointint</code>
$\iiint$	<code>\smalliiiint</code>	$\int$	<code>\smallintlarhk</code>	$\int$	<code>\smallrppolint</code>
$\iiint$	<code>\smalliiint</code>	$\int$	<code>\smallintx</code>	$\int$	<code>\smallscpolint</code>
$\iint$	<code>\smalliint</code>	$\int$	<code>\smalllowint</code>	$\oint$	<code>\smallsqint</code>
$\int$	<code>\smallint</code>	$\int$	<code>\smallnpolint</code>	$\int$	<code>\smallsumint</code>
$\int$	<code>\smallintbar</code>	$\iiint$	<code>\smalloiiint</code>	$\int$	<code>\smallupint</code>
$\int$	<code>\smallintBar</code>	$\iint$	<code>\smalloiint</code>	$\oint$	<code>\smallvarointclockwise</code>

By default, each of the preceding commands points to a slanted version of the glyph, as shown. The `upint` package option typesets each integral instead as an upright version. Slanted and upright integrals can be mixed, however, by explicitly using the commands shown in Table 71.

TABLE 71: stix Small Integrals with Explicit Slant

$\int$	<code>\smallawintsl</code>	$\int$	<code>\smallawintup</code>
$\oint$	<code>\smallcirfnintsl</code>	$\oint$	<code>\smallcirfnintup</code>
$\int$	<code>\smallfintsl</code>	$\int$	<code>\smallfintup</code>
$\iiint$	<code>\smalliiiintsl</code>	$\iiint$	<code>\smalliiiintup</code>
$\iiint$	<code>\smalliiintsl</code>	$\iiint$	<code>\smalliiintup</code>
$\iint$	<code>\smalliintsl</code>	$\iint$	<code>\smalliintup</code>
$\int$	<code>\smallintbarsl</code>	$\int$	<code>\smallintBarup</code>
$\int$	<code>\smallintBarsl</code>	$\int$	<code>\smallintbarup</code>
$\oint$	<code>\smallintcapsl</code>	$\oint$	<code>\smallintcapup</code>
$\oint$	<code>\smallintclockwisesl</code>	$\oint$	<code>\smallintclockwiseup</code>
$\int$	<code>\smallintcupsl</code>	$\int$	<code>\smallintcupup</code>
$\int$	<code>\smallintlarhksl</code>	$\int$	<code>\smallintlarhkup</code>
$\int$	<code>\smallintsl</code>	$\int$	<code>\smallintup</code>
$\int$	<code>\smallintxsl</code>	$\int$	<code>\smallintxup</code>
$\int$	<code>\smalllowintsl</code>	$\int$	<code>\smalllowintup</code>
$\int$	<code>\smallnpolintsl</code>	$\int$	<code>\smallnpolintup</code>
$\iiint$	<code>\smalloiiintsl</code>	$\iiint$	<code>\smalloiiintup</code>
$\iint$	<code>\smalloiintsl</code>	$\iint$	<code>\smalloiintup</code>
$\oint$	<code>\smallointctrcklockwisesl</code>	$\oint$	<code>\smallointctrckclockwiseup</code>
$\oint$	<code>\smallointsl</code>	$\oint$	<code>\smallointup</code>
$\oint$	<code>\smallpointintsl</code>	$\oint$	<code>\smallpointintup</code>
$\int$	<code>\smallrppolintsl</code>	$\int$	<code>\smallrppolintup</code>
$\int$	<code>\smallscpolintsl</code>	$\int$	<code>\smallscpolintup</code>
$\oint$	<code>\smallsqintsl</code>	$\oint$	<code>\smallsqintup</code>
$\int$	<code>\smallsumintsl</code>	$\int$	<code>\smallsumintup</code>
$\int$	<code>\smallupintsl</code>	$\int$	<code>\smallupintup</code>
$\oint$	<code>\smallvarointclockwisesl</code>	$\oint$	<code>\smallvarointclockwiseup</code>

Instead of using the preceding symbols directly, it is generally preferable to use the symbols listed in Table 70 either with or without the `upint` package option. Specifying `upint` selects each integral's upright (`up`) variant, while omitting `upint` selects each integral's slanted (`sl`) variant. Use the symbols shown in Table 71 only when you need to include both upright and slanted variations of a symbol in the same document.

TABLE 72: Variable-sized Math Operators

$\bigcap$	<code>\bigcap</code>	$\bigotimes$	<code>\bigotimes</code>	$\bigwedge$	<code>\bigwedge</code>	$\prod$	<code>\prod</code>	<code>\prod</code>
$\bigcup$	<code>\bigcup</code>	$\bigsqcup$	<code>\bigsqcup</code>	$\coprod$	<code>\coprod</code>	$\sum$	<code>\sum</code>	<code>\sum</code>
$\bigodot$	<code>\bigodot</code>	$\biguplus$	<code>\biguplus</code>	$\int$	<code>\int</code>			
$\bigoplus$	<code>\bigoplus</code>	$\bigvee$	<code>\bigvee</code>	$\oint$	<code>\oint</code>			

TABLE 73: $\mathcal{AMS}$ Variable-sized Math Operators

$\iint$	<code>\iint</code>	$\iiint$	<code>\iiint</code>
$\iiint$	<code>\iiint</code>	$\int \dots \int$	<code>\int \dots \int</code>

TABLE 74: `stmaryrd` Variable-sized Math Operators

$\bigboxplus$	<code>\bigboxplus</code>	$\biginterleave$	<code>\biginterleave</code>	$\bigsqcap$	<code>\bigsqcap</code>
$\bigcurlyvee$	<code>\bigcurlyvee</code>	$\bigplus$	<code>\bigplus</code>	$\bigtriangledown$	<code>\bigtriangledown</code>
$\bigcurlywedge$	<code>\bigcurlywedge</code>	$\bigparallel$	<code>\bigparallel</code>	$\bigtriangleup$	<code>\bigtriangleup</code>

TABLE 75: `wasysym` Variable-sized Math Operators

$\int$	<code>\int</code>	$\iint$	<code>\iint</code>	$\iiint$	<code>\iiint</code>
$\oint$	<code>\oint</code>	$\oiint$	<code>\oiint</code>		

If `wasysym` is loaded without package options then none of the preceding symbols are defined. However, `\varint` produces `wasysym`'s `\int` glyph, and `\varoint` produces `wasysym`'s `\oint` glyph.

If `wasysym` is loaded with the `integrals` option then all of the preceding symbols are defined, but `\varint` and `\varoint` are left undefined.

If `wasysym` is loaded with the `nointegrals` option then none of the preceding symbols, `\varint`, or `\varoint` are defined.

TABLE 76: mathabx Variable-sized Math Operators

$\curlyvee$	<code>\bigcurlyvee</code>	$\boxslash$	<code>\bigboxslash</code>	$\bigoplus$	<code>\bigoright</code>
$\sqcap$	<code>\bigsqcap</code>	$\boxtimes$	<code>\bigboxtimes</code>	$\bigoslash$	<code>\bigoslash</code>
$\curlywedge$	<code>\bigcurlywedge</code>	$\boxplus$	<code>\bigboxplus</code>	$\bigotimes$	<code>\bigotimes</code>
$\boxast$	<code>\bigboxasterisk</code>	$\boxtriangleup$	<code>\bigboxtriangleup</code>	$\bigtriangleup$	<code>\bigtriangleup</code>
$\boxbackslash$	<code>\bigboxbackslash</code>	$\boxvoid$	<code>\bigboxvoid</code>	$\bigcirc$	<code>\bigovoid</code>
$\boxbot$	<code>\bigboxbot</code>	$\complement$	<code>\bigcomplement</code>	$\bigplus$	<code>\bigplus</code>
$\boxcirc$	<code>\bigboxcirc</code>	$\bigcircast$	<code>\bigcircasterisk</code>	$\bigsqplus$	<code>\bigsqplus</code>
$\boxcoasterisk$	<code>\bigboxcoasterisk</code>	$\bigcircbackslash$	<code>\bigcircbackslash</code>	$\bigtimes$	<code>\bigtimes</code>
$\boxdiv$	<code>\bigboxdiv</code>	$\bigoplus$	<code>\bigoplus</code>	$\iiint$	<code>\iiint</code>
$\boxdot$	<code>\bigboxdot</code>	$\bigodot$	<code>\bigodot</code>	$\iint$	<code>\iint</code>
$\boxleft$	<code>\bigboxleft</code>	$\bigcircasterisk$	<code>\bigcircasterisk</code>	$\int$	<code>\int</code>
$\boxminus$	<code>\bigboxminus</code>	$\bigodiv$	<code>\bigodiv</code>	$\oint$	<code>\oint</code>
$\boxplus$	<code>\bigboxplus</code>	$\bigoplus$	<code>\bigoplus</code>	$\oint$	<code>\oint</code>
$\boxright$	<code>\bigboxright</code>	$\bigominus$	<code>\bigominus</code>		

TABLE 77: txfonts/pxfonts Variable-sized Math Operators

$\boxed{+}$	$\boxed{+}$	<code>\bigsqcapplus</code>	$\oint$	$\oint$	<code>\ointclockwise</code>
$\boxplus$	$\boxplus$	<code>\bigsqcupplus</code>	$\oint$	$\oint$	<code>\ointctrlockwise</code>
$\int$	$\int$	<code>\fint</code>	$\int$	$\int$	<code>\sqiiint</code>
$\int \cdots \int$	$\int \cdots \int$	<code>\idotsint</code>	$\int$	$\int$	<code>\sqiint</code>
$\iiint$	$\iiint$	<code>\iiiint</code>	$\int$	$\int$	<code>\sqint</code>
$\iiint$	$\iiint$	<code>\iiint</code>	$\int$	$\int$	<code>\varoiintclockwise</code>
$\iint$	$\iint$	<code>\iint</code>	$\int$	$\int$	<code>\varoiintctrlockwise</code>
$\oiint$	$\oiint$	<code>\oiintclockwise</code>	$\oint$	$\oint$	<code>\varoiintclockwise</code>
$\oiint$	$\oiint$	<code>\oiintctrlockwise</code>	$\oint$	$\oint$	<code>\varoiintctrlockwise</code>
$\oiint$	$\oiint$	<code>\oiint</code>	$\oint$	$\oint$	<code>\varointclockwise</code>
$\oint$	$\oint$	<code>\ointclockwise</code>	$\oint$	$\oint$	<code>\varointctrlockwise</code>
$\oint$	$\oint$	<code>\ointctrlockwise</code>	$\times$	$\times$	<code>\varprod</code>
$\oint$	$\oint$	<code>\oint</code>			

TABLE 78: esint Variable-sized Math Operators

$\int\cdots\int$	$\int\cdots\int$	<code>\dotsint</code>	$\oint$	$\oint$	<code>\ointclockwise</code>
$\int$	$\int$	<code>\fint</code>	$\oint$	$\oint$	<code>\ointctrackwise</code>
$\iiint$	$\iiint$	<code>\iiint</code>	$\sqint$	$\sqint$	<code>\sqint</code>
$\iint$	$\iint$	<code>\iint</code>	$\sqint$	$\sqint$	<code>\sqint</code>
$\iint$	$\iint$	<code>\iint</code>	$\varoint$	$\varoint$	<code>\varoint</code>
$\int$	$\int$	<code>\landdownint</code>	$\oint$	$\oint$	<code>\varointclockwise</code>
$\int$	$\int$	<code>\landupint</code>	$\oint$	$\oint$	<code>\varointctrackwise</code>
$\oint$	$\oint$	<code>\oint</code>			

TABLE 79: bigints Variable-sized Math Operators

$\int$	$\int$	<code>\bigint</code>	$\oint$	$\oint$	<code>\bigoint</code>
$\int$	$\int$	<code>\bigints</code>	$\oint$	$\oint$	<code>\bigoints</code>
$\int$	$\int$	<code>\bigintss</code>	$\oint$	$\oint$	<code>\bigointss</code>
$\int$	$\int$	<code>\bigintsss</code>	$\oint$	$\oint$	<code>\bigintsss</code>
$\int$	$\int$	<code>\bigintssss</code>	$\oint$	$\oint$	<code>\bigintssss</code>

TABLE 80: MnSymbol Variable-sized Math Operators

$\cap$	$\bigcap$	<code>\bigcap</code>	$\ominus$	$\bigominus$	<code>\bigominus</code>	$\complement$	$\complement$	<code>\complement</code>
$\cap\cdot$	$\bigcap\cdot$	<code>\bigcapdot</code>	$\oplus$	$\bigoplus$	<code>\bigoplus</code>	$\coprod$	$\coprod$	<code>\coprod</code>
$\oplus$	$\bigoplus$	<code>\bigcupplus</code>	$\oslash$	$\bigoslash$	<code>\bigoslash</code>	$\int\cdots\int$	$\int\cdots\int$	<code>\idotsint</code>
$\bigcirc$	$\bigcirc$	<code>\bigcircle</code>	$\bigotimes$	$\bigotimes$	<code>\bigotimes</code>	$\iiint$	$\iiint$	<code>\iiint</code>
$\bigcup$	$\bigcup$	<code>\bigcup</code>	$\bigotimes$	$\bigotimes$	<code>\bigotimes</code>	$\iiint$	$\iiint$	<code>\iiint</code>
$\bigcup\cdot$	$\bigcup\cdot$	<code>\bigcupdot</code>	$\bigtriangleup$	$\bigtriangleup$	<code>\bigtriangleup</code>	$\iint$	$\iint$	<code>\iint</code>
$\bigcup+$	$\bigcup+$	<code>\bigcupplus*</code>	$\bigodot$	$\bigodot$	<code>\bigodot</code>	$\int$	$\int$	<code>\int</code>
$\curlyvee$	$\curlyvee$	<code>\bigcurlyvee</code>	$+$	$+$	<code>\bigplus</code>	$\int$	$\int$	<code>\landdownint</code>
$\curlyvee\cdot$	$\curlyvee\cdot$	<code>\bigcurlyveedot</code>	$\sqcap$	$\sqcap$	<code>\bigsqcap</code>	$\int$	$\int$	<code>\landupint</code>
$\curlywedge$	$\curlywedge$	<code>\bigcurlywedge</code>	$\sqcap\cdot$	$\sqcap\cdot$	<code>\bigsqcapdot</code>	$\oint$	$\oint$	<code>\lrcircleleftint</code>
$\curlywedge\cdot$	$\curlywedge\cdot$	<code>\bigcurlywedgedot</code>	$\sqcap+$	$\sqcap+$	<code>\bigsqcupplus</code>	$\oint$	$\oint$	<code>\lrcirclerightint</code>
$\doublecurlyvee$	$\doublecurlyvee$	<code>\bigdoublecurlyvee</code>	$\sqcup$	$\sqcup$	<code>\bigsqcup</code>	$\oiint$	$\oiint$	<code>\oiint</code>
$\doublecurlywedge$	$\doublecurlywedge$	<code>\bigdoublecurlywedge</code>	$\sqcup\cdot$	$\sqcup\cdot$	<code>\bigsqcupdot</code>	$\oint$	$\oint$	<code>\oint</code>
$\doublevee$	$\doublevee$	<code>\bigdoublevee</code>	$\sqcup+$	$\sqcup+$	<code>\bigsqcupplus</code>	$\prod$	$\prod$	<code>\prod</code>
$\doublewedge$	$\doublewedge$	<code>\bigdoublewedge</code>	$\times$	$\times$	<code>\bigtimes</code>	$\oint$	$\oint$	<code>\rcircleleftint</code>
$\bigodot$	$\bigodot$	<code>\bigodot</code>	$\vee$	$\vee$	<code>\bigvee</code>	$\oint$	$\oint$	<code>\rcirclerightint</code>
$\bigobackslash$	$\bigobackslash$	<code>\bigobackslash</code>	$\vee\cdot$	$\vee\cdot$	<code>\bigveedot</code>	$\int$	$\int$	<code>\strokedint</code>
$\bigocirc$	$\bigocirc$	<code>\bigocirc</code>	$\bigwedge$	$\bigwedge$	<code>\bigwedge</code>	$\sum$	$\sum$	<code>\sum</code>
$\bigodot$	$\bigodot$	<code>\bigodot</code>	$\bigwedge\cdot$	$\bigwedge\cdot$	<code>\bigwedgedot</code>	$\int$	$\int$	<code>\sumint</code>

* MnSymbol defines `\biguplus` as a synonym for `\bigcupplus`.

TABLE 81: fdsymbol Variable-sized Math Operators

$\cap$	$\bigcap$	<code>\bigcap</code>	$\sqcup$	$\sqcup$	<code>\bigsqcup</code>	$\int$	$\int$	<code>\landupint</code>
$\cap\cdot$	$\bigcap\cdot$	<code>\bigcapdot</code>	$\sqcup\cdot$	$\sqcup\cdot$	<code>\bigsqcupdot</code>	$\oint$	$\oint$	<code>\lrcircleleftint</code>

(continued on next page)

$\bigoplus$	$\bigoplus$	<code>\bigcupplus</code>	$\bigoplus$	$\bigoplus$	<code>\bigsqcupplus</code>	$\oint$	$\oint$	<code>\lrcirclearightint</code>
$\bigcup$	$\bigcup$	<code>\bigcup</code>	$\times$	$\times$	<code>\bigtimes</code>	$\iiiint$	$\iiiint$	<code>\oiint</code>
$\bigcup\!\cdot$	$\bigcup\!\cdot$	<code>\bigcupdot</code>	$\bigvee$	$\bigvee$	<code>\bigvee</code>	$\oiint$	$\oiint$	<code>\oiint</code>
$\bigcupplus$	$\bigcupplus$	<code>\bigcupplus</code>	$\bigvee\!\cdot$	$\bigvee\!\cdot$	<code>\bigveedot</code>	$\oint$	$\oint$	<code>\oint</code>
$\bigcurlyvee$	$\bigcurlyvee$	<code>\bigcurlyvee</code>	$\bigwedge$	$\bigwedge$	<code>\bigwedge</code>	$\osum$	$\osum$	<code>\osum</code>
$\bigcurlywedge$	$\bigcurlywedge$	<code>\bigcurlywedge</code>	$\bigwedge\!\cdot$	$\bigwedge\!\cdot$	<code>\bigwedgedot</code>	$\prod$	$\prod$	<code>\prod</code>
$\bigdoublevee$	$\bigdoublevee$	<code>\bigdoublevee</code>	$\coprod$	$\coprod$	<code>\coprod</code>	$\oint$	$\oint$	<code>\rcircleleftint</code>
$\bigdoublewedge$	$\bigdoublewedge$	<code>\bigdoublewedge</code>	$\int$	$\int$	<code>\int</code>	$\oint$	$\oint$	<code>\rcirclearightint</code>
$\bigcircast$	$\bigcircast$	<code>\bigcircast</code>	$\int\!\cdots\!\int$	$\int\!\cdots\!\int$	<code>\idotsint</code>	$\sum$	$\sum$	<code>\sum</code>
$\bigcirc\!\cdot$	$\bigcirc\!\cdot$	<code>\bigcircdot</code>	$\iiint$	$\iiint$	<code>\iiint</code>	$\sumint$	$\sumint$	<code>\sumint</code>
$\bigoplus$	$\bigoplus$	<code>\bigoplus</code>	$\iiint$	$\iiint$	<code>\iiint</code>	$\varprod$	$\varprod$	<code>\varcoprod</code>
$\bigotimes$	$\bigotimes$	<code>\bigotimes</code>	$\iint$	$\iint$	<code>\iint</code>	$\varsum$	$\varsum$	<code>\varosum</code>
$\bigplus$	$\bigplus$	<code>\bigplus</code>	$\int$	$\int$	<code>\int</code>	$\prod$	$\prod$	<code>\varprod</code>
$\bigsqcap$	$\bigsqcap$	<code>\bigsqcap</code>	$\int$	$\int$	<code>\intbar</code>	$\sum$	$\sum$	<code>\varsum</code>
$\bigsqcap\!\cdot$	$\bigsqcap\!\cdot$	<code>\bigsqcapdot</code>	$\int$	$\int$	<code>\intBar</code>	$\sumint$	$\sumint$	<code>\varsumint</code>
$\bigsqcupplus$	$\bigsqcupplus$	<code>\bigsqcupplus</code>	$\int$	$\int$	<code>\landdownint</code>			

TABLE 82: boisik Variable-sized Math Operators

$$\int \int \backslash \text{intup}$$

44

TABLE 83: stix Variable-sized Math Operators

$\int$	$\int$	<code>\awint</code>	$\amalg$	$\amalg$	<code>\coprod</code>	$\iiint$	$\iiint$	<code>\oiint</code>
$\sum$	$\sum$	<code>\Bbbsum</code>	$\mathbb{W}$	$\mathbb{W}$	<code>\disjquant</code>	$\oint$	$\oint$	<code>\oint</code>
$\cap$	$\cap$	<code>\bigcap</code>	$\int$	$\int$	<code>\fint</code>	$\oint$	$\oint$	<code>\oint</code>
$\cup$	$\cup$	<code>\bigcup</code>	$\iiint$	$\iiint$	<code>\iiiint</code>	$\oint$	$\oint$	<code>\ointctrclockwise</code>
$\cup$	$\cup$	<code>\bigcupdot</code>	$\iiint$	$\iiint$	<code>\iiint</code>	$\oint$	$\oint$	<code>\ointint</code>
$\odot$	$\odot$	<code>\bigodot</code>	$\iint$	$\iint$	<code>\iint</code>	$\prod$	$\prod$	<code>\prod</code>
$\oplus$	$\oplus$	<code>\bigoplus</code>	$\int$	$\int$	<code>\int</code>	$\int$	$\int$	<code>\rppoint</code>
$\otimes$	$\otimes$	<code>\bigotimes</code>	$\int$	$\int$	<code>\intbar</code>	$\int$	$\int$	<code>\scpoint</code>
$\sqcap$	$\sqcap$	<code>\bigsqcap</code>	$\neq$	$\neq$	<code>\intBar</code>	$\int$	$\int$	<code>\sqint</code>
$\sqcup$	$\sqcup$	<code>\bigsqcup</code>	$\oint$	$\oint$	<code>\intcap</code>	$\sum$	$\sum$	<code>\sum</code>
$\llbracket$	$\llbracket$	<code>\bigtalloblong</code>	$\int$	$\int$	<code>\intclockwise</code>	$\nexists$	$\nexists$	<code>\sumint</code>
$\times$	$\times$	<code>\bigtimes</code>	ψ	ψ	<code>\intcup</code>	$\int$	$\int$	<code>\upoint</code>
$\uplus$	$\uplus$	<code>\biguplus</code>	$\nexists$	$\nexists$	<code>\intlarhk</code>	$\oint$	$\oint$	<code>\varointclockwise</code>
$\vee$	$\vee$	<code>\bigvee</code>	$\nexists$	$\nexists$	<code>\intx</code>	$\backslash$	$\backslash$	<code>\xbsol</code>
$\wedge$	$\wedge$	<code>\bigwedge</code>	$\int$	$\int$	<code>\lowint</code>	$/$	$/$	<code>\xsol</code>
$\oint$	$\oint$	<code>\cirfnint</code>	$\sum$	$\sum$	<code>\modtwosum</code>			
$\mathbb{M}$	$\mathbb{M}$	<code>\conjquant</code>	$\oint$	$\oint$	<code>\npoint</code>			

By default, each of the integral-producing commands in Table 83 points to a slanted version of the glyph, as shown. The `upint` package option typesets each integral instead as an upright version. Slanted and upright integrals can be mixed, however, by explicitly using the commands shown in Table 84.

TABLE 84: stix Integrals with Explicit Slant

$\int$	$\int$	<code>\intsl</code>	$\int$	$\int$	<code>\intup</code>
$\iint$	$\iint$	<code>\iintsl</code>	$\iint$	$\iint$	<code>\iintup</code>
$\iiint$	$\iiint$	<code>\iiintsl</code>	$\iiint$	$\iiint$	<code>\iiintup</code>
$\oint$	$\oint$	<code>\ointsl</code>	$\oint$	$\oint$	<code>\ointup</code>
$\oint\!\!\!\bigcirc$	$\oint\!\!\!\bigcirc$	<code>\ointsl</code>	$\oint\!\!\!\bigcirc$	$\oint\!\!\!\bigcirc$	<code>\ointup</code>
$\oint\!\!\!\bigcirc\!\!\!\bigcirc$	$\oint\!\!\!\bigcirc\!\!\!\bigcirc$	<code>\oint\!\!\!\bigcirc\!\!\!\bigcircsl</code>	$\oint\!\!\!\bigcirc\!\!\!\bigcirc$	$\oint\!\!\!\bigcirc\!\!\!\bigcirc$	<code>\oint\!\!\!\bigcirc\!\!\!\bigcircup</code>
$\int\!\!\!\curvearrowright$	$\int\!\!\!\curvearrowright$	<code>\intclockwisesl</code>	$\int\!\!\!\curvearrowright$	$\int\!\!\!\curvearrowright$	<code>\intclockwiseup</code>
$\oint\!\!\!\curvearrowright$	$\oint\!\!\!\curvearrowright$	<code>\varointclockwisesl</code>	$\oint\!\!\!\curvearrowright$	$\oint\!\!\!\curvearrowright$	<code>\varointclockwiseup</code>
$\oint\!\!\!\curvearrowleft$	$\oint\!\!\!\curvearrowleft$	<code>\ointctrclockwisesl</code>	$\oint\!\!\!\curvearrowleft$	$\oint\!\!\!\curvearrowleft$	<code>\ointctrclockwiseup</code>
$\sum\!\!\!\int$	$\sum\!\!\!\int$	<code>\sumintsl</code>	$\sum\!\!\!\int$	$\sum\!\!\!\int$	<code>\sumintup</code>
$\iiiiiint$	$\iiiiiint$	<code>\iiiiiintsl</code>	$\iiiiiint$	$\iiiiiint$	<code>\iiiiiintup</code>
$\int\!\!\!\bar{}$	$\int\!\!\!\bar{}$	<code>\intbarsl</code>	$\int\!\!\!\bar{}$	$\int\!\!\!\bar{}$	<code>\intbarup</code>
$\int\!\!\!\bar{}\!\!\!\bar{}$	$\int\!\!\!\bar{}\!\!\!\bar{}$	<code>\intBarsl</code>	$\int\!\!\!\bar{}\!\!\!\bar{}$	$\int\!\!\!\bar{}\!\!\!\bar{}$	<code>\intBarup</code>
$\int\!\!\!\mathcal{F}$	$\int\!\!\!\mathcal{F}$	<code>\fintsl</code>	$\int\!\!\!\mathcal{F}$	$\int\!\!\!\mathcal{F}$	<code>\fintup</code>
$\oint\!\!\!\mathcal{C}$	$\oint\!\!\!\mathcal{C}$	<code>\cirfnintsl</code>	$\oint\!\!\!\mathcal{C}$	$\oint\!\!\!\mathcal{C}$	<code>\cirfnintup</code>
$\int\!\!\!\mathcal{W}$	$\int\!\!\!\mathcal{W}$	<code>\awintsl</code>	$\int\!\!\!\mathcal{W}$	$\int\!\!\!\mathcal{W}$	<code>\awintup</code>
$\int\!\!\!\mathcal{P}$	$\int\!\!\!\mathcal{P}$	<code>\rppolintsl</code>	$\int\!\!\!\mathcal{P}$	$\int\!\!\!\mathcal{P}$	<code>\rppolintup</code>
$\int\!\!\!\mathcal{S}$	$\int\!\!\!\mathcal{S}$	<code>\scpolintsl</code>	$\int\!\!\!\mathcal{S}$	$\int\!\!\!\mathcal{S}$	<code>\scpolintup</code>
$\int\!\!\!\mathcal{N}$	$\int\!\!\!\mathcal{N}$	<code>\npolintsl</code>	$\int\!\!\!\mathcal{N}$	$\int\!\!\!\mathcal{N}$	<code>\npolintup</code>

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$\oint$	$\oint$	<code>\pointintsl</code>	$\oint$	$\oint$	<code>\pointintup</code>
$\oint$	$\oint$	<code>\sqintsl</code>	$\oint$	$\oint$	<code>\sqintup</code>
$\int$	$\int$	<code>\intlarhksl</code>	$\int$	$\int$	<code>\intlarhkup</code>
$\int$	$\int$	<code>\intxsl</code>	$\int$	$\int$	<code>\intxup</code>
$\int$	$\int$	<code>\intcapsl</code>	$\int$	$\int$	<code>\intcapup</code>
$\int$	$\int$	<code>\intcupsl</code>	$\int$	$\int$	<code>\intcupup</code>
$\int$	$\int$	<code>\upintsl</code>	$\int$	$\int$	<code>\upintup</code>
$\int$	$\int$	<code>\lowintsl</code>	$\int$	$\int$	<code>\lowintup</code>

Instead of using the preceding symbols directly, it is generally preferable to use the symbols listed in Table 83 either with or without the `upint` package option. Specifying `upint` selects each integral's upright (`up`) variant, while omitting `upint` selects each integral's slanted (`sl`) variant. Use the symbols shown in Table 84 only when you need to include both upright and slanted variations of a symbol in the same document.

TABLE 85: `mathdesign` Variable-sized Math Operators

$\int$	$\int$	<code>\intclockwise</code>	$\oint$	$\oint$	<code>\ointclockwise</code>
$\int$	$\int$	<code>\oiint</code>	$\oint$	$\oint$	<code>\ointctrcklockwise</code>
$\int$	$\int$	<code>\oiint</code>			

The `mathdesign` package provides three versions of each integral—in fact, of every symbol—to accompany different text fonts: Utopia ($\int$), Garamond ($\int$), and Charter ($\int$).

TABLE 86: `prodint` Variable-sized Math Operators

$\prod$	<code>\prodi</code>	$\prod$	<code>\Prodi</code>	$\prod$	<code>\PRODI</code>
---------	---------------------	---------	---------------------	---------	---------------------

`prodint` currently requires the author to manually specify `\prodi` for inlined expressions (`$...$`), `\Prodi` for displayed math (`\[...\]`), and `\PRODI` for displayed math involving tall integrands. The package does not define a product integral command that scales automatically akin to the symbols in Table 72.

TABLE 87: `cmll` Large Math Operators

$\mathcal{P}$	<code>\bigparr*</code>	$\&$	<code>\bigwith</code>
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* `cmll` defines `\beginvamp` as a synonym for `\bigparr`.

TABLE 88: Binary Relations

$\approx$	<code>\approx</code>	$\equiv$	<code>\equiv</code>	$\perp$	<code>\perp</code>	$\smile$	<code>\smile</code>
$\asymp$	<code>\asymp</code>	$\frown$	<code>\frown</code>	$\prec$	<code>\prec</code>	$\succ$	<code>\succ</code>
$\bowtie$	<code>\bowtie</code>	$\Join$	<code>\Join*</code>	$\preceq$	<code>\preceq</code>	$\succeq$	<code>\succeq</code>
$\cong$	<code>\cong</code>	$\mid$	<code>\mid†</code>	$\propto$	<code>\propto</code>	$\vdash$	<code>\vdash</code>
$\dashv$	<code>\dashv</code>	$\models$	<code>\models</code>	$\sim$	<code>\sim</code>	$\dashv$	<code>\dashv</code>
$\doteq$	<code>\doteq</code>	$\parallel$	<code>\parallel</code>	$\simeq$	<code>\simeq</code>		
$\times$							

* Not predefined by the $\text{\LaTeX} 2_{\epsilon}$ core. Use the `latexsym` package to expose this symbol.

† The difference between `\mid` and `|` is that the former is a binary relation while the latter is a math ordinal. Consequently, $\text{\LaTeX}$ typesets the two with different surrounding spacing. Contrast “ $P(A \mid B)$ ” $\mapsto$ “ $P(A|B)$ ” with “ $P(A \mid B)$ ” $\mapsto$ “ $P(A \mid B)$ ”.

TABLE 89: $\mathcal{AMS}$ Binary Relations

$\approx$	<code>\approxeq</code>	$\equiv$	<code>\eqcirc</code>	$\asymp$	<code>\succapprox</code>
$\backsimeq$	<code>\backepsilon</code>	$\fallingdotseq$	<code>\fallingdotseq</code>	$\asymp$	<code>\succcurlyeq</code>
$\backsimeq$	<code>\backsim</code>	$\multimap$	<code>\multimap</code>	$\asymp$	<code>\succsim</code>
$\backsimeq$	<code>\backsimeq</code>	$\pitchfork$	<code>\pitchfork</code>	$\therefore$	<code>\therefore</code>
$\because$	<code>\because</code>	$\precapprox$	<code>\precapprox</code>	$\approx$	<code>\thickapprox</code>
$\between$	<code>\between</code>	$\preccurlyeq$	<code>\preccurlyeq</code>	$\sim$	<code>\thicksim</code>
$\bumpeq$	<code>\bumpeq</code>	$\precsim$	<code>\precsim</code>	$\propto$	<code>\varpropto</code>
$\bumpeq$	<code>\bumpeq</code>	$\risingdotseq$	<code>\risingdotseq</code>	$\Vdash$	<code>\Vdash</code>
$\circeq$	<code>\circeq</code>	$\shortmid$	<code>\shortmid</code>	$\Vdash$	<code>\Vdash</code>
$\curlyeqprec$	<code>\curlyeqprec</code>	$\shortparallel$	<code>\shortparallel</code>	$\Vdash$	<code>\Vdash</code>
$\curlyeqsucc$	<code>\curlyeqsucc</code>	$\smallfrown$	<code>\smallfrown</code>		
$\doteqdot$	<code>\doteqdot</code>	$\smallsmile$	<code>\smallsmile</code>		

TABLE 90: $\mathcal{AMS}$ Negated Binary Relations

$\ncong$	<code>\ncong</code>	$\nshortparallel$	<code>\nshortparallel</code>	$\nVDash$	<code>\nVDash</code>
$\nmid$	<code>\nmid</code>	$\nsim$	<code>\nsim</code>	$\preapprox$	<code>\preapprox</code>
$\nparallel$	<code>\nparallel</code>	$\nsucc$	<code>\nsucc</code>	$\precnsim$	<code>\precnsim</code>
$\nprec$	<code>\nprec</code>	$\nsucceq$	<code>\nsucceq</code>	$\succapprox$	<code>\succapprox</code>
$\npreceq$	<code>\npreceq</code>	$\nvDash$	<code>\nvDash</code>	$\succnsim$	<code>\succnsim</code>
$\nshortmid$	<code>\nshortmid</code>	$\nvdash$	<code>\nvdash</code>		

TABLE 91: `stmaryrd` Binary Relations

$\in$	<code>\inplus</code>	$\ni$	<code>\niplus</code>
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TABLE 92: `wasysym` Binary Relations

$\neg$	<code>\invneg</code>	$\leadsto$	<code>\leadsto</code>	$\propto$	<code>\wasypropto</code>
$\Join$	<code>\Join</code>	$\otimes$	<code>\logof</code>		

TABLE 93: `txfonts/pxfonts` Binary Relations

$\circledgtr$	<code>\lJoin</code>	$\times$	<code>\opentimes</code>
$\circledless$	<code>\lRtimes</code>	$\perp$	<code>\Perp</code>
$\colonapprox$	<code>\multimap</code>	$\preceq$	<code>\preceqq</code>
$\Colonapprox$	<code>\multimapboth</code>	$\precneq$	<code>\precneqq</code>
$\coloneq$	<code>\multimapbothvert</code>	$\rJoin$	<code>\rJoin</code>
$\Coloneq$	<code>\multimapdot</code>	$\strictfi$	<code>\strictfi</code>
$\Coloneqq$	<code>\multimapdotboth</code>	$\strictif$	<code>\strictif</code>
$\coloneqq^*$	<code>\multimapdotbothA</code>	$\succeq$	<code>\succeqq</code>
$\Colonsim$	<code>\multimapdotbothAvert</code>	$\succneq$	<code>\succneqq</code>
$\colonsim$	<code>\multimapdotbothB</code>	$\varparallel$	<code>\varparallel</code>
$\Eqcolon$	<code>\multimapdotbothBvert</code>	$\varparallelinv$	<code>\varparallelinv</code>
$\eqcolon$	<code>\multimapdotbothvert</code>	$\Vdash$	<code>\Vdash</code>
$\eqqcolon$	<code>\multimapdotinv</code>		
$\Eqqcolon$	<code>\multimapinv</code>		
$\eqsim$	<code>\openJoin</code>		

* As an alternative to using `txfonts/pxfonts`, a “ $\mathrel{:=}$ ” symbol can be constructed with “`\mathrel{\mathop{:}}=`”.

TABLE 94: `txfonts/pxfonts` Negated Binary Relations

$\napprox$	<code>\napprox</code>	$\nprec$	<code>\nprec</code>	$\nthickapprox$	<code>\nthickapprox</code>
$\nasympt$	<code>\nasympt</code>	$\npreceq$	<code>\npreceq</code>	$\twoheadleftarrow$	<code>\twoheadleftarrow</code>
$\nbacksim$	<code>\nbacksim</code>	$\nprec$	<code>\nprec</code>	$\twoheadrightarrow$	<code>\twoheadrightarrow</code>
$\nbacksimeq$	<code>\nbacksimeq</code>	$\nsimeq$	<code>\nsimeq</code>	$\nvarparallel$	<code>\nvarparallel</code>
$\nbump$	<code>\nbump</code>	$\nsuccapprox$	<code>\nsuccapprox</code>	$\nvarparallelinv$	<code>\nvarparallelinv</code>
$\nbump$	<code>\nbump</code>	$\nsucccurlyeq$	<code>\nsucccurlyeq</code>	$\nVDash$	<code>\nVDash</code>
$\nequiv$	<code>\nequiv</code>	$\nsucceq$	<code>\nsucceq</code>		
$\nprecapprox$	<code>\nprecapprox</code>	$\nsuccsim$	<code>\nsuccsim</code>		

TABLE 95: mathabx Binary Relations

$\bowtie$	<code>\between</code>	$ $	<code>\divides</code>	$\dot{=}$	<code>\risingdotseq</code>
$\dot{=}$	<code>\botdoteq</code>	$\dot{=}$	<code>\dotseq</code>	$\gtrsim$	<code>\succapprox</code>
$\curvearrowright$	<code>\Bumpedeq</code>	$\curvearrowright$	<code>\eqbumped</code>	$\gtrsim$	<code>\succcurlyeq</code>
$\curvearrowright$	<code>\bumpedeq</code>	$\equiv$	<code>\eqcirc</code>	$\succ$	<code>\succdot</code>
$\circ$	<code>\circeq</code>	$\equiv$	<code>\eqcolon</code>	$\succsim$	<code>\succsim</code>
$\coloneqq$	<code>\coloneq</code>	$\dot{=}$	<code>\fallingdotseq</code>	$\therefore$	<code>\therefore</code>
$\triangleq$	<code>\corresponds</code>	$\gg$	<code>\ggcurly</code>	$\dot{=}$	<code>\topdoteq</code>
$\ll$	<code>\curlyeqprec</code>	$\ll$	<code>\llcurly</code>	$\Vdash$	<code>\vDash</code>
$\gg$	<code>\curlyeqsucc</code>	$\gg$	<code>\precapprox</code>	$\Vdash$	<code>\Vdash</code>
$\DashV$	<code>\DashV</code>	$\ll$	<code>\preccurlyeq</code>	$\Vdash$	<code>\Vdash</code>
$\Dashv$	<code>\Dashv</code>	$\triangleleft$	<code>\precdot</code>	$\Vdash$	<code>\Vdash</code>
$\dashv$	<code>\dashv</code>	$\succsim$	<code>\precsim</code>		

TABLE 96: mathabx Negated Binary Relations

$\napprox$	<code>\napprox</code>	$\nperp$	<code>\notperp</code>	$\nvdash$	<code>\nvDash</code>
$\ncong$	<code>\ncong</code>	$\nprec$	<code>\nprec</code>	$\nVdash$	<code>\nVdash</code>
$\ncurlyeqprec$	<code>\ncurlyeqprec</code>	$\nprecapprox$	<code>\nprecapprox</code>	$\nVdash$	<code>\nVdash</code>
$\ncurlyeqsucc$	<code>\ncurlyeqsucc</code>	$\npreccurlyeq$	<code>\npreccurlyeq</code>	$\nvdash$	<code>\nvdash</code>
$\nDashv$	<code>\nDashv</code>	$\npreceq$	<code>\npreceq</code>	$\nVdash$	<code>\nVdash</code>
$\ndashV$	<code>\ndashV</code>	$\nprecsim$	<code>\nprecsim</code>	$\nprecapprox$	<code>\nprecapprox</code>
$\ndashv$	<code>\ndashv</code>	$\nsim$	<code>\nsim</code>	$\nprecneq$	<code>\nprecneq</code>
$\nDashV$	<code>\nDashV</code>	$\nsimeq$	<code>\nsimeq</code>	$\nprecsim$	<code>\nprecsim</code>
$\ndashVv$	<code>\ndashVv</code>	$\nsucc$	<code>\nsucc</code>	$\nsuccapprox$	<code>\nsuccapprox</code>
$\neq$	<code>\neq</code>	$\nsuccapprox$	<code>\nsuccapprox</code>	$\nsuccneq$	<code>\nsuccneq</code>
$\notasymp$	<code>\notasymp</code>	$\nsucccurlyeq$	<code>\nsucccurlyeq</code>	$\nsuccsim$	<code>\nsuccsim</code>
$\notdivides$	<code>\notdivides</code>	$\nsucceq$	<code>\nsucceq</code>		
$\notequiv$	<code>\notequiv</code>	$\nsuccsim$	<code>\nsuccsim</code>		

The `\changenotsign` command toggles the behavior of `\not` to produce either a vertical or a diagonal slash through a binary operator. Thus, “ $\$a \not= b\$$ ” can be made to produce either “ $a \nmid b$ ” or “ $a \neq b$ ”.

TABLE 97: MnSymbol Binary Relations

$\approx$	<code>\approx</code>	$\hat{=}$	<code>\hateq</code>	∞	<code>\rightpropto</code>
$\approx$	<code>\approxeq</code>	$\times$	<code>\hcrossing</code>	$\triangleright$	<code>\rightslice</code>
$\approx$	<code>\backapprox</code>	$\vdash$	<code>\leftfootline</code>	$\Vdash$	<code>\rightVdash</code>
$\approx$	<code>\backapproxeq</code>	$\vdash$	<code>\leftfree</code>	$\vdash$	<code>\rightvdash</code>
$\approx$	<code>\backcong</code>	$\dashv$	<code>\leftmodels</code>	$\dot{=}$	<code>\risingdotseq</code>
$\approx$	<code>\backeqsim</code>	$\dashv$	<code>\leftModels</code>	$\searrow$	<code>\sefootline</code>
$\approx$	<code>\backsim</code>	$\propto$	<code>\leftpropto</code>	$\searrow$	<code>\sefree</code>
$\approx$	<code>\backsimeq</code>	$\dashv$	<code>\leftrightline</code>	$\ll$	<code>\seModels</code>
$\approx$	<code>\backtriplesim</code>	$=$	<code>\Leftrightarrow</code>	$\ll$	<code>\semodels</code>
$\approx$	<code>\between</code>	$\triangleleft$	<code>\leftslice</code>	$\langle$	<code>\separated</code>
$\approx$	<code>\bumpeq</code>	$\dashv$	<code>\leftVdash</code>	$\ll$	<code>\seVdash</code>

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$\Leftarrow$	<code>\Bumpeq</code>	$\dashleftarrow$	<code>\leftvdash</code>	$\searrow$	<code>\sevdash</code>
$\circ$	<code>\circeq</code>	$\nearrow$	<code>\nefootline</code>	$\parallel$	<code>\shortparallel</code>
$\equiv$	<code>\closedequal</code>	$\nearrow$	<code>\nefree</code>	$\sim$	<code>\sim</code>
$\prec$	<code>\closedprec</code>	$\napprox$	<code>\neModels</code>	$\simeq$	<code>\simeq</code>
$\succ$	<code>\closedsucc</code>	$\napprox$	<code>\nemodels</code>	$\succ$	<code>\succ</code>
$\coloneqq$	<code>\coloneq</code>	$\nearrow$	<code>\neswline</code>	$\approx$	<code>\succapprox</code>
$\cong$	<code>\cong</code>	$\parallel$	<code>\Neswline</code>	$\succcurlyeq$	<code>\succcurlyeq</code>
$\curlyeqprec$	<code>\curlyeqprec</code>	$\napprox$	<code>\neVdash</code>	$\succeq$	<code>\succeq</code>
$\curlyeqsucc$	<code>\curlyeqsucc</code>	$\napprox$	<code>\nevDash</code>	$\succsim$	<code>\succsim</code>
$\doteq$	<code>\Doteq</code>	$\nwarrow$	<code>\nwfootline</code>	$\swarrow$	<code>\swfootline</code>
$\doteq$	<code>\doteq</code>	$\nwarrow$	<code>\nwfree</code>	$\swarrow$	<code>\swfree</code>
$\downarrow$	<code>\downfootline</code>	$\nwarrow$	<code>\nwmodels</code>	$\swarrow$	<code>\swModels</code>
$\downarrow$	<code>\downfree</code>	$\nwarrow$	<code>\nwModels</code>	$\swarrow$	<code>\swmodels</code>
$\Downarrow$	<code>\downmodels</code>	$\nwarrow$	<code>\nwseccrossing</code>	$\swarrow$	<code>\swVdash</code>
$\Downarrow$	<code>\downModels</code>	$\nwarrow$	<code>\Nwseline</code>	$\swarrow$	<code>\swvdash</code>
$\propto$	<code>\downpropto</code>	$\nwarrow$	<code>\nwseline</code>	$\approx$	<code>\triplesim</code>
$\dashv$	<code>\downvdash</code>	$\nwarrow$	<code>\nwvdash</code>	$\updownarrow$	<code>\updownline</code>
$\dashv$	<code>\downVdash</code>	$\nwarrow$	<code>\nwVdash</code>	$\Updownarrow$	<code>\Updownline</code>
$\bumpeq$	<code>\eqbump</code>	$\prec$	<code>\prec</code>	$\Uparrow$	<code>\upfootline</code>
$\circ$	<code>\eqcirc</code>	$\approx$	<code>\precapprox</code>	$\Uparrow$	<code>\upfree</code>
$\dot{=}$	<code>\eqdot</code>	$\approx$	<code>\preccurlyeq</code>	$\parallel$	<code>\upModels</code>
$\sim$	<code>\eqsim</code>	$\preceq$	<code>\preceq</code>	$\parallel$	<code>\upmodels</code>
$=$	<code>\equal</code>	$\approx$	<code>\precsim</code>	$\propto$	<code>\uppropto</code>
$\equiv$	<code>\equalclosed</code>	$\dashrightarrow$	<code>\rightfootline</code>	$\perp$	<code>\upvdash</code>
$\equiv$	<code>\equiv</code>	$\rightarrow$	<code>\rightfree</code>	$\perp$	<code>\upVdash</code>
$\equiv$	<code>\equivclosed</code>	$\models$	<code>\rightmodels</code>	$\times$	<code>\vcrossing</code>
$\fallingdotseq$	<code>\fallingdotseq</code>	$\models$	<code>\rightModels</code>	$\Vdash$	<code>\Vdash</code>

MnSymbol additionally defines synonyms for some of the preceding symbols:

$\dashv$	<code>\dashv</code>	(same as <code>\leftvdash</code>)
$\searrow$	<code>\diagdown</code>	(same as <code>\nwseline</code>)
$\nearrow$	<code>\diagup</code>	(same as <code>\neswline</code>)
$\div$	<code>\divides</code>	(same as <code>\updownline</code>)
$\doteqdot$	<code>\doteqdot</code>	(same as <code>\Doteq</code>)
$\models$	<code>\models</code>	(same as <code>\rightmodels</code>)
$\parallel$	<code>\parallel</code>	(same as <code>\Updownline</code>)
$\perp$	<code>\perp</code>	(same as <code>\upvdash</code>)
$\propto$	<code>\propto</code>	(same as <code>\leftpropto</code>)
$\relbar$	<code>\relbar</code>	(same as <code>\leftrighthline</code>)
$\Relbar$	<code>\Relbar</code>	(same as <code>\Leftrightarrow</code>)
$\varpropto$	<code>\varpropto</code>	(same as <code>\leftpropto</code>)
$\vDash$	<code>\vDash</code>	(same as <code>\rightmodels</code>)
$\Vdash$	<code>\Vdash</code>	(same as <code>\rightModels</code>)
$\vdash$	<code>\vdash</code>	(same as <code>\rightvdash</code>)
$\Vdash$	<code>\Vdash</code>	(same as <code>\rightVdash</code>)

TABLE 98: MnSymbol Negated Binary Relations

$\napprox$	<code>\napprox</code>	$\nleftthreetimes$	<code>\nleftfootline</code>	$\nmid$	<code>\nrisingdotseq</code>
$\napprox$	<code>\napproxeq</code>	$\nleftthreetimes$	<code>\nleftfree</code>	$\nmid$	<code>\nsefootline</code>
$\nbackapprox$	<code>\nbackapprox</code>	$\nleftthreetimes$	<code>\nleftmodels</code>	$\nmid$	<code>\nsefree</code>
$\nbackapprox$	<code>\nbackapproxeq</code>	$\nleftthreetimes$	<code>\nleftModels</code>	$\nmid$	<code>\nseModels</code>
$\nbackcong$	<code>\nbackcong</code>	$\nleftthreetimes$	<code>\nleftrightline</code>	$\nmid$	<code>\nsemodels</code>
$\nbackeqsim$	<code>\nbackeqsim</code>	$\nleftthreetimes$	<code>\nLeftrightarrow</code>	$\nmid$	<code>\nsevdash</code>
$\nbacksim$	<code>\nbacksim</code>	$\nleftthreetimes$	<code>\nleftvdash</code>	$\nmid$	<code>\nseVdash</code>
$\nbacksimeq$	<code>\nbacksimeq</code>	$\nleftthreetimes$	<code>\nleftVdash</code>	$\nmid$	<code>\nshortmid</code>
$\nbacktriple$	<code>\nbacktriple</code>	$\nleftthreetimes$	<code>\nnefootline</code>	$\nmid$	<code>\nshortparallel</code>
$\nbumpeq$	<code>\nbumpeq</code>	$\nleftthreetimes$	<code>\nnefree</code>	$\nmid$	<code>\nsim</code>
$\nbumpeq$	<code>\nBumpeq</code>	$\nleftthreetimes$	<code>\nnmodels</code>	$\nmid$	<code>\nsimeq</code>
$\ncirc$	<code>\ncirc</code>	$\nleftthreetimes$	<code>\nneModels</code>	$\nmid$	<code>\nsucc</code>
$\nclosedequal$	<code>\nclosedequal</code>	$\nleftthreetimes$	<code>\nneswline</code>	$\nmid$	<code>\nsuccapprox</code>
$\ncong$	<code>\ncong</code>	$\nleftthreetimes$	<code>\nNeswline</code>	$\nmid$	<code>\nsucccurlyeq</code>
$\ncurlyeqprec$	<code>\ncurlyeqprec</code>	$\nleftthreetimes$	<code>\nneVdash</code>	$\nmid$	<code>\nsucceq</code>
$\ncurlyeqsucc$	<code>\ncurlyeqsucc</code>	$\nleftthreetimes$	<code>\nnevDash</code>	$\nmid$	<code>\nsuccsim</code>
$\ndoteq$	<code>\ndoteq</code>	$\nleftthreetimes$	<code>\nnwfootline</code>	$\nmid$	<code>\nswfootline</code>
$\ndoteq$	<code>\nDoteq</code>	$\nleftthreetimes$	<code>\nnwfree</code>	$\nmid$	<code>\nswfree</code>
$\ndownfootline$	<code>\ndownfootline</code>	$\nleftthreetimes$	<code>\nnwmodels</code>	$\nmid$	<code>\nswModels</code>
$\ndownfree$	<code>\ndownfree</code>	$\nleftthreetimes$	<code>\nnwModels</code>	$\nmid$	<code>\nswmodels</code>
$\ndownModels$	<code>\ndownModels</code>	$\nleftthreetimes$	<code>\nNwseline</code>	$\nmid$	<code>\nswvdash</code>
$\ndownmodels$	<code>\ndownmodels</code>	$\nleftthreetimes$	<code>\nnwseline</code>	$\nmid$	<code>\nswVdash</code>
$\ndownVdash$	<code>\ndownVdash</code>	$\nleftthreetimes$	<code>\nnwvdash</code>	$\nmid$	<code>\ntriple</code>
$\ndownvdash$	<code>\ndownvdash</code>	$\nleftthreetimes$	<code>\nnwVdash</code>	$\nmid$	<code>\nUpdownline</code>
$\neq$	<code>\neqbump</code>	$\nleftthreetimes$	<code>\nprec</code>	$\nmid$	<code>\nupdownline</code>
$\neq$	<code>\neqcirc</code>	$\nleftthreetimes$	<code>\nprecapprox</code>	$\nmid$	<code>\nupfootline</code>
$\neq$	<code>\neqdot</code>	$\nleftthreetimes$	<code>\npreccurlyeq</code>	$\nmid$	<code>\nupfree</code>
$\neq$	<code>\neqsim</code>	$\nleftthreetimes$	<code>\npreceq</code>	$\nmid$	<code>\nupModels</code>
$\neq$	<code>\nequal</code>	$\nleftthreetimes$	<code>\nprecsim</code>	$\nmid$	<code>\nupmodels</code>
$\neq$	<code>\nequalclosed</code>	$\nleftthreetimes$	<code>\nrightfootline</code>	$\nmid$	<code>\nupVdash</code>
$\neq$	<code>\nequiv</code>	$\nleftthreetimes$	<code>\nrightfree</code>	$\nmid$	<code>\nupvdash</code>
$\neq$	<code>\nequivclosed</code>	$\nleftthreetimes$	<code>\nrightModels</code>	$\nmid$	<code>\precapprox</code>
$\neq$	<code>\neswcrossing</code>	$\nleftthreetimes$	<code>\nrightmodels</code>	$\nmid$	<code>\precnsim</code>
$\neq$	<code>\nfallingdotseq</code>	$\nleftthreetimes$	<code>\nrightvdash</code>	$\nmid$	<code>\succapprox</code>
$\neq$	<code>\nhateq</code>	$\nleftthreetimes$	<code>\nrightVdash</code>	$\nmid$	<code>\succnsim</code>

MnSymbol additionally defines synonyms for some of the preceding symbols:

$\nmid$	<code>\ndashv</code>	(same as <code>\nleftvdash</code>)
$\nmid$	<code>\ndiagdown</code>	(same as <code>\nnwseline</code>)
$\nmid$	<code>\ndiagup</code>	(same as <code>\nneswline</code>)
$\nmid$	<code>\ndivides</code>	(same as <code>\nupdownline</code>)
$\neq$	<code>\ne</code>	(same as <code>\nequal</code>)
$\neq$	<code>\neq</code>	(same as <code>\nequal</code>)
$\nmid$	<code>\nmid</code>	(same as <code>\nupdownline</code>)
$\neq$	<code>\nmodels</code>	(same as <code>\nrightmodels</code>)
$\nmid$	<code>\nparallel</code>	(same as <code>\nUpdownline</code>)
$\neq$	<code>\nperp</code>	(same as <code>\nupvdash</code>)
$\neq$	<code>\nrelbar</code>	(same as <code>\nleftrightline</code>)
$\neq$	<code>\nRelbar</code>	(same as <code>\nLeftrightarrow</code>)
$\neq$	<code>\nvDash</code>	(same as <code>\nrightmodels</code>)
$\neq$	<code>\nvDash</code>	(same as <code>\nrightvdash</code>)
$\neq$	<code>\nVdash</code>	(same as <code>\nrightVdash</code>)
$\neq$	<code>\nVDash</code>	(same as <code>\nrightModels</code>)

TABLE 99: fdsymbol Binary Relations

$\approx$	<code>\approx</code>	$\equiv$	<code>\equiv</code>	$\models$	<code>\models</code>
$\approx$	<code>\approxeq</code>	$\doteq$	<code>\doteq</code>	$\Vdash$	<code>\Vdash</code>
$\cong$	<code>\backcong</code>	$\frown$	<code>\frown</code>	$\Vdash$	<code>\rightVDash</code>
$\propto$	<code>\backpropto</code>	$\frown$	<code>\frown</code>	$\vdash$	<code>\rightvdash</code>
$\sim$	<code>\backsim</code>	$\circ$	<code>\circ</code>	$\models$	<code>\rightvDash</code>
$\simeq$	<code>\backsimeq</code>	$\in$	<code>\in</code>	$\models$	<code>\risingdotseq</code>
$\wp$	<code>\between</code>	$\dashv$	<code>\dashv</code>	$\vdash$	<code>\shortmid</code>
$\bowtie$	<code>\bowtie</code>	$\dashv$	<code>\dashv</code>	$\parallel$	<code>\shortparallel</code>
$\bumpeq$	<code>\bumpeq</code>	$\vdash$	<code>\vdash</code>	$\sim$	<code>\sim</code>
$\Bumpeq$	<code>\Bumpeq</code>	$\models$	<code>\models</code>	$\simeq$	<code>\simeq</code>
$\bumpeq$	<code>\bumpeq</code>	$\vdash$	<code>\vdash</code>	$\smile$	<code>\smile</code>
$\circ$	<code>\circeq</code>	$\models$	<code>\models</code>	$\simeq$	<code>\simeq</code>
$\coloneq$	<code>\coloneq</code>	$\dashv$	<code>\dashv</code>	$\times$	<code>\smilefrown</code>
$\cong$	<code>\cong</code>	$\models$	<code>\models</code>	$\star$	<code>\stareq</code>
$\times$	<code>\crossing</code>	$\vdash$	<code>\vdash</code>	$\succ$	<code>\succ</code>
$\curlyeqprec$	<code>\curlyeqprec</code>	$\Longleftarrow$	<code>\Longleftarrow</code>	$\succapprox$	<code>\succapprox</code>
$\curlyeqsucc$	<code>\curlyeqsucc</code>	$\longleftarrow$	<code>\longleftarrow</code>	$\succcurlyeq$	<code>\succcurlyeq</code>
$\dashv$	<code>\dashv</code>	$\vdash$	<code>\vdash</code>	$\succeq$	<code>\succeq</code>
$\dashv$	<code>\Ddashv</code>	$\mid$	<code>\mid</code>	$\succeq$	<code>\succeq</code>
$\dot{\cong}$	<code>\dotcong</code>	$\ni$	<code>\ni</code>	$\succsim$	<code>\succsim</code>
$\doteq$	<code>\doteq</code>	$\parallel$	<code>\parallel</code>	$\thickapprox$	<code>\thickapprox</code>
$\doteq$	<code>\Doteq</code>	$\prec$	<code>\prec</code>	$\thicksim$	<code>\thicksim</code>
$\dot{-}$	<code>\dotsminusdots</code>	$\approx$	<code>\approx</code>	$\tripleapprox$	<code>\tripleapprox</code>
$\Downarrow$	<code>\downAssert</code>	$\preccurlyeq$	<code>\preccurlyeq</code>	$\Uparrow$	<code>\upassert</code>
$\Downarrow$	<code>\downassert</code>	$\preceq$	<code>\preceq</code>	$\Uparrow$	<code>\upAssert</code>
$\Downarrow$	<code>\downmodels</code>	$\preceq$	<code>\preceq</code>	$\Uparrow$	<code>\upmodels</code>
$\Downarrow$	<code>\downvDash</code>	$\preccurlyeq$	<code>\preccurlyeq</code>	$\Uparrow$	<code>\upvDash</code>
$\Downarrow$	<code>\downVDash</code>	$\precneq$	<code>\precneq</code>	$\Uparrow$	<code>\upvDash</code>
$\Downarrow$	<code>\downvdash</code>	$\precneq$	<code>\precneq</code>	$\Uparrow$	<code>\upVDash</code>
$\Downarrow$	<code>\downVDash</code>	$\precnsim$	<code>\precnsim</code>	$\Uparrow$	<code>\upVDash</code>
$\#$	<code>\eqcirc</code>	$\prec$	<code>\prec</code>	$\Vdash$	<code>\vDash</code>
$\equiv$	<code>\eqcolon</code>	$\propto$	<code>\propto</code>	$\vee$	<code>\vee</code>
$\equiv$	<code>\eqdot</code>	$\vdash$	<code>\vdash</code>	$\Vdash$	<code>\Vdash</code>
$\approx$	<code>\eqsim</code>	$\Vdash$	<code>\Vdash</code>	$\wedge$	<code>\wedge</code>
$=$	<code>\equal</code>	$\vdash$	<code>\vdash</code>		

`fdsymbol` defines synonyms for many of the preceding symbols:

$\approx$	<code>\approxident</code>	$\dashv$	<code>\dashv</code>	$\vdash$	<code>\shortrightarrow</code>
$\cong$	<code>\arceq</code>	$\doteq$	<code>\doteqdot</code>	$\perp$	<code>\shortrightarrow</code>
$\Vdash$	<code>\Assert</code>	$\equiv$	<code>\eqcolon</code>	$\frown$	<code>\smallfrown</code>
$\vdash$	<code>\assert</code>	$\hat{=}$	<code>\hateq</code>	$\smile$	<code>\smallsmile</code>
$\propto$	<code>\asymp</code>	$\Join$	<code>\Join</code>	$\propto$	<code>\varpropto</code>
$\bar{\vdash}$	<code>\Barv</code>	$\vdash$	<code>\vdash</code>	$\perp$	<code>\vBar</code>
$\bar{\vdash}$	<code>\barV</code>	$\models$	<code>\models</code>	$\perp$	<code>\Vbar</code>
$\circ$	<code>\closure</code>	$\ni$	<code>\ni</code>	$\models$	<code>\vDash</code>
$\coloneqq$	<code>\coloneqq</code>	$\perp$	<code>\perp</code>	$\models$	<code>\VDash</code>
$\dashv$	<code>\dashv</code>	$\propto$	<code>\propfrom</code>	$\models$	<code>\Vdash</code>
$\dashv$	<code>\DashV</code>	$\top$	<code>\shortrightarrow</code>	$\vdash$	<code>\vdash</code>
$\dashv$	<code>\Dashv</code>	$\vdash$	<code>\shortrightarrow</code>	$\vdash$	<code>\vlongdash</code>

TABLE 100: fdsymbol Negated Binary Relations

$\nexists$	<code>\backsimneqq</code>	$\notin$	<code>\nin</code>	$\nmid$	<code>\nsim</code>
$\neq$	<code>\napprox</code>	$\nVdash$	<code>\nleftAssert</code>	$\neq$	<code>\nsimeq</code>
$\neq$	<code>\napproxeq</code>	$\nVdash$	<code>\nleftassert</code>	$\nmid$	<code>\nsmile</code>
$\neq$	<code>\nbackcong</code>	$\nVdash$	<code>\nleftfootline</code>	$\neq$	<code>\nsmileeq</code>
$\nmid$	<code>\nbacksim</code>	$\nVdash$	<code>\nleftmodels</code>	$\neq$	<code>\nsmilefrown</code>
$\neq$	<code>\nbacksimseq</code>	$\nVdash$	<code>\nleftvDash</code>	$\neq$	<code>\nstareq</code>
$\neq$	<code>\nbumpeq</code>	$\nVdash$	<code>\nleftvdash</code>	$\nmid$	<code>\nsucc</code>
$\neq$	<code>\nBumpeq</code>	$\nVdash$	<code>\nleftVDash</code>	$\neq$	<code>\nsuccapprox</code>
$\neq$	<code>\nbumpeqeq</code>	$\nVdash$	<code>\nleftVDash</code>	$\neq$	<code>\nsucccurlyeq</code>
$\neq$	<code>\ncirceq</code>	$\nVdash$	<code>\nlongleftfootline</code>	$\neq$	<code>\nsucceq</code>
$\neq$	<code>\ncong</code>	$\nVdash$	<code>\nLongmapsfrom</code>	$\neq$	<code>\nsucceqq</code>
$\neq$	<code>\ncurlyeqprec</code>	$\nVdash$	<code>\nlongmapsfrom</code>	$\neq$	<code>\nsuccsim</code>
$\neq$	<code>\ncurlyeqsucc</code>	$\nVdash$	<code>\nlongrightfootline</code>	$\neq$	<code>\ntriplesim</code>
$\nVdash$	<code>\ndashVv</code>	$\nmid$	<code>\nmid</code>	$\neq$	<code>\nupassert</code>
$\nVdash$	<code>\nDdashv</code>	$\nmid$	<code>\nowns</code>	$\neq$	<code>\nupAssert</code>
$\neq$	<code>\ndoteq</code>	$\nmid$	<code>\nparallel</code>	$\neq$	<code>\nupmodels</code>
$\neq$	<code>\nDoteq</code>	$\nmid$	<code>\nprec</code>	$\neq$	<code>\nupVDash</code>
$\nVdash$	<code>\ndownassert</code>	$\neq$	<code>\nprecapprox</code>	$\neq$	<code>\nupvDash</code>
$\nVdash$	<code>\ndownAssert</code>	$\neq$	<code>\npreccurlyeq</code>	$\neq$	<code>\nupVdash</code>
$\nVdash$	<code>\ndownmodels</code>	$\neq$	<code>\npreceq</code>	$\neq$	<code>\nupvdash</code>
$\nVdash$	<code>\ndownvdash</code>	$\neq$	<code>\npreceqq</code>	$\neq$	<code>\nvDdash</code>
$\nVdash$	<code>\ndownVDash</code>	$\neq$	<code>\nprecsim</code>	$\neq$	<code>\nveeeq</code>
$\nVdash$	<code>\ndownVDash</code>	$\nmid$	<code>\nrightassert</code>	$\nVdash$	<code>\nVdash</code>
$\nVdash$	<code>\ndownvDash</code>	$\nmid$	<code>\nrightAssert</code>	$\neq$	<code>\nwedgeq</code>
$\neq$	<code>\neqcirc</code>	$\nmid$	<code>\nrightfootline</code>	$\neq$	<code>\precneq</code>
$\neq$	<code>\neqdot</code>	$\nmid$	<code>\nrightmodels</code>	$\neq$	<code>\precneqq</code>
$\neq$	<code>\neqsim</code>	$\nmid$	<code>\nrightvdash</code>	$\neq$	<code>\simneqq</code>
$\neq$	<code>\nequal</code>	$\nmid$	<code>\nrightVDash</code>	$\neq$	<code>\succnapprox</code>
$\neq$	<code>\nequiv</code>	$\nmid$	<code>\nrightvDash</code>	$\neq$	<code>\succneq</code>
$\neq$	<code>\nfallingdotseq</code>	$\nmid$	<code>\nrightVDash</code>	$\neq$	<code>\succneqq</code>
$\nmid$	<code>\nfrown</code>	$\neq$	<code>\nrisingdotseq</code>	$\neq$	<code>\succnsim</code>
$\neq$	<code>\nfrowneg</code>	$\nmid$	<code>\nshortmid</code>		
$\neq$	<code>\nfrownsmile</code>	$\nmid$	<code>\nshortparallel</code>		

fdsymbol defines synonyms for many of the preceding symbols:

$\neq$	<code>\napproxident</code>	$\nVdash$	<code>\ndashV</code>	$\nmid$	<code>\nshortrighttack</code>
$\neq$	<code>\narceq</code>	$\neq$	<code>\ne</code>	$\neq$	<code>\nshortuptack</code>
$\nVdash$	<code>\nAssert</code>	$\neq$	<code>\neq</code>	$\neq$	<code>\nsime</code>
$\nVdash$	<code>\nassert</code>	$\neq$	<code>\nhateq</code>	$\neq$	<code>\nvBar</code>
$\neq$	<code>\nasymp</code>	$\nVdash$	<code>\nlongdashv</code>	$\neq$	<code>\nVbar</code>
$\nVdash$	<code>\nBarv</code>	$\neq$	<code>\nmodels</code>	$\nVdash$	<code>\nVdash</code>
$\nVdash$	<code>\nbarV</code>	$\neq$	<code>\nni</code>	$\neq$	<code>\nvDash</code>
$\neq$	<code>\nclosure</code>	$\notin$	<code>\notin</code>	$\nVdash$	<code>\nVDash</code>
$\nVdash$	<code>\nDashV</code>	$\neq$	<code>\nperp</code>	$\nVdash$	<code>\nvDash</code>
$\nVdash$	<code>\nDashv</code>	$\nVdash$	<code>\nshortdowntack</code>	$\nVdash$	<code>\nvlongdash</code>
$\nVdash$	<code>\ndashv</code>	$\nVdash$	<code>\nshortlefttack</code>		

TABLE 101: boisik Binary Relations

$\approx$	<code>\ac</code>	$\parallel$	<code>\fatslash</code>	$\curvearrowright$	<code>\scurel</code>
$\approx$	<code>\approxeq</code>	$\ni$	<code>\forkv</code>	$\mid$	<code>\shortmid</code>
$\arceq$	<code>\arceq</code>	$\frown$	<code>\frown</code>	$\parallel$	<code>\shortparallel</code>
$\backsimeq$	<code>\backsimeq</code>	$\ggcurly$	<code>\ggcurly</code>	$\sim$	<code>\simrdots</code>
$\backsimeq$	<code>\backsimeq</code>	$\#$	<code>\hash</code>	$\smile$	<code>\smallfrown</code>
$\in$	<code>\bagmember</code>	$\in$	<code>\inplus</code>	$\smile$	<code>\smallsmile</code>
$\because$	<code>\because</code>	$\curvearrowleft$	<code>\kernelcontraction</code>	$\smile$	<code>\smile</code>
$\between$	<code>\between</code>	$\llcurly$	<code>\llcurly</code>	$\strictfi$	<code>\strictfi</code>
$\bumpeq$	<code>\bumpeq</code>	$\multimap$	<code>\multimap</code>	$\strictif$	<code>\strictif</code>
$\Bumpeq$	<code>\Bumpeq</code>	$\multimapboth$	<code>\multimapboth</code>	$\succapprox$	<code>\succapprox</code>
$\circeq$	<code>\circeq</code>	$\multimapbothvert$	<code>\multimapbothvert</code>	$\succcurlyeq$	<code>\succcurlyeq</code>
$\CircledEq$	<code>\CircledEq</code>	$\multimapdot$	<code>\multimapdot</code>	$\succapprox$	<code>\succapprox</code>
$\cong$	<code>\cong</code>	$\multimapdotboth$	<code>\multimapdotboth</code>	$\succneqq$	<code>\succneqq</code>
$\corresponds$	<code>\corresponds</code>	$\multimapdotbothA$	<code>\multimapdotbothA</code>	$\succnsim$	<code>\succnsim</code>
$\curlyeqprec$	<code>\curlyeqprec</code>	$\multimapdotbothAvert$	<code>\multimapdotbothAvert</code>	$\succsim$	<code>\succsim</code>
$\curlyeqsucc$	<code>\curlyeqsucc</code>	$\multimapdotbothB$	<code>\multimapdotbothB</code>	$\therefore$	<code>\therefore</code>
$\dashV$	<code>\dashV</code>	$\multimapdotbothBvert$	<code>\multimapdotbothBvert</code>	$\thickapprox$	<code>\thickapprox</code>
$\DashV$	<code>\DashV</code>	$\multimapdotbothvert$	<code>\multimapdotbothvert</code>	$\thicksim$	<code>\thicksim</code>
$\dashVv$	<code>\dashVv</code>	$\multimapdotinv$	<code>\multimapdotinv</code>	$\topfork$	<code>\topfork</code>
$\dfourier$	<code>\dfourier</code>	$\multimapinv$	<code>\multimapinv</code>	$\triangleq$	<code>\triangleq</code>
$\Dfourier$	<code>\Dfourier</code>	$\niplus$	<code>\niplus</code>	$\varhash$	<code>\varhash</code>
$\disin$	<code>\disin</code>	$\nisd$	<code>\nisd</code>	$\varisins$	<code>\varisins</code>
$\doteq$	<code>\doteq</code>	$\Perp$	<code>\Perp</code>	$\varnis$	<code>\varnis</code>
$\doteqdot$	<code>\doteqdot</code>	$\pitchfork$	<code>\pitchfork</code>	$\varpropto$	<code>\varpropto</code>
$\dotminus$	<code>\dotminus</code>	$\precapprox$	<code>\precapprox</code>	$\Vdash$	<code>\Vdash</code>
$\dotsim$	<code>\dotsim</code>	$\preccurlyeq$	<code>\preccurlyeq</code>	$\vDash$	<code>\vDash</code>
$\eqbumped$	<code>\eqbumped</code>	$\precnapprox$	<code>\precnapprox</code>	$\VDash$	<code>\VDash</code>
$\eqcirc$	<code>\eqcirc</code>	$\precneqq$	<code>\precneqq</code>	$\veeeq$	<code>\veeeq</code>
$\eqsim$	<code>\eqsim</code>	$\precnsim$	<code>\precnsim</code>	$\Vvdash$	<code>\Vvdash</code>
$\equalparallel$	<code>\equalparallel</code>	$\precsim$	<code>\precsim</code>	$\ztransf$	<code>\ztransf</code>
$\fallingdotseq$	<code>\fallingdotseq</code>	$\prurel$	<code>\prurel</code>	$\Ztransf$	<code>\Ztransf</code>
$\fatbslash$	<code>\fatbslash</code>	$\risingdotseq$	<code>\risingdotseq</code>		

TABLE 102: boisik Negated Binary Relations

$\ncong$	<code>\ncong</code>	$\npreceq$	<code>\npreceq</code>	$\nVDash$	<code>\nVDash</code>
$\neq$	<code>\neq</code>	$\nshortmid$	<code>\nshortmid</code>	$\nVdash$	<code>\nVdash</code>
$\nequiv$	<code>\nequiv</code>	$\nshortparallel$	<code>\nshortparallel</code>	$\nvDash$	<code>\nvDash</code>
$\nmid$	<code>\nmid</code>	$\nsim$	<code>\nsim</code>	$\nvDash$	<code>\nvDash</code>
$\nparallel$	<code>\nparallel</code>	$\nsucc$	<code>\nsucc</code>		
$\nprec$	<code>\nprec</code>	$\nsucceq$	<code>\nsucceq</code>		

TABLE 103: stix Binary Relations

$\approx$	<code>\approx</code>	$\#$	<code>\eqvparsl</code>	$\rightarrow$	<code>\rightfishtail</code>
$\approx\approx$	<code>\approxeq</code>	$\fallingdotseq$	<code>\fallingdotseq</code>	$\Rightarrow$	<code>\rightimply</code>
$\approx\approx\approx$	<code>\approxeqq</code>	$\bowtie$	<code>\fbowtie</code>	$\dashv$	<code>\righttail</code>
$\approx\approx\approx\approx$	<code>\approxident</code>	$\forksnot$	<code>\forksnot</code>	$\risingdotseq$	<code>\risingdotseq</code>
$\approx\approx\approx\approx\approx$	<code>\arceq</code>	$\forkv$	<code>\forkv</code>	$\sqhook$	<code>\rsqhook</code>
$\vdash$	<code>\assert</code>	$\frown$	<code>\frown</code>	$\rightarrowtail$	<code>\ruledelayed</code>
$\approx\approx\approx\approx\approx\approx$	<code>\asteq</code>	$\gleichstark$	<code>\gleichstark</code>	$\scurel$	<code>\scurel</code>
$\asymp$	<code>\asymp</code>	$\hat{\approx}$	<code>\hat{\approx}</code>	$\shortdown tack$	<code>\shortdown tack</code>
$\backcong$	<code>\backcong</code>	$\imageof$	<code>\imageof</code>	$\shortleft tack$	<code>\shortleft tack</code>
$\backsim$	<code>\backsim</code>	$\in$	<code>\in</code>	$\shortmid$	<code>\shortmid</code>
$\backsimeq$	<code>\backsimeq</code>	$\isindot$	<code>\isindot</code>	$\shortparallel$	<code>\shortparallel</code>
$\bagmember$	<code>\bagmember</code>	$\isinE$	<code>\isinE</code>	$\shortuptack$	<code>\shortuptack</code>
$\Barv$	<code>\Barv</code>	$\isinobar$	<code>\isinobar</code>	$\sim$	<code>\sim</code>
$\bar{V}$	<code>\bar{V}</code>	$\isins$	<code>\isins</code>	$\simeq$	<code>\simeq</code>
$\between$	<code>\between</code>	$\isinvb$	<code>\isinvb</code>	$\simminussim$	<code>\simminussim</code>
$\bNot$	<code>\bNot</code>	$\kernelcontraction$	<code>\kernelcontraction</code>	$\simneqq$	<code>\simneqq</code>
$\bowtie$	<code>\bowtie</code>	$\lefthdbl tail$	<code>\lefthdbl tail</code>	$\simrdots$	<code>\simrdots</code>
$\Bumpeq$	<code>\Bumpeq</code>	$\leftfishtail$	<code>\leftfishtail</code>	$\smallfrown$	<code>\smallfrown</code>
$\bumpeq$	<code>\bumpeq</code>	$\lefttail$	<code>\lefttail</code>	$\smallin$	<code>\smallin</code>
$\bumpeq\approx$	<code>\bumpeq\approx</code>	$\lfbowtie$	<code>\lfbowtie</code>	$\smallni$	<code>\smallni</code>
$\cirbot$	<code>\cirbot</code>	$\lftimes$	<code>\lftimes</code>	$\smallsmile$	<code>\smallsmile</code>
$\circeq$	<code>\circeq</code>	$\longdashv$	<code>\longdashv</code>	$\smeparsl$	<code>\smeparsl</code>
$\cirmid$	<code>\cirmid</code>	$\lsqhook$	<code>\lsqhook</code>	$\smile$	<code>\smile</code>
$\closure$	<code>\closure</code>	$\measeq$	<code>\measeq</code>	$\stareq$	<code>\stareq</code>
$\Coloneq$	<code>\Coloneq</code>	$\mid$	<code>\mid</code>	$\succ$	<code>\succ</code>
$\coloneq$	<code>\coloneq</code>	$\midcir$	<code>\midcir</code>	$\Succ$	<code>\Succ</code>
$\cong$	<code>\cong</code>	$\mlcp$	<code>\mlcp</code>	$\succapprox$	<code>\succapprox</code>
$\cong\dot{}$	<code>\cong\dot{}</code>	$\models$	<code>\models</code>	$\succcurlyeq$	<code>\succcurlyeq</code>
$\curlyeqprec$	<code>\curlyeqprec</code>	$\multimap$	<code>\multimap</code>	$\succeq$	<code>\succeq</code>
$\curlyeqsucc$	<code>\curlyeqsucc</code>	$\multimapinv$	<code>\multimapinv</code>	$\succeqq$	<code>\succeqq</code>
$\dashcolon$	<code>\dashcolon</code>	$\ni$	<code>\ni</code>	$\succnapprox$	<code>\succnapprox</code>
$\dashv$	<code>\dashv</code>	$\niobar$	<code>\niobar</code>	$\succneq$	<code>\succneq</code>
$\dashV$	<code>\dashV</code>	$\nis$	<code>\nis</code>	$\succneqq$	<code>\succneqq</code>
$\Dashv$	<code>\Dashv</code>	$\nisd$	<code>\nisd</code>	$\succnsim$	<code>\succnsim</code>
$\DashV$	<code>\DashV</code>	$\Not$	<code>\Not</code>	$\succsim$	<code>\succsim</code>
$\DashVDash$	<code>\DashVDash</code>	$\notchar$	<code>\notchar</code>	$\thickapprox$	<code>\thickapprox</code>
$\dashVdash$	<code>\dashVdash</code>	$\origof$	<code>\origof</code>	$\thicksim$	<code>\thicksim</code>
$\ddot{}$	<code>\ddot{}</code>	$\parallel$	<code>\parallel</code>	$\topfork$	<code>\topfork</code>
$\disin$	<code>\disin</code>	$\parsim$	<code>\parsim</code>	$\upfishtail$	<code>\upfishtail</code>
$\Doteq$	<code>\Doteq</code>	$\perp$	<code>\perp</code>	$\upin$	<code>\upin</code>
$\doteq$	<code>\doteq</code>	$\pitchfork$	<code>\pitchfork</code>	$\varisinobar$	<code>\varisinobar</code>
$\dotequiv$	<code>\dotequiv</code>	$\prec$	<code>\prec</code>	$\varisins$	<code>\varisins</code>
$\dot{\sim}$	<code>\dot{\sim}</code>	$\Prec$	<code>\Prec</code>	$\varniobar$	<code>\varniobar</code>
$\dot{\sim}\dot{\sim}$	<code>\dot{\sim}\dot{\sim}</code>	$\precapprox$	<code>\precapprox</code>	$\varnis$	<code>\varnis</code>
$\downfishtail$	<code>\downfishtail</code>	$\preccurlyeq$	<code>\preccurlyeq</code>	$\varpropto$	<code>\varpropto</code>
$\dualmap$	<code>\dualmap</code>	$\preceq$	<code>\preceq</code>	$\varVdash$	<code>\varVdash</code>
$\#$	<code>\eparsl</code>	$\preceqq$	<code>\preceqq</code>	$\vBar$	<code>\vBar</code>
$\#$	<code>\eqcirc</code>	$\precnapprox$	<code>\precnapprox</code>	$\Vbar$	<code>\Vbar</code>
$\equiv$	<code>\eqcolon</code>	$\precneq$	<code>\precneq</code>	$\vBarv$	<code>\vBarv</code>
$\stackrel{\text{def}}{=}$	<code>\eqdef</code>	$\precneqq$	<code>\precneqq</code>	$\Vdash$	<code>\Vdash</code>
$\equiv$	<code>\eqdot</code>	$\precnsim$	<code>\precnsim</code>	$\vdash$	<code>\vdash</code>

(continued on next page)

(continued from previous page)

$\approx$	<code>\eqeq</code>	$\lesssim$	<code>\precsim</code>	$\vDash$	<code>\vDash</code>
$\approx$	<code>\eqeqeq</code>	$\propto$	<code>\propto</code>	$\Vdash$	<code>\VDash</code>
$\approx$	<code>\eqqsim</code>	$\rightsquigarrow$	<code>\prurel</code>	$\equiv$	<code>\vDash</code>
$\approx$	<code>\eqsim</code>	$\lrcorner$	<code>\pullback</code>	$\vdots$	<code>\vdots</code>
$\#$	<code>\equalparallel</code>	$\sqsupset$	<code>\pushout</code>	$\leq$	<code>\veeq</code>
$\equiv$	<code>\equiv</code>	$\stackrel{?}{=}$	<code>\questeq</code>	$\wedge$	<code>\veeonwedge</code>
$\equiv$	<code>\Equiv</code>	$\dagger$	<code>\revnmid</code>	$\mid$	<code>\vertoverlay</code>
$\equiv$	<code>\equivDD</code>	$\bowtie$	<code>\rfbowtie</code>	$\longdash$	<code>\vlongdash</code>
$\#$	<code>\equivVert</code>	$\rtimes$	<code>\rftimes</code>	$\Vdash$	<code>\Vdash</code>
$\#$	<code>\equivVvert</code>	$\rightharpoonup$	<code>\righdbltail</code>	$\triangleq$	<code>\wedqeq</code>

stix defines `\owns` as a synonym for `\ni` and `\doteqdot` as a synonym for `\Doteq`.

TABLE 104: stix Negated Binary Relations

$\nmid$	<code>\forks</code>	$\nparallel$	<code>\nhpar</code>	$\nsime$	<code>\nsime</code>
$\approx$	<code>\napprox</code>	$\nmid$	<code>\nmid</code>	$\nsucc$	<code>\nsucc</code>
$\approx$	<code>\napproxeqq</code>	$\nparallel$	<code>\nni</code>	$\nsucccurlyeq$	<code>\nsucccurlyeq</code>
$\nasymp$	<code>\nasympt</code>	$\notin$	<code>\notin</code>	$\nsucceq$	<code>\nsucceq</code>
$\nbumpeq$	<code>\nbumpeq</code>	$\nparallel$	<code>\nparallel</code>	$\nvarisinobar$	<code>\nvarisinobar</code>
$\nbumpeq$	<code>\nbumpeq</code>	$\nprec$	<code>\nprec</code>	$\nvarniobar$	<code>\nvarniobar</code>
$\ncong$	<code>\ncong</code>	$\nprec$	<code>\nprec</code>	$\nvDash$	<code>\nvDash</code>
$\ncongdot$	<code>\ncongdot</code>	$\nprec$	<code>\nprec</code>	$\nvDash$	<code>\nvDash</code>
$\neq$	<code>\neq</code>	$\nshortmid$	<code>\nshortmid</code>	$\nVDash$	<code>\nVDash</code>
$\neqsim$	<code>\neqsim</code>	$\nshortparallel$	<code>\nshortparallel</code>	$\nVdash$	<code>\nVdash</code>
$\nequiv$	<code>\nequiv</code>	$\nsim$	<code>\nsim</code>		

stix defines `\neq` as a synonym for `\neq`, `\nsimeq` as a synonym for `\nsime`, and `\nforksnot` as a synonym for `\forks`.

TABLE 105: mathtools Binary Relations

$\approx$	<code>\Colonapprox</code>	$\coloneq$	<code>\coloneq</code>	$\Eqcolon$	<code>\Eqcolon</code>
$\approx$	<code>\colonapprox</code>	$\colonsim$	<code>\colonsim</code>	$\eqqcolon$	<code>\eqqcolon</code>
$\approx$	<code>\coloneqq</code>	$\Colonsim$	<code>\Colonsim</code>	$\Eqqcolon$	<code>\Eqqcolon</code>
$\approx$	<code>\Coloneqq</code>	$\dblcolon$	<code>\dblcolon</code>		
$\approx$	<code>\Coloneq</code>	$\eqcolon$	<code>\eqcolon</code>		

Similar symbols can be defined using mathtools's `\vcentcolon`, which produces a colon centered on the font's math axis:

$$\begin{array}{ccc} \approx & \text{vs.} & \approx \\ \text{"=:="} & & \text{"=\vcentcolon="} \end{array}$$

TABLE 106: turnstile Binary Relations

$\frac{def}{abc}$	<code>\dddtstyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\nntstyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\stdtstyle{abc}{def}</code>
$\frac{def}{abc}$	<code>\ddststyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\nnttstyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\stststyle{abc}{def}</code>
$\frac{def}{abc}$	<code>\ddtstyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\nsdtstyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\sttstyle{abc}{def}</code>
$\frac{def}{abc}$	<code>\ddttstyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\nsststyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\stttstyle{abc}{def}</code>
$\frac{def}{abc}$	<code>\dndtstyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\nststyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\tddtstyle{abc}{def}</code>
$\frac{def}{abc}$	<code>\dnststyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\nsttstyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\tdststyle{abc}{def}</code>
$\frac{def}{abc}$	<code>\dntstyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\ntdtstyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\tdtstyle{abc}{def}</code>
$\frac{def}{abc}$	<code>\dnttstyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\ntststyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\tdttstyle{abc}{def}</code>
$\frac{def}{abc}$	<code>\dsdtstyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\nttstyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\tndtstyle{abc}{def}</code>
$\frac{def}{abc}$	<code>\dsststyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\ntttstyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\tnststyle{abc}{def}</code>
$\frac{def}{abc}$	<code>\dststyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\sddtstyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\tntstyle{abc}{def}</code>
$\frac{def}{abc}$	<code>\dsttstyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\sdststyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\tnttstyle{abc}{def}</code>
$\frac{def}{abc}$	<code>\dtdtstyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\sdtstyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\tsdtstyle{abc}{def}</code>
$\frac{def}{abc}$	<code>\dtststyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\sdtstyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\tsststyle{abc}{def}</code>
$\frac{def}{abc}$	<code>\dttstyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\sndtstyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\tststyle{abc}{def}</code>
$\frac{def}{abc}$	<code>\dtttstyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\snststyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\tsttstyle{abc}{def}</code>
$\frac{def}{abc}$	<code>\nddtstyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\sntstyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\ttdtstyle{abc}{def}</code>
$\frac{def}{abc}$	<code>\ndststyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\snttstyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\ttststyle{abc}{def}</code>
$\frac{def}{abc}$	<code>\ndtstyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\ssdtstyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\tttstyle{abc}{def}</code>
$\frac{def}{abc}$	<code>\ndttstyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\ssststyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\ttttstyle{abc}{def}</code>
$\frac{def}{abc}$	<code>\nndtstyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\sststyle{abc}{def}</code>		
$\frac{def}{abc}$	<code>\nnststyle{abc}{def}</code>	$\frac{def}{abc}$	<code>\ssttstyle{abc}{def}</code>		

Each of the above takes an optional argument that controls the size of the upper and lower expressions. See the turnstile documentation for more information.

TABLE 107: trsym Binary Relations

$\bullet \circ$	<code>\InversTransformHoriz</code>	$\circ \bullet$	<code>\TransformHoriz</code>
$\bullet \downarrow$	<code>\InversTransformVert</code>	$\downarrow \bullet$	<code>\TransformVert</code>

TABLE 108: trfsigns Binary Relations

$\swarrow$	<code>\dfourier</code>	$\searrow$	<code>\Dfourier</code>
$\longrightarrow$	<code>\fourier</code>	$\longleftarrow$	<code>\Fourier</code>
$\longrightarrow \bullet$	<code>\laplace</code>	$\bullet \longrightarrow$	<code>\Laplace</code>
$\swarrow \bullet$	<code>\ztransf</code>	$\bullet \searrow$	<code>\Ztransf</code>

TABLE 109: cmll Binary Relations

$\subset$	<code>\coh</code>	$\supset$	<code>\scoh</code>
$\supsetneq$	<code>\incoh</code>	$\subsetneq$	<code>\sincoh</code>
$\perp$	<code>\Perp</code>	$\perp$	<code>\simperp</code>
$\circ \circ$	<code>\multimapboth</code>		

TABLE 110: colonequals Binary Relations

$\approx$	<code>\approxcolon</code>	$::-$	<code>\coloncolonminus</code>	$=::$	<code>\equalscoloncolon</code>
$\approx::$	<code>\approxcoloncolon</code>	$::\sim$	<code>\coloncolonsim</code>	$-:$	<code>\minuscolon</code>
$:\approx$	<code>\colonapprox</code>	$:=$	<code>\colonequals</code>	$-::$	<code>\minuscoloncolon</code>
$::$	<code>\coloncolon</code>	$:-$	<code>\colonminus</code>	$:$	<code>\ratio</code>
$::\approx$	<code>\coloncolonapprox</code>	$:\sim$	<code>\colonsim</code>	$\sim:$	<code>\simcolon</code>
$::=$	<code>\coloncolonequals</code>	$=:$	<code>\equalscolon</code>	$\sim::$	<code>\simcoloncolon</code>

TABLE 111: fourier Binary Relations

$\#$	<code>\nparallelslant</code>	$//$	<code>\parallelslant</code>
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TABLE 112: Subset and Superset Relations

$\sqsubset$	<code>\sqsubset*</code>	$\sqsupseteq$	<code>\sqsupseteq</code>	$\supset$	<code>\supset</code>
$\sqsubseteq$	<code>\sqsubseteq</code>	$\subset$	<code>\subset</code>	$\supseteq$	<code>\supseteq</code>
$\sqsupset$	<code>\sqsupset*</code>	$\subseteq$	<code>\subseteq</code>		

* Not predefined by the $\text{\LaTeX}2_{\varepsilon}$ core. Use the `latexsym` package to expose this symbol.

$\nsubseteq$	<code>\nsubseteq</code>	$\subseteq$	<code>\subseteq</code>	$\supsetneq$	<code>\supsetneq</code>
$\nsupseteq$	<code>\nsupseteq</code>	$\subsetneq$	<code>\subsetneq</code>	$\varsubsetneq$	<code>\varsubsetneq</code>
$\nsupseteqq$	<code>\nsupseteqq</code>	$\subsetneqq$	<code>\subsetneqq</code>	$\varsubsetneqq$	<code>\varsubsetneqq</code>
$\sqsubset$	<code>\sqsubset</code>	$\Supset$	<code>\Supset</code>	$\varsupsetneq$	<code>\varsupsetneq</code>
$\sqsupset$	<code>\sqsupset</code>	$\supseteqq$	<code>\supseteqq</code>	$\varsupsetneqq$	<code>\varsupsetneqq</code>
$\Subset$	<code>\Subset</code>	$\supsetneq$	<code>\supsetneq</code>		

$\oplus$	<code>\subsetplus</code>	$\oplus$	<code>\supsetplus</code>
$\underline{\oplus}$	<code>\subsetpluseq</code>	$\underline{\oplus}$	<code>\supsetpluseq</code>

$\sqsubset$ `\sqsubset` $\sqsupset$ `\sqsupset`

$\nsubseteq$	<code>\nsubseteq</code>	$\nsupseteq$	<code>\nsupseteq</code>	$\Supset$	<code>\Supset</code>
$\nsubseteqq$	<code>\nsubseteqq</code>	$\nsubset$	<code>\nsubset</code>	$\supset$	<code>\supset</code>
$\nsupset$	<code>\nsupset</code>	$\nsubseteqq$	<code>\nsubseteqq</code>	$\supsetneq$	<code>\supsetneq</code>

$\nsqsubset$	$\nsupset$	$\sqsupseteq$	$\supseteq$
$\nsqSubset$	$\nsupset$	$\sqsupseteqq$	$\supseteqq$
$\nsqsubseteq$	$\nsupseteq$	$\sqsupsetneq$	$\supsetneq$
$\nsqsubseteqq$	$\nsupseteqq$	$\sqsupsetneqq$	$\supsetneqq$
$\nsqsupset$	$\sqsubset$	$\subset$	$\varsubsetneq$
$\nsqSupset$	$\sqSubset$	$\Subset$	$\varsubsetneqq$
$\nsqsupseteq$	$\sqsubseteq$	$\subseteq$	$\varsupsetneq$
$\nsqsupseteqq$	$\sqsubseteqq$	$\subseteqq$	$\varsupsetneqq$
$\nsubset$	$\sqsubsetneq$	$\subsetneq$	$\varsubsetneq$
$\nSubset$	$\sqsubsetneqq$	$\subsetneqq$	$\varsubsetneqq$
$\nsubseteq$	$\sqsupseteq$	$\supseteq$	$\varsupsetneq$
$\nsubseteqq$	$\sqsupseteq$	$\Supseteq$	$\varsupsetneqq$

TABLE 118: MnSymbol Subset and Superset Relations

$\nsubseteq$	<code>\nSqsubset</code>	$\not\subseteq$	<code>\nsubseteqq</code>	$\sqsubsetneq$	<code>\sqsubsetneq</code>	$\subseteq$	<code>\subseteqq</code>
$\sqsubset$	<code>\nsqsubset</code>	$\not\sqsubseteq$	<code>\nsubseteqqq</code>	$\sqsubsetneqq$	<code>\sqsubsetneqq</code>	$\subseteq$	<code>\subseteqqq</code>
$\supsetneq$	<code>\nsqsupseteq</code>	$\not\supset$	<code>\nSupset</code>	$\sqsupset$	<code>\Sqsupset</code>	$\supsetneq$	<code>\supsetneq</code>
$\supseteq$	<code>\nsqsupseteqq</code>	$\not\supseteq$	<code>\nsupset</code>	$\sqsupseteq$	<code>\sqsupseteq</code>	$\supsetneqq$	<code>\supsetneqq</code>
$\supset$	<code>\nSqsupset</code>	$\not\supseteq$	<code>\nsupseteq</code>	$\sqsupseteq$	<code>\sqsupseteq</code>	$\supset$	<code>\Supset</code>
$\supseteq$	<code>\nsqsupset</code>	$\not\supseteqq$	<code>\nsupseteqq</code>	$\sqsupseteqq$	<code>\sqsupseteqq</code>	$\supseteq$	<code>\supseteq</code>
$\supseteq$	<code>\nsqsupseteq</code>	$\sqsubseteq$	<code>\Sqsubset</code>	$\sqsupsetneq$	<code>\sqsupsetneq</code>	$\supseteq$	<code>\supseteqq</code>
$\supseteq$	<code>\nsqsupseteqq</code>	$\sqsubset$	<code>\sqsubset</code>	$\sqsupsetneqq$	<code>\sqsupsetneqq</code>	$\supseteq$	<code>\supseteqqq</code>
$\subseteq$	<code>\nSubset</code>	$\sqsubseteq$	<code>\sqsubseteq</code>	$\Subset$	<code>\Subset</code>	$\supsetneq$	<code>\supsetneq</code>
$\subseteq$	<code>\nsubset</code>	$\sqsubseteq$	<code>\sqsubseteqq</code>	$\subset$	<code>\subset</code>	$\supsetneqq$	<code>\supsetneqq</code>

MnSymbol additionally defines `\varsubsetneq` as a synonym for `\subsetneq`, `\varsubsetneqq` as a synonym for `\subsetneqq`, `\varsupsetneq` as a synonym for `\supsetneq`, and `\varsupsetneqq` as a synonym for `\supsetneqq`.

TABLE 119: fdsymbol Subset and Superset Relations

$\nsubseteq$	<code>\nsqsubset</code>	$\not\subseteq$	<code>\nsubseteqq</code>	$\sqsubsetneq$	<code>\sqsubsetneq</code>	$\subseteq$	<code>\subseteqq</code>
$\nsubseteq$	<code>\nSqssubset</code>	$\not\sqsubseteq$	<code>\nsubseteqqq</code>	$\sqsubsetneqq$	<code>\sqsubsetneqq</code>	$\subseteq$	<code>\subseteqqq</code>
$\supsetneq$	<code>\nsqsupseteq</code>	$\not\supset$	<code>\nsupset</code>	$\sqsupset$	<code>\Sqsupset</code>	$\supsetneq$	<code>\supsetneq</code>
$\supseteq$	<code>\nsqsupseteqq</code>	$\not\supseteq$	<code>\nSupset</code>	$\sqsupseteq$	<code>\Sqsupseteq</code>	$\supsetneqq$	<code>\supsetneqq</code>
$\supseteq$	<code>\nsqsupset</code>	$\not\supseteq$	<code>\nsupseteq</code>	$\sqsupseteq$	<code>\sqsupseteq</code>	$\supseteq$	<code>\supseteq</code>
$\supseteq$	<code>\nSqsupset</code>	$\not\supseteqq$	<code>\nsupseteqq</code>	$\sqsupseteqq$	<code>\sqsupseteqq</code>	$\supseteq$	<code>\Supset</code>
$\supseteq$	<code>\nsqsupseteq</code>	$\sqsubset$	<code>\sqsubset</code>	$\sqsupsetneq$	<code>\sqsupsetneq</code>	$\supseteq$	<code>\supseteqq</code>
$\supseteq$	<code>\nsqsupseteqq</code>	$\sqsubseteq$	<code>\Sqsubset</code>	$\sqsupsetneqq$	<code>\sqsupsetneqq</code>	$\supseteq$	<code>\supseteqqq</code>
$\subseteq$	<code>\nsubset</code>	$\sqsubseteq$	<code>\sqsubseteq</code>	$\subset$	<code>\subset</code>	$\supsetneq$	<code>\supsetneq</code>
$\subseteq$	<code>\nSubset</code>	$\sqsubseteq$	<code>\sqsubseteqq</code>	$\Subset$	<code>\Subset</code>	$\supsetneqq$	<code>\supsetneqq</code>

fdsymbol additionally defines `\varsubsetneqq` as a synonym for `\subsetneqq`, `\varsubsetneq` as a synonym for `\subsetneq`, `\varsupsetneqq` as a synonym for `\supsetneqq`, and `\varsupsetneq` as a synonym for `\supsetneq`.

TABLE 120: boisik Subset and Superset Relations

$\nsubseteq$	<code>\nsubset</code>	$\sqsubseteq$	<code>\sqSubset</code>	$\subseteq$	<code>\subsetplus</code>	$\supseteq$	<code>\supsetplusseq</code>
$\nsubseteq$	<code>\nsubseteqq</code>	$\supseteq$	<code>\sqSupset</code>	$\subseteq$	<code>\subsetpluseq</code>	$\nsubseteq$	<code>\varsubsetneq</code>
$\nsubseteq$	<code>\nsubseteqqq</code>	$\supseteq$	<code>\sqsupset</code>	$\supseteq$	<code>\Supset</code>	$\nsubseteq$	<code>\varsubsetneqq</code>
$\supseteq$	<code>\nsupset</code>	$\sqsubseteq$	<code>\Subset</code>	$\supseteq$	<code>\supseteqq</code>	$\supseteq$	<code>\varsupsetneq</code>
$\supseteq$	<code>\nsupseteq</code>	$\sqsubseteq$	<code>\subseteqqq</code>	$\supseteq$	<code>\supsetneq</code>	$\supseteq$	<code>\varsupsetneqq</code>
$\supseteq$	<code>\nsupseteqq</code>	$\nsubseteq$	<code>\subseteqneq</code>	$\supseteq$	<code>\supsetneqq</code>	$\supseteq$	<code>\varsupsetneqq</code>
$\subseteq$	<code>\sqsubset</code>	$\nsubseteq$	<code>\subseteqneqq</code>	$\supseteq$	<code>\supsetplus</code>		

TABLE 121: stix Subset and Superset Relations

$\backslash$ bsolhsb	$\sqsupseteq$	$\backslash$ sqsupseteq	$\supsetsubset$
$\backslash$ csb	$\sqsupsetneq$	$\supsetlarr$	
$\backslash$ csbe	$\subedot$	$\supmult$	
$\backslash$ csup	$\submult$	$\Supset$	
$\backslash$ csupe	$\subrarr$	$\supsetset$	
$\leftarrowtail$	$\Subset$	$\supsetsetapprox$	
$\nsubseteq$	$\subset$	$\supsetsetcirc^*$	
$\nsubseteqq$	$\subsetapprox$	$\supsetsetdot$	
$\nsupset$	$\subsetcirc^*$	$\supsetseteq$	
$\nsupseteq$	$\subsetdot$	$\supsetseteqq$	
$\nsubset$	$\subseteq$	$\supsetsetneq$	
$\nsubseteqq$	$\subseteqq$	$\supsetsetneqq$	
$\nsubsetneq$	$\subsetneq$	$\supsetsetplus$	
$\supset$	$\subsetneqq$	$\supsim$	
$\supseteq$	$\subsetplus$	$\supsub$	
$\supseteqq$	$\subsetssim$	$\supsup$	
$\rightarrowtail$	$\subsetssub$	$\varsubsetneq$	
$\sqsubset$	$\subsetssup$	$\varsubsetneqq$	
$\sqsubseteq$	$\supdsub$	$\varsupsetneq$	
$\sqsubsetneq$	$\supedot$	$\varsupsetneqq$	
$\sqsupset$	$\supsol$		

* Defined as an ordinary character, not as a binary relation.

TABLE 122: Inequalities

$$\geq \backslash \mathrm{geq} \gg \backslash \mathrm{gg} \leq \backslash \mathrm{leq} \ll \backslash \mathrm{ll} \oint \backslash \mathrm{neq}$$
TABLE 123: $\mathcal{AMS}$ Inequalities

$\gtrsim$	<code>\eqslantgtr</code>	$\gtrdot$	<code>\gtrdot</code>	$\lesseqgtr$	<code>\lesseqgtr</code>	$\ngeq$	<code>\ngeq</code>
$\lessgtr$	<code>\eqslantless</code>	$\gtreqless$	<code>\gtreqless</code>	$\lesseqqgtr$	<code>\lesseqqgtr</code>	$\ngeqq$	<code>\ngeqq</code>
$\geq$	<code>\geqq</code>	$\gtreqqless$	<code>\gtreqqless</code>	$\lessgtr$	<code>\lessgtr</code>	$\ngeqslant$	<code>\ngeqslant</code>
$\gelslant$	<code>\gelslant</code>	$\gtrless$	<code>\gtrless</code>	$\lessssim$	<code>\lessssim</code>	$\ngtr$	<code>\ngtr</code>
$\ggg$	<code>\ggg</code>	$\gtrsim$	<code>\gtrsim</code>	$\lll$	<code>\lll</code>	$\nleq$	<code>\nleq</code>
$\gapprox$	<code>\gapprox</code>	$\gvertneqq$	<code>\gvertneqq</code>	$\lnapprox$	<code>\lnapprox</code>	$\nleqq$	<code>\nleqq</code>
$\gneq$	<code>\gneq</code>	$\leqq$	<code>\leqq</code>	$\lneq$	<code>\lneq</code>	$\nleqslant$	<code>\nleqslant</code>
$\gneqq$	<code>\gneqq</code>	$\leqslant$	<code>\leqslant</code>	$\lneqq$	<code>\lneqq</code>	$\nless$	<code>\nless</code>
$\gnsim$	<code>\gnsim</code>	$\lessapprox$	<code>\lessapprox</code>	$\lnsim$	<code>\lnsim</code>		
$\gtrapprox$	<code>\gtrapprox</code>	$\lessdot$	<code>\lessdot</code>	$\lvertneqq$	<code>\lvertneqq</code>		

TABLE 124: wasysym Inequalities

 $\gtrsim$ \apprge $\lesssim$ \apprle

TABLE 125: txfonts/pxfonts Inequalities

 $\nngg$ \ngg $\ngtrsim$ \ngtrsim $\nlessssim$ \nlessssim
 $\ngtrapprox$ \ngtrapprox $\nlessapprox$ \nlessapprox $\nll$ \nll
 $\ngtrless$ \ngtrless $\nlessgtr$ \nlessgtr

TABLE 126: mathabx Inequalities

$\geqslant$	\eqslantgtr	$\gtrless$	\gtreqless	$\lessssim$	\lesssim	$\ngtr$	\ngtr
$\leqslant$	\eqslantless	$\gtrless$	\gtreqqlless	$\ll$	\ll	$\ngtrapprox$	\ngtrapprox
$\geq$	\geq	$\gtrless$	\gtrless	$\lll$	\lll	$\ngtrsim$	\ngtrsim
$\geq$	\geqq	$\gtrsim$	\gtrsim	$\lnapprox$	\lnapprox	$\nleq$	\nleq
$\gg$	\gg	$\gvertneqq$	\gvertneqq	$\lneq$	\lneq	$\nleqq$	\nleqq
$\ggg$	\ggg	$\leq$	\leq	$\lneqq$	\lneqq	$\nless$	\nless
$\gapprox$	\gapprox	$\leqq$	\leqq	$\lnsim$	\lnsim	$\nlessapprox$	\nlessapprox
$\gneq$	\gneq	$\lessapprox$	\lessapprox	$\lvertneqq$	\lvertneqq	$\nlessssim$	\nlessssim
$\gneqq$	\gneqq	$\lessdot$	\lessdot	$\neqslantgtr$	\neqslantgtr	$\nvareq$	\nvareq
$\gnsim$	\gnsim	$\lesseqgtr$	\lesseqgtr	$\neqslantless$	\neqslantless	$\nvarleq$	\nvarleq
$\gtrapprox$	\gtrapprox	$\lesseqqgtr$	\lesseqqgtr	$\ngeq$	\ngeq	$\vargeq$	\vargeq
$\gtrdot$	\gtrdot	$\lessgtr$	\lessgtr	$\ngeqq$	\ngeqq	$\varleq$	\varleq

mathabx defines \leqslant and \le as synonyms for \leq, \geqslant and \ge as synonyms for \geq, \nleqslant as a synonym for \nleq, and \ngeqslant as a synonym for \ngeq.

TABLE 127: MnSymbol Inequalities

$\gtrsim$	<code>\eqslantgtr</code>	$\gtrapprox$	<code>\gtreqqless</code>	$\lesssim$	<code>\lesssim</code>	$\ngtrless$	<code>\ngtreqlless</code>
$\lessgtr$	<code>\eqslantless</code>	$\gtrless$	<code>\gtrless</code>	$\ll$	<code>\ll</code>	$\ngtrlessless$	<code>\ngtreqllessslant</code>
$\geq$	<code>\geq</code>	$\gtrneqqless$	<code>\gtrneqqless</code>	$\lll$	<code>\lll</code>	$\ngtreqlless$	<code>\ngtreqlless</code>
$\geqslant$	<code>\geqclosed</code>	$\gtrsim$	<code>\gtrsim</code>	$\lnapprox$	<code>\lnapprox</code>	$\ngtrless$	<code>\ngtrless</code>
$\geqdot$	<code>\geqdot</code>	$\leq$	<code>\leq</code>	$\lneqq$	<code>\lneqq</code>	$\nleq$	<code>\nleq</code>
$\geqq$	<code>\geqq</code>	$\leqclosed$	<code>\leqclosed</code>	$\lnsim$	<code>\lnsim</code>	$\nleqclosed$	<code>\nleqclosed</code>
$\geqslant$	<code>\geqslant</code>	$\leqdot$	<code>\leqdot</code>	$\neqslantgtr$	<code>\neqslantgtr</code>	$\nleqdot$	<code>\nleqdot</code>
$\geqslantdot$	<code>\geqslantdot</code>	$\leqq$	<code>\leqq</code>	$\neqslantless$	<code>\neqslantless</code>	$\nleqq$	<code>\nleqq</code>
$\gg$	<code>\gg</code>	$\leqslant$	<code>\leqslant</code>	$\ngeq$	<code>\ngeq</code>	$\nleqslant$	<code>\nleqslant</code>
$\ggg$	<code>\ggg</code>	$\leqslantdot$	<code>\leqslantdot</code>	$\ngeqclosed$	<code>\ngeqclosed</code>	$\nleqslantdot$	<code>\nleqslantdot</code>
$\gapprox$	<code>\gapprox</code>	$<$	<code>\less</code>	$\ngeqdot$	<code>\ngeqdot</code>	$\nless$	<code>\nless</code>
$\gneqq$	<code>\gneqq</code>	$\lessapprox$	<code>\lessapprox</code>	$\ngeqq$	<code>\ngeqq</code>	$\nlessclosed$	<code>\nlessclosed</code>
$\gnsim$	<code>\gnsim</code>	$\lessclosed$	<code>\lessclosed</code>	$\ngeqslant$	<code>\ngeqslant</code>	$\nlessdot$	<code>\nlessdot</code>
$>$	<code>\gtr</code>	$\lessdot$	<code>\lessdot</code>	$\ngeqslantdot$	<code>\ngeqslantdot</code>	$\nlesseqgtr$	<code>\nlesseqgtr</code>
$\gtrapprox$	<code>\gtrapprox</code>	$\lesseqgtr$	<code>\lesseqgtr</code>	$\ngg$	<code>\ngg</code>	$\nlesseqgtrslant$	<code>\nlesseqgtrslant</code>
$\gtrclosed$	<code>\gtrclosed</code>	$\lesseqgtrslant$	<code>\lesseqgtrslant</code>	$\nggg$	<code>\nggg</code>	$\nlesseqqgtr$	<code>\nlesseqqgtr</code>
$\gtrdot$	<code>\gtrdot</code>	$\lesseqqgtr$	<code>\lesseqqgtr</code>	$\ngtr$	<code>\ngtr</code>	$\nlessgtr$	<code>\nlessgtr</code>
$\gtreqless$	<code>\gtreqless</code>	$\lessgtr$	<code>\lessgtr</code>	$\ngtrclosed$	<code>\ngtrclosed</code>	$\nll$	<code>\nll</code>
$\gtreqlessslant$	<code>\gtreqlessslant</code>	$\lessneqqgtr$	<code>\lessneqqgtr</code>	$\ngtrdot$	<code>\ngtrdot</code>	$\nlll$	<code>\nlll</code>

MnSymbol additionally defines synonyms for some of the preceding symbols:

$\gggtr$	<code>\gggtr</code>	(same as <code>\ggg</code>)
$\gvertneqq$	<code>\gvertneqq</code>	(same as <code>\gneqq</code>)
$\lhd$	<code>\lhd</code>	(same as <code>\lessclosed</code>)
$\lllless$	<code>\lllless</code>	(same as <code>\lll</code>)
$\lvertneqq$	<code>\lvertneqq</code>	(same as <code>\lneqq</code>)
$\ntrianglelefteq$	<code>\ntrianglelefteq</code>	(same as <code>\nleqclosed</code>)
$\ntriangleleft$	<code>\ntriangleleft</code>	(same as <code>\nlessclosed</code>)
$\ntrianglerighteq$	<code>\ntrianglerighteq</code>	(same as <code>\ngeqclosed</code>)
$\ntriangleright$	<code>\ntriangleright</code>	(same as <code>\ngtrclosed</code>)
$\rhd$	<code>\rhd</code>	(same as <code>\gtrclosed</code>)
$\trianglelefteq$	<code>\trianglelefteq</code>	(same as <code>\leqclosed</code>)
$\trianglerighteq$	<code>\trianglerighteq</code>	(same as <code>\geqclosed</code>)
$\unlhd$	<code>\unlhd</code>	(same as <code>\leqclosed</code>)
$\unrhd$	<code>\unrhd</code>	(same as <code>\geqclosed</code>)
$\vartriangleleft$	<code>\vartriangleleft</code>	(same as <code>\lessclosed</code>)
$\vartriangleright$	<code>\vartriangleright</code>	(same as <code>\gtrclosed</code>)

TABLE 128: fdsymbol Inequalities

$\geq$	<code>\eqslantgtr</code>	$\leq$	<code>\leqslantdot</code>	$\nless$	<code>\ngtrapprox</code>
$\leq$	<code>\eqslantless</code>	$\geq$	<code>\leqslcc</code>	$\ngtrcc$	<code>\ngtrcc</code>
$\geq$	<code>\geq</code>	$<$	<code>\less</code>	$\ngtrclosed$	<code>\ngtrclosed</code>
$\geq$	<code>\geqclosed</code>	$\approx$	<code>\lessapprox</code>	$\ngtrdot$	<code>\ngtrdot</code>
$\geq$	<code>\geqdot</code>	$\triangleleft$	<code>\lesscc</code>	$\ngtreqlless$	<code>\ngtreqlless</code>
$\geq$	<code>\geqq</code>	$\triangleleft$	<code>\lessclosed</code>	$\ngtreqqless$	<code>\ngtreqqless</code>
$\geq$	<code>\geqslant</code>	$\triangleleft$	<code>\lessdot</code>	$\ngtreqslantless$	<code>\ngtreqslantless</code>
$\geq$	<code>\geqslantdot</code>	$\lesseqgtr$	<code>\lesseqgtr</code>	$\ngtrless$	<code>\ngtrless</code>
$\geq$	<code>\geqslcc</code>	$\lesseqqgtr$	<code>\lesseqqgtr</code>	$\ngtrsim$	<code>\ngtrsim</code>
$\gg$	<code>\gg</code>	$\lesseqslantgtr$	<code>\lesseqslantgtr</code>	$\nleq$	<code>\nleq</code>
$\ggg$	<code>\ggg</code>	$\lessgtr$	<code>\lessgtr</code>	$\nleqclosed$	<code>\nleqclosed</code>
$\gapprox$	<code>\gnapprox</code>	$\lessssim$	<code>\lesssim</code>	$\nleqdot$	<code>\nleqdot</code>
$\gneq$	<code>\gneq</code>	$\ll$	<code>\ll</code>	$\nleqq$	<code>\nleqq</code>
$\gneqq$	<code>\gneqq</code>	$\lll$	<code>\lll</code>	$\nleqslant$	<code>\nleqslant</code>
$\gnsim$	<code>\gnsim</code>	$\lnapprox$	<code>\lnapprox</code>	$\nleqslantdot$	<code>\nleqslantdot</code>
$>$	<code>\gtr</code>	$\lneq$	<code>\lneq</code>	$\nleqslcc$	<code>\nleqslcc</code>
$\gtrapprox$	<code>\gtrapprox</code>	$\lneqq$	<code>\lneqq</code>	$\nless$	<code>\nless</code>
$\gtrcc$	<code>\gtrcc</code>	$\lnsim$	<code>\lnsim</code>	$\nlessapprox$	<code>\nlessapprox</code>
$\gtrclosed$	<code>\gtrclosed</code>	$\neqslantgtr$	<code>\neqslantgtr</code>	$\nlesscc$	<code>\nlesscc</code>
$\gtrdot$	<code>\gtrdot</code>	$\neqslantless$	<code>\neqslantless</code>	$\nlessclosed$	<code>\nlessclosed</code>
$\gtreqlless$	<code>\gtreqlless</code>	$\ngeq$	<code>\ngeq</code>	$\nlessdot$	<code>\nlessdot</code>
$\gtreqqless$	<code>\gtreqqless</code>	$\ngeqclosed$	<code>\ngeqclosed</code>	$\nlesseqgtr$	<code>\nlesseqgtr</code>
$\gtreqslantless$	<code>\gtreqslantless</code>	$\ngeqdot$	<code>\ngeqdot</code>	$\nlesseqqgtr$	<code>\nlesseqqgtr</code>
$\gtrless$	<code>\gtrless</code>	$\ngeqq$	<code>\ngeqq</code>	$\nlesseqslantgtr$	<code>\nlesseqslantgtr</code>
$\gtrsim$	<code>\gtrsim</code>	$\ngeqslant$	<code>\ngeqslant</code>	$\nlessgtr$	<code>\nlessgtr</code>
$\leq$	<code>\leq</code>	$\ngeqslantdot$	<code>\ngeqslantdot</code>	$\nlesssim$	<code>\nlesssim</code>
$\leqclosed$	<code>\leqclosed</code>	$\ngeqslcc$	<code>\ngeqslcc</code>	$\nll$	<code>\nll</code>
$\leqdot$	<code>\leqdot</code>	$\ngg$	<code>\ngg</code>	$\nlll$	<code>\nlll</code>
$\leqq$	<code>\leqq</code>	$\nggg$	<code>\nggg</code>		
$\leqslant$	<code>\leqslant</code>	$\ngtr$	<code>\ngtr</code>		

`fdsymbol` defines synonyms for some of the preceding symbols:

$\geq$	<code>\ge</code>	$\leq$	<code>\lesdot</code>	$\ngtcc$	<code>\ngtcc</code>
$\geq$	<code>\gescc</code>	$\lesseqgtr$	<code>\lesseqgtrslant</code>	$\ngtreqlless$	<code>\ngtreqlless</code>
$\geq$	<code>\gesdot</code>	$\lesseqqgtr$	<code>\lesseqqgtrslant</code>	$\nlesscc$	<code>\nlesscc</code>
$\geq$	<code>\gesl</code>	$\lhd$	<code>\lhd</code>	$\nlessdot$	<code>\nlessdot</code>
$\ggg$	<code>\gggtr</code>	$\lllless$	<code>\lllless</code>	$\nlessgtr$	<code>\nlessgtr</code>
$\gtrcc$	<code>\gtcc</code>	$\ltcc$	<code>\ltcc</code>	$\nlesseqgtrslant$	<code>\nlesseqgtrslant</code>
$\gtreqlless$	<code>\gtreqlless</code>	$\lvertneqq$	<code>\lvertneqq</code>	$\nltcc$	<code>\nltcc</code>
$\gtrsim$	<code>\gvertneqq</code>	$\ngescc$	<code>\ngescc</code>	$\rhd$	<code>\rhd</code>

(continued on next page)

(continued from previous page)

$\leq$	<code>\le</code>	$\nlessdot$	<code>\ngesdot</code>	$\sqsubseteq$	<code>\unlhd</code>
$\leqslant$	<code>\lescc</code>	$\nlessl$	<code>\ngesl</code>	$\sqsupseteq$	<code>\unrhd</code>

TABLE 129: boisik Inequalities

$\gg$	<code>\eqslantgtr</code>	$\gtrdot$	<code>\gtcir</code>	$\lesseqgtr$	<code>\lesseqgtr</code>	$\ngeq$	<code>\ngeq</code>
$\lessgtr$	<code>\eqslantless</code>	$\gtrapprox$	<code>\gtrapprox</code>	$\lessgtr$	<code>\lessgtr</code>	$\ngeqq$	<code>\ngeqq</code>
$\geq$	<code>\geqq</code>	$\gtreqless$	<code>\gtreqless</code>	$\lesssim$	<code>\lesssim</code>	$\ngeqslant$	<code>\ngeqslant</code>
$\gtrsim$	<code>\geqslant</code>	$\gtreqqless$	<code>\gtreqqless</code>	$\lll$	<code>\lll</code>	$\ngtr$	<code>\ngtr</code>
$\ggg$	<code>\ggg</code>	$\gtrless$	<code>\gtrless</code>	$\lnapprox$	<code>\lnapprox</code>	$\nleq$	<code>\nleq</code>
$\glj$	<code>\glj</code>	$\gtrsim$	<code>\gtrsim</code>	$\lneq$	<code>\lneq</code>	$\nleqq$	<code>\nleqq</code>
$\glnapprox$	<code>\glnapprox</code>	$\gvertneqq$	<code>\gvertneqq</code>	$\lneqq$	<code>\lneqq</code>	$\nleqslant$	<code>\nleqslant</code>
$\gneq$	<code>\gneq</code>	$\leqq$	<code>\leqq</code>	$\lnsim$	<code>\lnsim</code>	$\nless$	<code>\nless</code>
$\gneqq$	<code>\gneqq</code>	$\leqslant$	<code>\leqslant</code>	$\Lt$	<code>\Lt</code>		
$\gnsim$	<code>\gnsim</code>	$\lessapprox$	<code>\lessapprox</code>	$\ltcir$	<code>\ltcir</code>		
$\Gt$	<code>\Gt</code>	$\lesseqgtr$	<code>\lesseqgtr</code>	$\lvertneqq$	<code>\lvertneqq</code>		

TABLE 130: stix Inequalities

$\egsdot$	<code>\egsdot</code>	$\gtquest$	<code>\gtquest</code>	$\lnsim$	<code>\lnsim</code>
$\elsdot$	<code>\elsdot</code>	$\gtrapprox$	<code>\gtrapprox</code>	$\lsime$	<code>\lsime</code>
$\eqgtr$	<code>\eqgtr</code>	$\gtrarr$	<code>\gtrarr</code>	$\lsimg$	<code>\lsimg</code>
$\eqless$	<code>\eqless</code>	$\gtrdot$	<code>\gtrdot</code>	$\Lt$	<code>\Lt</code>
$\eqqgtr$	<code>\eqqgtr</code>	$\gtreqless$	<code>\gtreqless</code>	$\ltcc$	<code>\ltcc</code>
$\eqqless$	<code>\eqqless</code>	$\gtreqqless$	<code>\gtreqqless</code>	$\ltcir$	<code>\ltcir</code>
$\eqqslantgtr$	<code>\eqqslantgtr</code>	$\gtrless$	<code>\gtrless</code>	$\ltlarr$	<code>\ltlarr</code>
$\eqqslantless$	<code>\eqqslantless</code>	$\gtrsim$	<code>\gtrsim</code>	$\ltquest$	<code>\ltquest</code>
$\eqslantgtr$	<code>\eqslantgtr</code>	$\gvertneqq$	<code>\gvertneqq</code>	$\lvertneqq$	<code>\lvertneqq</code>
$\eqslantless$	<code>\eqslantless</code>	$\lat$	<code>\lat</code>	$\neqslantgtr$	<code>\neqslantgtr</code>
$\geq$	<code>\geq</code>	$\late$	<code>\late</code>	$\neqslantless$	<code>\neqslantless</code>
$\geqq$	<code>\geqq</code>	$\leftarrowless$	<code>\leftarrowless</code>	$\ngeq$	<code>\ngeq</code>
$\geqqslant$	<code>\geqqslant</code>	$\leq$	<code>\leq</code>	$\ngeqq$	<code>\ngeqq</code>
$\geqslant$	<code>\geqslant</code>	$\leqq$	<code>\leqq</code>	$\ngeqslant$	<code>\ngeqslant</code>
$\gescc$	<code>\gescc</code>	$\leqqslant$	<code>\leqqslant</code>	$\ngg$	<code>\ngg</code>
$\gesdot$	<code>\gesdot</code>	$\leqslant$	<code>\leqslant</code>	$\ngtr$	<code>\ngtr</code>
$\gesdoto$	<code>\gesdoto</code>	$\lescc$	<code>\lescc</code>	$\ngtrless$	<code>\ngtrless</code>
$\gesdotol$	<code>\gesdotol</code>	$\lesdot$	<code>\lesdot</code>	$\ngtrsim$	<code>\ngtrsim</code>

(continued on next page)

(continued from previous page)

$\leqslant$	<code>\gesles</code>	$\leqslant$	<code>\lesdoto</code>	$\nless$	<code>\nleq</code>
$\gg$	<code>\gg</code>	$\leqslant$	<code>\lesdotor</code>	$\nlessq$	<code>\nleqq</code>
$\ggg$	<code>\ggg</code>	$\leqslant$	<code>\lesges</code>	$\nlesslant$	<code>\nleqslant</code>
$\ggg$	<code>\ggg</code>	$\lesapprox$	<code>\lessapprox</code>	$\nless$	<code>\nless</code>
$\times$	<code>\gla</code>	$\lessdot$	<code>\lessdot</code>	$\nlessgtr$	<code>\nlessgtr</code>
$\equiv$	<code>\glE</code>	$\lesseqgtr$	<code>\lesseqgtr</code>	$\nlesssim$	<code>\nlesssim</code>
$\times$	<code>\glj</code>	$\lesseqqgtr$	<code>\lesseqqgtr</code>	$\nll$	<code>\nll</code>
$\approx$	<code>\gnapprox</code>	$\lessgtr$	<code>\lessgtr</code>	$\partialmeetcontraction$	<code>\partialmeetcontraction</code>
$\neq$	<code>\gneq</code>	$\lessssim$	<code>\lessssim</code>	$\rightarrowgtr$	<code>\rightarrowgtr</code>
$\neqq$	<code>\gneqq</code>	$\lgE$	<code>\lgE</code>	$\simE$	<code>\simE</code>
$\nsim$	<code>\gnsim</code>	$\ll$	<code>\ll</code>	$\simgtr$	<code>\simgtr</code>
$\sime$	<code>\gsime</code>	$\lll$	<code>\lll</code>	$\simLE$	<code>\simLE</code>
$\siml$	<code>\gsiml</code>	$\lllnest$	<code>\lllnest</code>	$\simless$	<code>\simless</code>
$\gt$	<code>\Gt</code>	$\lnapprox$	<code>\lnapprox</code>	$\smt$	<code>\smt</code>
$\gtcc$	<code>\gtcc</code>	$\lneq$	<code>\lneq</code>	$\smt$	<code>\smt</code>
$\gtcir$	<code>\gtcir</code>	$\lneqq$	<code>\lneqq</code>		

stix defines `\le` as a synonym for `\leq`, `\ge` as a synonym for `\geq`, `\llless` as a synonym for `\lll`, `\gggtr` as a synonym for `\ggg`, `\nle` as a synonym for `\nleq`, and `\nge` as a synonym for `\ngeq`.

TABLE 131: $\mathcal{AMS}$ Triangle Relations

$\blacktriangleleft$	<code>\blacktriangleleft</code>	$\ntriangleright$	<code>\ntriangleright</code>	$\trianglerighteq$	<code>\trianglerighteq</code>
$\blacktriangleright$	<code>\blacktriangleright</code>	$\ntrianglerighteq$	<code>\ntrianglerighteq</code>	$\triangleleft$	<code>\triangleleft</code>
$\triangleleft$	<code>\triangleleft</code>	$\trianglelefteq$	<code>\trianglelefteq</code>	$\triangleright$	<code>\triangleright</code>
$\trianglelefteq$	<code>\trianglelefteq</code>	$\trianglelefteq$	<code>\trianglelefteq</code>		

TABLE 132: stmaryrd Triangle Relations

$\trianglelefteqslant$	<code>\trianglelefteqslant</code>	$\trianglerighteqslant$	<code>\trianglerighteqslant</code>
$\ntrianglelefteqslant$	<code>\ntrianglelefteqslant</code>	$\ntrianglerighteqslant$	<code>\ntrianglerighteqslant</code>

TABLE 133: mathabx Triangle Relations

$\triangleleft$	<code>\triangleleft</code>	$\triangleleft$	<code>\triangleleft</code>
$\trianglelefteq$	<code>\trianglelefteq</code>	$\triangleright$	<code>\triangleright</code>
$\triangleright$	<code>\triangleright</code>	$\trianglerighteq$	<code>\trianglerighteq</code>
$\trianglerighteq$	<code>\trianglerighteq</code>	$\trianglerighteq$	<code>\trianglerighteq</code>

TABLE 134: MnSymbol Triangle Relations

▼	\filledmedtriangledown	△	\largetriangleup	▽	\smalltriangledown
◀	\filledmedtriangleleft	▽	\medtriangledown	◄	\smalltriangleleft
▶	\filledmedtriangleright	◄	\medtriangleleft	►	\smalltriangleright
▲	\filledmedtriangleup	▷	\medtriangleright	△	\smalltriangleup
▼	\filledtriangledown	△	\medtriangleup	≐	\triangleeq
◀	\filledtriangleleft	≐	\ntriangleeq	◄	\trianglelefteq
▶	\filledtriangleright	◄	\ntriangleleft	►	\trianglerighteq
▲	\filledtriangleup	◄	\ntrianglelefteq	◄	\vartriangleleft
▽	\largetriangledown	◄	\ntriangleright	►	\vartriangleright
◄	\largetriangleleft	◄	\ntrianglerighteq		
►	\largetriangleright	⊗	\otriangle		

MnSymbol additionally defines synonyms for many of the preceding symbols: `\triangleeq` is a synonym for `\triangleeq`; `\lhd` and `\lessclosed` are synonyms for `\vartriangleleft`; `\rhd` and `\gtrclosed` are synonyms for `\vartriangleright`; `\unlhd` and `\leqclosed` are synonyms for `\trianglelefteq`; `\unrhd` and `\geqclosed` are synonyms for `\trianglerighteq`; `\blacktriangledown`, `\blacktriangleleft`, `\blacktriangleright`, and `\blacktriangle` [*sic*] are synonyms for, respectively, `\filledmedtriangledown`, `\filledmedtriangleleft`, `\filledmedtriangleright`, and `\filledmedtriangleup`; `\triangleright` is a synonym for `\medtriangleright`; `\triangle`, `\vartriangle`, and `\bigtriangleup` are synonyms for `\medtriangleup`; `\triangleleft` is a synonym for `\medtriangleleft`; `\triangledown` and `\bigtriangledown` are synonyms for `\medtriangledown`; `\nlessclosed` is a synonym for `\ntriangleleft`; `\ngtrclosed` is a synonym for `\ntriangleright`; `\nleqclosed` is a synonym for `\ntrianglelefteq`; and `\ngeqclosed` is a synonym for `\ntrianglerighteq`.

The title “Triangle Relations” is a bit of a misnomer here as only `\triangleeq` and `\ntriangleeq` are defined as TeX relations (class 3 symbols). The `\largetriangle...` symbols are defined as TeX “ordinary” characters (class 0) and all of the remaining characters are defined as TeX binary operators (class 2).

TABLE 135: fdsymbol Triangle Relations

$\rhd$	<code>\geqclosed</code>	∇	<code>\medtriangledown</code>	$\blacktriangleleft$	<code>\smallblacktriangleleft</code>
$\triangleright$	<code>\gtrclosed</code>	$\triangleleft$	<code>\medtriangleleft</code>	$\blacktriangleright$	<code>\smallblacktriangleright</code>
$\bigtriangledown$	<code>\largetriangledown</code>	$\triangleright$	<code>\medtriangleright</code>	$\blacktriangleup$	<code>\smallblacktriangleup</code>
$\bigtriangleup$	<code>\largetriangleup</code>	$\triangleup$	<code>\medtriangleup</code>	$\smalltriangledown$	<code>\smalltriangledown</code>
$\leqclosed$	<code>\leqclosed</code>	$\ngeqclosed$	<code>\ngeqclosed</code>	$\smalltriangleleft$	<code>\smalltriangleleft</code>
$\lessclosed$	<code>\lessclosed</code>	$\ngtrclosed$	<code>\ngtrclosed</code>	$\smalltriangleright$	<code>\smalltriangleright</code>
$\blacktriangledown$	<code>\medblacktriangledown</code>	$\nleqclosed$	<code>\nleqclosed</code>	$\smalltriangleup$	<code>\smalltriangleup</code>
$\blacktriangleleft$	<code>\medblacktriangleleft</code>	$\nlessclosed$	<code>\nlessclosed</code>	$\triangleeq$	<code>\triangleeq</code>
$\blacktriangleright$	<code>\medblacktriangleright</code>	$\ntriangleeq$	<code>\ntriangleeq</code>		
$\blacktriangleup$	<code>\medblacktriangleup</code>	$\smallblacktriangledown$	<code>\smallblacktriangledown</code>		

fdsymbol defines synonyms for almost all of the preceding symbols:

$\bigtriangledown$	<code>\bigtriangledown</code>	$\ntrianglelefteq$	<code>\ntrianglelefteq</code>	$\triangleeq$	<code>\triangleeq</code>
$\bigtriangleup$	<code>\bigtriangleup</code>	$\ntriangleright$	<code>\ntriangleright</code>	$\trianglerighteq$	<code>\trianglerighteq</code>
$\blacktriangle$	<code>\blacktriangle</code>	$\ntrianglerighteq$	<code>\ntrianglerighteq</code>	$\trianglerighteq$	<code>\trianglerighteq</code>
$\blacktriangledown$	<code>\blacktriangledown</code>	$\triangle$	<code>\triangle</code>	$\vartriangle$	<code>\vartriangle</code>
$\blacktriangleleft$	<code>\blacktriangleleft</code>	$\triangledown$	<code>\triangledown</code>	$\vartriangleleft$	<code>\vartriangleleft</code>
$\blacktriangleright$	<code>\blacktriangleright</code>	$\triangleleft$	<code>\triangleleft</code>	$\vartriangleright$	<code>\vartriangleright</code>
$\ntriangleleft$	<code>\ntriangleleft</code>	$\trianglelefteq$	<code>\trianglelefteq</code>		

The title “Triangle Relations” is a bit of a misnomer here as only `\triangleeq` and `\ntriangleeq` are defined as T_EX relations (class 3 symbols). The `\largetriangle...` symbols are defined as T_EX “ordinary” characters (class 0) and all of the remaining characters are defined as T_EX binary operators (class 2).

TABLE 136: boisik Triangle Relations

$\ntriangleleft$	<code>\ntriangleleft</code>	$\trianglelefteq$	<code>\trianglelefteq</code>	$\vartriangleleft$	<code>\vartriangleleft</code>
$\ntrianglelefteq$	<code>\ntrianglelefteq</code>	$\trianglelefteqslant$	<code>\trianglelefteqslant</code>	$\vartriangle$	<code>\vartriangle</code>
$\ntriangleright$	<code>\ntriangleright</code>	$\trianglerighteq$	<code>\trianglerighteq</code>	$\vartriangleleft$	<code>\vartriangleleft</code>
$\ntrianglerighteq$	<code>\ntrianglerighteq</code>	$\trianglerighteqslant$	<code>\trianglerighteqslant</code>	$\vartriangleright$	<code>\vartriangleright</code>
$\triangleleft$	<code>\triangleleft</code>	$\trianglerighteqslant$	<code>\trianglerighteqslant</code>		

TABLE 137: stix Triangle Relations

$\lrrtriangleeq$	<code>\lrrtriangleeq</code>	$\nvartriangleright$	<code>\nvartriangleright</code>	$\vartriangle$	<code>\vartriangle</code>
$\lrrtrivb$	<code>\lrrtrivb</code>	$\rtriltri$	<code>\rtriltri</code>	$\vartriangleleft$	<code>\vartriangleleft</code>
$\ntrianglelefteq$	<code>\ntrianglelefteq</code>	$\trianglelefteq$	<code>\trianglelefteq</code>	$\vartriangleright$	<code>\vartriangleright</code>
$\ntrianglerighteq$	<code>\ntrianglerighteq</code>	$\triangleeq$	<code>\triangleeq</code>	$\vbrtri$	<code>\vbrtri</code>
$\nvartriangleleft$	<code>\nvartriangleleft</code>	$\trianglerighteq$	<code>\trianglerighteq</code>		

TABLE 138: Arrows

$\Downarrow$	<code>\Downarrow</code>	$\longleftarrow$	<code>\longleftarrow</code>	$\nwarrow$	<code>\nwarrow</code>
$\downarrow$	<code>\downarrow</code>	$\Longleftarrow$	<code>\Longleftarrow</code>	$\Rightarrow$	<code>\Rightarrow</code>
$\hookleftarrow$	<code>\hookleftarrow</code>	$\longleftrightarrow$	<code>\longleftrightarrow</code>	$\rightarrow$	<code>\rightarrow</code>
$\hookrightarrow$	<code>\hookrightarrow</code>	$\Longleftrightarrow$	<code>\Longleftrightarrow</code>	$\searrow$	<code>\searrow</code>
$\leadsto$	<code>\leadsto*</code>	$\mapsto$	<code>\mapsto</code>	$\swarrow$	<code>\swarrow</code>
$\leftarrow$	<code>\leftarrow</code>	$\Longrightarrow$	<code>\Longrightarrow</code>	$\Uparrow$	<code>\Uparrow</code>
$\Leftarrow$	<code>\Leftarrow</code>	$\longrightarrow$	<code>\longrightarrow</code>	$\Uparrow$	<code>\Uparrow</code>
$\Leftrightarrow$	<code>\Leftrightarrow</code>	$\mapsto$	<code>\mapsto</code>	$\updownarrow$	<code>\updownarrow</code>
$\leftrightharpoonup$	<code>\leftrightharpoonup</code>	$\nearrow^\dagger$	<code>\nearrow^\dagger</code>	$\Updownarrow$	<code>\Updownarrow</code>

* Not predefined by the L^AT_EX 2_ε core. Use the latexsym package to expose this symbol.

† See the note beneath Table 240 for information about how to put a diagonal arrow across a mathematical expression (as in “ $\nabla \cdot \vec{B}$ ”).

TABLE 139: Harpoons

$\leftharpoonup$	<code>\leftharpoonup</code>	$\rightharpoonup$	<code>\rightharpoonup</code>	$\leftharpoonup$	<code>\leftharpoonup</code>
$\leftharpoonup$	<code>\leftharpoonup</code>	$\rightharpoonup$	<code>\rightharpoonup</code>	$\leftharpoonup$	<code>\leftharpoonup</code>

TABLE 140: textcomp Text-mode Arrows

$\downarrow$	<code>\textdownarrow</code>	$\rightarrow$	<code>\textrightarrow</code>
$\leftarrow$	<code>\textleftarrow</code>	$\uparrow$	<code>\textuparrow</code>

TABLE 141: $\mathcal{AMS}$ Arrows

$\circlearrowleft$	<code>\circlearrowleft</code>	$\leftrightsquigarrow$	<code>\leftrightsquigarrow</code>	$\rightleftarrows$	<code>\rightleftarrows</code>
$\circlearrowright$	<code>\circlearrowright</code>	$\leftrightsquigarrow$	<code>\leftrightsquigarrow</code>	$\rightleftarrows$	<code>\rightleftarrows</code>
$\curvearrowleft$	<code>\curvearrowleft</code>	$\Lleftarrow$	<code>\Lleftarrow</code>	$\Rrightarrow$	<code>\Rrightarrow</code>
$\curvearrowright$	<code>\curvearrowright</code>	$\Lleftarrow$	<code>\Lleftarrow</code>	$\Rrightarrow$	<code>\Rrightarrow</code>
$\dashleftarrow$	<code>\dashleftarrow</code>	$\looparrowleft$	<code>\looparrowleft</code>	$\twoheadleftarrow$	<code>\twoheadleftarrow</code>
$\dashrightarrow$	<code>\dashrightarrow</code>	$\looparrowright$	<code>\looparrowright</code>	$\twoheadrightarrow$	<code>\twoheadrightarrow</code>
$\downdownarrows$	<code>\downdownarrows</code>	$\Lsh$	<code>\Lsh</code>	$\upuparrows$	<code>\upuparrows</code>
$\leftarrowtail$	<code>\leftarrowtail</code>	$\rightarrowtail$	<code>\rightarrowtail</code>		

TABLE 142: $\mathcal{AMS}$ Negated Arrows

$\nleftarrow$	<code>\nleftarrow</code>	$\nrightarrow$	<code>\nrightarrow</code>	$\nrightarrow$	<code>\nrightarrow</code>
$\nleftarrow$	<code>\nleftarrow</code>	$\nrightarrow$	<code>\nrightarrow</code>	$\nrightarrow$	<code>\nrightarrow</code>

TABLE 143: $\mathcal{AMS}$ Harpoons

$\downharpoonleft$	<code>\downharpoonleft</code>	$\leftrightharpoons$	<code>\leftrightharpoons</code>	$\upharpoonleft$	<code>\upharpoonleft</code>
$\downharpoonright$	<code>\downharpoonright</code>	$\leftrightharpoons$	<code>\leftrightharpoons</code>	$\upharpoonright$	<code>\upharpoonright</code>

TABLE 144: stmaryrd Arrows

$\leftarrow$	<code>\leftarrowtriangle</code>	$\Leftarrow$	<code>\Mapsfrom</code>	$\leftarrow$	<code>\shortleftarrow</code>
$\Leftrightarrow$	<code>\leftrightharveq</code>	$\mapsto$	<code>\mapsfrom</code>	$\rightarrow$	<code>\shortrightarrow</code>
$\Leftrightarrow$	<code>\leftrightharveqtriangle</code>	$\mapsto$	<code>\Mapsto</code>	$\uparrow$	<code>\shortuparrow</code>
$\lightning$	<code>\lightning</code>	$\nearrow$	<code>\nnearrow</code>	$\searrow$	<code>\ssearrow</code>
$\Longmapsfrom$	<code>\Longmapsfrom</code>	$\nwarrow$	<code>\nnwarrow</code>	$\swarrow$	<code>\sswarrow</code>
$\longmapsfrom$	<code>\longmapsfrom</code>	$\rightarrowtriangle$	<code>\rightarrowtriangle</code>		
$\Longmapsto$	<code>\Longmapsto</code>	$\downarrow$	<code>\shortdownarrow</code>		
$\mapsto$	<code>\mapsto</code>				

TABLE 145: txfonts/pxfonts Arrows

$\boxdotleft$	<code>\boxdotLeft</code>	$\circrightarrow$	<code>\circleddotright</code>	$\diamondleft$	<code>\Diamondleft</code>
$\boxdotleft$	<code>\boxdotleft</code>	$\circleftarrow$	<code>\circleleft</code>	$\diamondrightarrow$	<code>\Diamondright</code>
$\boxdotright$	<code>\boxdotright</code>	$\circrightarrow$	<code>\circcleright</code>	$\diamondrightarrow$	<code>\DiamondRight</code>
$\boxdotright$	<code>\boxdotRight</code>	$\dashrightarrow$	<code>\dashlefrightharveq</code>	$\leftrightsquigarrow$	<code>\leftrightsquigarrow</code>
$\boxleftarrow$	<code>\boxLeft</code>	$\diamondleftarrow$	<code>\DiamondddotLeft</code>	$\nearrow$	<code>\Nearrow</code>
$\boxleftarrow$	<code>\boxleft</code>	$\diamondleftarrow$	<code>\Diamondddotleft</code>	$\nwarrow$	<code>\Nwarrow</code>
$\boxrightarrow$	<code>\boxright</code>	$\diamondrightarrow$	<code>\Diamondddotright</code>	$\Rightarrow$	<code>\Rightarrow</code>
$\boxrightarrow$	<code>\boxRight</code>	$\diamondrightarrow$	<code>\DiamondddotRight</code>	$\searrow$	<code>\Searrow</code>
$\circleftarrow$	<code>\circleddotleft</code>	$\diamondleftarrow$	<code>\DiamondLeft</code>	$\swarrow$	<code>\Swarrow</code>

TABLE 146: mathabx Arrows

$\circlearrowleft$	<code>\circlearrowleft</code>	$\leftarrow$	<code>\leftarrow</code>	$\nwarrow$	<code>\nwarrow</code>
$\circlearrowright$	<code>\circlearrowright</code>	$\leftleftarrows$	<code>\leftleftarrows</code>	$\restriction$	<code>\restriction</code>
$\curvearrowleft$	<code>\curvearrowleft</code>	$\leftrightarrows$	<code>\leftrightarrows</code>	$\rightarrow$	<code>\rightarrow</code>
$\curvearrowleft$	<code>\curvearrowleft</code>	$\leftrightsquigarrow$	<code>\leftrightsquigarrow</code>	$\rightleftarrows$	<code>\rightleftarrows</code>
$\curvearrowright$	<code>\curvearrowright</code>	$\rightsquigarrow$	<code>\rightsquigarrow</code>	$\rightrightarrows$	<code>\rightrightarrows</code>
$\curvearrowright$	<code>\curvearrowright</code>	$\lefttorightarrow$	<code>\lefttorightarrow</code>	$\rightsquigarrow$	<code>\rightsquigarrow</code>
$\curvearrowright$	<code>\curvearrowright</code>	$\looparrowleft$	<code>\looparrowleft</code>	$\righttoleftarrow$	<code>\righttoleftarrow</code>
$\curvearrowright$	<code>\curvearrowright</code>	$\looparrowright$	<code>\looparrowright</code>	$\Rsh$	<code>\Rsh</code>
$\dls$	<code>\dls</code>	$\looparrowleft$	<code>\looparrowleft</code>	$\searrow$	<code>\searrow</code>
$\downarrow$	<code>\downarrow</code>	$\looparrowright$	<code>\looparrowright</code>	$\swarrow$	<code>\swarrow</code>
$\downto$	<code>\downto</code>	$\Lsh$	<code>\Lsh</code>	$\updownarrow$	<code>\updownarrow</code>
$\downarrow$	<code>\downarrow</code>	$\nearrow$	<code>\nearrow</code>	$\uptodownarrow$	<code>\uptodownarrow</code>
$\drsh$	<code>\drsh</code>			$\upuparrows$	<code>\upuparrows</code>

TABLE 147: mathabx Negated Arrows

$\nleftarrow$	<code>\nleftarrow</code>	$\nrightarrow$	<code>\nrightarrow</code>	$\nrightarrow$	<code>\nrightarrow</code>
$\nleftarrow$	<code>\nleftarrow</code>	$\nrightarrow$	<code>\nrightarrow</code>	$\nrightarrow$	<code>\nrightarrow</code>

TABLE 148: mathabx Harpoons

$\leftharpoonup$	<code>\barleftharpoonup</code>	$\leftarrow$	<code>\leftharpoonupup</code>	$\Rightarrow$	<code>\rightleftharpoons</code>
$\rightharpoonup$	<code>\barrightharpoonup</code>	$\Leftarrow$	<code>\leftleftharpoons</code>	$\Rightarrow$	<code>\rightrightarpoons</code>
$\Downarrow$	<code>\downdownharpoons</code>	$\leftrightarrow$	<code>\leftrightharpoonup</code>	$\Downarrow$	<code>\updownharpoons</code>
$\harpoonleft$	<code>\downharpoonleft</code>	$\Leftrightarrow$	<code>\leftrightharpoons</code>	$\Uparrow$	<code>\upharpoonleft</code>
$\harpoonright$	<code>\downharpoonright</code>	$\Rightarrow$	<code>\rightbarharpoonup</code>	$\Uparrow$	<code>\upharpoonright</code>
$\Updownarrow$	<code>\downupharpoons</code>	$\rightarrow$	<code>\rightharpoonowdown</code>	$\Uparrow$	<code>\upupharpoons</code>
$\Leftarrow$	<code>\leftbarharpoonup</code>	$\rightarrow$	<code>\rightharpoonupup</code>		
$\leftarrow$	<code>\leftharpoonowdown</code>	$\leftrightarrow$	<code>\rightleftharpoonup</code>		

TABLE 149: MnSymbol Arrows

$\curvearrowright$	<code>\curvearrowdownup</code>	$\longleftarrow$	<code>\longleftarrow</code>	$\hookrightarrow$	<code>\rhookswarrow</code>
$\curvearrowleft$	<code>\curvearrowleftright</code>	$\Longleftarrow$	<code>\Longleftarrow</code>	$\Uparrow$	<code>\rhookuparrow</code>
$\curvearrowright$	<code>\curvearrownesw</code>	$\longleftrightarrow$	<code>\longleftarrowrightarrow</code>	$\rightarrow$	<code>\rightarrow</code>
$\curvearrowleft$	<code>\curvearrownwse</code>	$\Longleftrightarrow$	<code>\Longleftarrowrightarrow</code>	$\Rightarrow$	<code>\rightarrow</code>
$\curvearrowright$	<code>\curvearrowrightleft</code>	$\mapsto$	<code>\longmapsto</code>	$\rightarrowtail$	<code>\rightarrowtail</code>
$\curvearrowleft$	<code>\curvearrowsenw</code>	$\rightarrow$	<code>\rightarrow</code>	$\rightleftarrows$	<code>\rightleftarrows</code>
$\curvearrowright$	<code>\curvearrowswne</code>	$\Rightarrow$	<code>\rightarrow</code>	$\rightsquigarrow$	<code>\rightsquigarrow</code>
$\curvearrowleft$	<code>\curvearrowupdown</code>	$\looparrowleft$	<code>\looparrowleft</code>	$\mapsto$	<code>\rightarrow</code>
$\dashrightarrow$	<code>\dasheddownarrow</code>	$\looparrowright$	<code>\looparrowright</code>	$\Rightarrow$	<code>\rightarrow</code>
$\dashleftarrow$	<code>\dashedleftarrow</code>	$\Lsh$	<code>\Lsh</code>	$\rightsquigarrow$	<code>\rightsquigarrow</code>
$\nearrow$	<code>\dashednearrow</code>	$\nearrow$	<code>\nearrow</code>	$\Rightarrow$	<code>\rightarrow</code>
$\nwarrow$	<code>\dashednwarrow</code>	$\nearrow$	<code>\nearrow</code>	$\rightarrow$	<code>\rightarrow</code>
$\rightarrow$	<code>\dashedrightarrow</code>	$\nearrowtail$	<code>\nearrowtail</code>	$\searrow$	<code>\searrow</code>
$\searrow$	<code>\dashedsearrow</code>	$\nrightarrow$	<code>\nrightarrow</code>	$\searrow$	<code>\searrow</code>
$\swarrow$	<code>\dashedswarrow</code>	$\nrightarrow$	<code>\nrightarrow</code>	$\searrowtail$	<code>\searrowtail</code>
$\uparrow$	<code>\dasheduparrow</code>	$\nrightarrow$	<code>\nrightarrow</code>	$\searrow$	<code>\searrow</code>
$\Downarrow$	<code>\Downarrow</code>	$\nrightarrow$	<code>\nrightarrow</code>	$\searrow$	<code>\searrow</code>
$\downarrow$	<code>\downarrow</code>	$\nrightarrow$	<code>\nrightarrow</code>	$\searrow$	<code>\searrow</code>
$\Downarrowtail$	<code>\downarrowtail</code>	$\nrightarrow$	<code>\nrightarrow</code>	$\searrow$	<code>\searrow</code>
$\Downarrow$	<code>\downarrowarrows</code>	$\nrightarrow$	<code>\nrightarrow</code>	$\searrow$	<code>\searrow</code>
$\Downarrow$	<code>\downarrowsquigarrow</code>	$\nrightarrow$	<code>\nrightarrow</code>	$\searrow$	<code>\searrow</code>
$\Downarrow$	<code>\downmapsto</code>	$\nrightarrow$	<code>\nrightarrow</code>	$\searrow$	<code>\searrow</code>
$\Downarrow$	<code>\downrsquigarrow</code>	$\nrightarrow$	<code>\nrightarrow</code>	$\searrow$	<code>\searrow</code>
$\Downarrow$	<code>\downuparrows</code>	$\nrightarrow$	<code>\nrightarrow</code>	$\searrow$	<code>\searrow</code>
$\Downarrow$	<code>\lccirclearrowdown</code>	$\nrightarrow$	<code>\nrightarrow</code>	$\searrow$	<code>\searrow</code>
$\Downarrow$	<code>\lccirclearrowleft</code>	$\nrightarrow$	<code>\nrightarrow</code>	$\searrow$	<code>\searrow</code>
$\Downarrow$	<code>\lccirclearrowright</code>	$\nrightarrow$	<code>\nrightarrow</code>	$\searrow$	<code>\searrow</code>
$\Downarrow$	<code>\lccirclearrowup</code>	$\nrightarrow$	<code>\nrightarrow</code>	$\searrow$	<code>\searrow</code>
$\Downarrow$	<code>\lccurvearrowdown</code>	$\nrightarrow$	<code>\nrightarrow</code>	$\searrow$	<code>\searrow</code>
$\Downarrow$	<code>\lccurvearrowleft</code>	$\nrightarrow$	<code>\nrightarrow</code>	$\searrow$	<code>\searrow</code>
$\Downarrow$	<code>\lccurvearrowne</code>	$\nrightarrow$	<code>\nrightarrow</code>	$\searrow$	<code>\searrow</code>
$\Downarrow$	<code>\lccurvearrownw</code>	$\nrightarrow$	<code>\nrightarrow</code>	$\searrow$	<code>\searrow</code>
$\Downarrow$	<code>\lccurvearrowright</code>	$\nrightarrow$	<code>\nrightarrow</code>	$\searrow$	<code>\searrow</code>
$\Downarrow$	<code>\lccurvearrowse</code>	$\nrightarrow$	<code>\nrightarrow</code>	$\searrow$	<code>\searrow</code>
$\Downarrow$	<code>\lccurvearrowsw</code>	$\nrightarrow$	<code>\nrightarrow</code>	$\searrow$	<code>\searrow</code>
$\Downarrow$	<code>\lccurvearrowup</code>	$\nrightarrow$	<code>\nrightarrow</code>	$\searrow$	<code>\searrow</code>
$\Leftarrow$	<code>\Leftarrow</code>	$\nrightarrow$	<code>\nrightarrow</code>	$\searrow$	<code>\searrow</code>

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$\leftarrow$	$\backslashleftarrow$	$\circ$	$\backslashpartialvartrcirclearightint*$	$\leftarrow$	$\backslashtwoheadleftarrow$
$\leftarrowtail$	$\backslashleftarrowtail$	$\circ$	$\backslashrcirclearrowdown$	$\nearrow$	$\backslashtwoheadnearrow$
$\leftleftarrows$	$\backslashleftleftarrows$	$\circ$	$\backslashrcirclearrowleft$	$\nwarrow$	$\backslashtwoheadnwarrow$
$\leftthreetimes$	$\backslashleftthreetimes$	$\circ$	$\backslashrcirclearrowright$	$\rightarrow$	$\backslashtwoheadrightarrow$
$\mapsto$	$\backslashmapsto$	$\circ$	$\backslashrcirclearrowup$	$\searrow$	$\backslashtwoheadsearrow$
$\rightleftarrows$	$\backslashrightleftarrows$	$\hookrightarrow$	$\backslashrcurvearrowdown$	$\swarrow$	$\backslashtwoheadswarrow$
$\Leftrightarrow$	$\backslashLeftrightarrow$	$\hookleftarrow$	$\backslashrcurvearrowleft$	$\Uparrow$	$\backslashtwoheaduparrow$
$\leftrightarrows$	$\backslashleftrightarrows$	$\hookrightarrow$	$\backslashrcurvearrowright$	$\uparrow$	$\backslashuparrow$
$\leftrightsquigarrow$	$\backslashleftrightsquigarrow$	$\hookleftarrow$	$\backslashrcurvearrownw$	$\Uparrow$	$\backslashUparrow$
$\hookrightarrow$	$\backslashhookrightarrow$	$\hookrightarrow$	$\backslashrcurvearrowright$	$\uparrowtail$	$\backslashuparrowtail$
$\hookleftarrow$	$\backslashhookleftarrow$	$\hookleftarrow$	$\backslashrcurvearrowse$	$\updownarrow$	$\backslashupdownarrow$
$\hooknearrow$	$\backslashhooknearrow$	$\hookrightarrow$	$\backslashrcurvearrowsw$	$\Updownarrow$	$\backslashUpdownarrow$
$\hooknwarrow$	$\backslashhooknwarrow$	$\hookrightarrow$	$\backslashrcurvearrowup$	$\updownarrows$	$\backslashupdownarrows$
$\hookrightarrow$	$\backslashhookrightarrow$	$\hookrightarrow$	$\backslashrhookdownarrow$	$\uplsql$	$\backslashuplsql$
$\hooksearrow$	$\backslashhooksearrow$	$\hookleftarrow$	$\backslashrhookleftarrow$	$\upmapsto$	$\backslashupmapsto$
$\hookswarrow$	$\backslashhookswarrow$	$\hooknearrow$	$\backslashrhooknearrow$	$\uprsql$	$\backslashuprsql$
$\hookuparrow$	$\backslashhookuparrow$	$\hooknwarrow$	$\backslashrhooknwarrow$	$\upuparrows$	$\backslashupuparrows$
$\lightning$	$\backslashlightning$	$\hookrightarrow$	$\backslashrhookrightarrow$		
$\Lleftarrow$	$\backslashLleftarrow$	$\hooksearrow$	$\backslashrhooksearrow$		

	<code>\circlearrowleft</code>	(same as <code>\rcirclearrowup</code>)
	<code>\circlearrowright</code>	(same as <code>\lcirclearrowup</code>)
	<code>\curvearrowleft</code>	(same as <code>\rcurvearrowleft</code>)
	<code>\curvearrowright</code>	(same as <code>\lcurvearrowright</code>)
	<code>\dashleftarrow</code>	(same as <code>\dashedleftarrow</code>)
	<code>\dashrightarrow</code>	(same as <code>\dashedrightarrow</code>)
	<code>\hookleftarrow</code>	(same as <code>\rhookleftarrow</code>)
	<code>\hookrightarrow</code>	(same as <code>\lhookrightarrow</code>)
	<code>\leadsto</code>	(same as <code>\rightlsquigarrow</code>)
	<code>\leftrightsquigarrow</code>	(same as <code>\squigarrowleftright</code>)
	<code>\mapsto</code>	(same as <code>\rightmapsto</code>)
	<code>\rightsquigarrow</code>	(same as <code>\rightlsquigarrow</code>)

* The `\partialvar...int` macros are intended to be used internally by MnSymbol to produce various types of integrals.

	<code>\ncurvecarrowdownup</code>		<code>\nlhooknwarrow</code>		<code>\nrightleftarrows</code>
	<code>\ncurvecarrowleftright</code>		<code>\nlhookrightarrow</code>		<code>\nrightlsquigarrow</code>
	<code>\ncurvecarrownesw</code>		<code>\nlhooksearrow</code>		<code>\nrightmapsto</code>
	<code>\ncurvecarrownwse</code>		<code>\nlhookswarrow</code>		<code>\nrightrightarrow</code>
	<code>\ncurvecarrowrightleft</code>		<code>\nlhookuparrow</code>		<code>\nrightrsquigarrow</code>
	<code>\ncurvearrowsenw</code>		<code>\nLleftarrow</code>		<code>\nRrightarrow</code>
	<code>\ncurvearrowswne</code>		<code>\nnearrow</code>		<code>\nsearrow</code>
	<code>\ncurvecarrowupdown</code>		<code>\nNearrow</code>		<code>\nsearrow</code>

73

(continued from previous page)

	<code>\ndasheddownarrow</code>		<code>\nnearrowtail</code>		<code>\nsearrowtail</code>
	<code>\ndashedleftarrow</code>		<code>\nnelsquigarrow</code>		<code>\nselsquigarrow</code>
	<code>\ndashednearrow</code>		<code>\nnemapsto</code>		<code>\nsemapsto</code>
	<code>\ndashednwarrow</code>		<code>\nnenearrows</code>		<code>\nsenwarrows</code>
	<code>\ndashedrightarrow</code>		<code>\nnersquigarrow</code>		<code>\nsersquigarrow</code>
	<code>\ndashedsearrow</code>		<code>\nNeswarrow</code>		<code>\nsesearrows</code>
	<code>\ndashedswarrow</code>		<code>\nneswarrow</code>		<code>\nsquigarrowdownup</code>
	<code>\ndasheduparrow</code>		<code>\nneswarrows</code>		<code>\nsquigarrowleftright</code>
	<code>\ndownarrow</code>		<code>\nNwarrow</code>		<code>\nsquigarrownesw</code>
	<code>\nDownarrow</code>		<code>\nnwarrow</code>		<code>\nsquigarrownwse</code>
	<code>\ndownarrowtail</code>		<code>\nnwarrowtail</code>		<code>\nsquigarrowrightleft</code>
	<code>\ndowndownarrows</code>		<code>\nnwlsquigarrow</code>		<code>\nsquigarrowswne</code>
	<code>\ndownlsquigarrow</code>		<code>\nnwmapsto</code>		<code>\nsquigarrowswne</code>
	<code>\ndownmapsto</code>		<code>\nnwnwarrows</code>		<code>\nsquigarrowupdown</code>
	<code>\ndownrsquigarrow</code>		<code>\nnwrsquigarrow</code>		<code>\nswarrow</code>
	<code>\ndownuparrows</code>		<code>\nnwsearrow</code>		<code>\nSswarrow</code>
	<code>\nlcirclearrowdown</code>		<code>\nNwsearrow</code>		<code>\nswarrowtail</code>
	<code>\nlcirclearrowleft</code>		<code>\nnwsearrows</code>		<code>\nswlsquigarrow</code>
	<code>\nlcirclearrowright</code>		<code>\nrcirclearrowdown</code>		<code>\nswmapsto</code>
	<code>\nlcirclearrowup</code>		<code>\nrcirclearrowleft</code>		<code>\nswnearrows</code>
	<code>\nlcurvearrowdown</code>		<code>\nrcirclearrowright</code>		<code>\nswrsquigarrow</code>
	<code>\nlcurvearrowleft</code>		<code>\nrcirclearrowup</code>		<code>\nswswarrows</code>
	<code>\nlcurvearrowne</code>		<code>\nrcurvearrowdown</code>		<code>\ntwoheaddownarrow</code>
	<code>\nlcurvearrownw</code>		<code>\nrcurvearrowleft</code>		<code>\ntwoheadleftarrow</code>
	<code>\nlcurvearrowright</code>		<code>\nrcurvearrowne</code>		<code>\ntwoheadnearrow</code>
	<code>\nlcurvearrowse</code>		<code>\nrcurvearrownw</code>		<code>\ntwoheadnwarrow</code>
	<code>\nlcurvearrowsw</code>		<code>\nrcurvearrowright</code>		<code>\ntwoheadrightarrow</code>
	<code>\nlcurvearrowup</code>		<code>\nrcurvearrowse</code>		<code>\ntwoheadsearrow</code>
	<code>\nLeftarrow</code>		<code>\nrcurvearrowsw</code>		<code>\ntwoheadswarrow</code>
	<code>\nleftarrow</code>		<code>\nrcurvearrowup</code>		<code>\ntwoheaduparrow</code>
	<code>\nleftarrowtail</code>		<code>\nrhookdownarrow</code>		<code>\nuparrow</code>
	<code>\nleftleftarrows</code>		<code>\nrhookleftarrow</code>		<code>\nUparrow</code>
	<code>\nleftlsquigarrow</code>		<code>\nrhooknearrow</code>		<code>\nuparrowtail</code>
	<code>\nleftmapsto</code>		<code>\nrhooknwarrow</code>		<code>\nupdownarrow</code>
	<code>\nleftrightarrow</code>		<code>\nrhookrightarrow</code>		<code>\nUpdownarrow</code>
	<code>\nLeftrightarrow</code>		<code>\nrhooksearrow</code>		<code>\nupdownarrows</code>
	<code>\nleftrightarrows</code>		<code>\nrhookswarrow</code>		<code>\nuplsquigarrow</code>
	<code>\nleftrsquigarrow</code>		<code>\nrhookuparrow</code>		<code>\nupmapsto</code>
	<code>\nlhookdownarrow</code>		<code>\nrhookrightarrow</code>		<code>\nuprsquigarrow</code>
	<code>\nlhookleftarrow</code>		<code>\nRightarrow</code>		<code>\nupuparrows</code>
	<code>\nlhooknearrow</code>		<code>\nrhookrightarrowtail</code>		

MnSymbol additionally defines synonyms for some of the preceding symbols:

	<code>\ncirclearrowleft</code>	(same as <code>\nrcirclearrowup</code>)
	<code>\ncirclearrowright</code>	(same as <code>\nlcirclearrowup</code>)
	<code>\ncurvearrowleft</code>	(same as <code>\nrcurvearrowleft</code>)
	<code>\ncurvearrowright</code>	(same as <code>\nlcurvearrowright</code>)
$\dashrightarrow$	<code>\ndasharrow</code>	(same as <code>\ndashedrightarrow</code>)
$\dashleftarrow$	<code>\ndashleftarrow</code>	(same as <code>\ndashedleftarrow</code>)
$\dashrightarrow$	<code>\ndashrightarrow</code>	(same as <code>\ndashedrightarrow</code>)
$\leftarrow$	<code>\ngets</code>	(same as <code>\nleftarrow</code>)
$\hookleftarrow$	<code>\nhookleftarrow</code>	(same as <code>\nrhookleftarrow</code>)
$\hookrightarrow$	<code>\nhookrightarrow</code>	(same as <code>\nlhookrightarrow</code>)
$\rightarrowtail$	<code>\nleadsto</code>	(same as <code>\nrightlsquigarrow</code>)
$\leftrightsquigarrow$	<code>\nleftrightsquigarrow</code>	(same as <code>\nsquigarrowleftright</code>)
$\mapsto$	<code>\nmapsto</code>	(same as <code>\nrightmapsto</code>)
$\rightarrowtail$	<code>\nrightsquigarrow</code>	(same as <code>\nrightlsquigarrow</code>)
$\rightarrow$	<code>\nto</code>	(same as <code>\nrightarrow</code>)

TABLE 151: MnSymbol Harpoons

$\downharpoonccw^*$	$\swharpoon$	$\searrow$	<code>\seharpooncw</code>
$\downharpooncw^*$	$\swharpoonsw$	$\nwarrow$	<code>\senwharpoons</code>
$\downupharpoons$	$\nwarrow$	$\swarrow$	<code>\swharpoonccw</code>
$\leftharpoonccw^*$	$\nwarrow$	$\swarrow$	<code>\swharpooncw</code>
$\leftharpooncw^*$	$\nwarrow$	$\swarrow$	<code>\swneharpoons</code>
$\leftrightharpoondownup$	$\nwarrow$	$\updownharpoonleftright$	
$\leftrightharpoons$	$\nwarrow$	$\updownharpoonrightleft$	
$\leftrightharpoonupdown$	$\rightarrow$	$\updownharpoons$	
$\nearrow$	$\rightarrow$	$\upharpoonccw^*$	
$\nearrow$	$\rightarrow$	$\upharpooncw^*$	
$\nearrow$	$\rightarrow$	$\upharpooncw^*$	

* Where marked, the “ccw” suffix can be replaced with “up” and the “cw” suffix can be replaced with “down”. (In addition, `\upharpooncw` can be written as `\restriction`.)

TABLE 152: MnSymbol Negated Harpoons

$\downharpoonccw^*$	$\swneharpoon$	$\nwarrow$	<code>\nseharpooncw</code>
$\downharpooncw^*$	$\swneharpoonsw$	$\nwarrow$	<code>\nsenwharpoons</code>
$\downupharpoons$	$\nwarrow$	$\swarrow$	<code>\nswharpoonccw</code>
$\leftharpoonccw^*$	$\nwarrow$	$\swarrow$	<code>\nswharpooncw</code>
$\leftharpooncw^*$	$\nwarrow$	$\swarrow$	<code>\nswneharpoons</code>
$\leftrightharpoondownup$	$\nwarrow$	$\updownharpoonleftright$	
$\leftrightharpoons$	$\nwarrow$	$\updownharpoonrightleft$	
$\leftrightharpoonupdown$	$\rightarrow$	$\updownharpoons$	
$\nearrow$	$\rightarrow$	$\upharpoonccw^*$	
$\nearrow$	$\rightarrow$	$\upharpooncw^*$	
$\nearrow$	$\rightarrow$	$\upharpooncw^*$	

* Where marked, the “ccw” suffix can be replaced with “up” and the “cw” suffix can be replaced with “down”. (In addition, `\nupharpooncw` can be written as `\nrestriction`.)

TABLE 153: fdsymbol Arrows

	<code>\acwcirclearrowdown</code>		<code>\leftarrow</code>		<code>\rightrightarrows</code>
	<code>\acwcirclearrowleft</code>		<code>\leftarrowtail</code>		<code>\rightwvearrow</code>
	<code>\acwcirclearrowright</code>		<code>\lefttbkarrow</code>		<code>\Rightarrow</code>
	<code>\acwcirclearrowup</code>		<code>\leftleftarrows</code>		<code>\Rsh</code>
	<code>\acwleftarcarrow</code>		<code>\leftmapsto</code>		<code>\searrow</code>
	<code>\acwnearcarrow</code>		<code>\Leftmapsto</code>		<code>\Searrow</code>
	<code>\acwnwarcarrow</code>		<code>\Leftrightarrow</code>		<code>\searrowtail</code>
	<code>\acwoverarcarrow</code>		<code>\leftrightarrow</code>		<code>\sebkarrow</code>
	<code>\acwrightarcarrow</code>		<code>\leftrightharrows</code>		<code>\senwarrows</code>
	<code>\acwsearcarrow</code>		<code>\leftrightwvearrow</code>		<code>\sesearrows</code>
	<code>\acswwarcarrow</code>		<code>\leftwvearrow</code>		<code>\Swarrow</code>
	<code>\acwunderarcarrow</code>		<code>\lightning</code>		<code>\swarrow</code>
	<code>\bdleftarcarrow</code>		<code>\Lleftarrow</code>		<code>\swarrowtail</code>
	<code>\bdnearcarrow</code>		<code>\Longleftarrow</code>		<code>\swbkarrow</code>
	<code>\bdnwarcarrow</code>		<code>\longleftarrow</code>		<code>\swnearrows</code>
	<code>\bdoverarcarrow</code>		<code>\longleftrightharrows</code>		<code>\swswarrows</code>
	<code>\bdrigharcarrow</code>		<code>\Longleftrightharrows</code>		<code>\twoheaddownarrow</code>
	<code>\bdsearcarrow</code>		<code>\longleftwvearrow</code>		<code>\twoheadleftarrow</code>
	<code>\bdswarcarrow</code>		<code>\Longmapsfrom</code>		<code>\twoheadnearrow</code>
	<code>\bdunderarcarrow</code>		<code>\longmapsfrom</code>		<code>\twoheadnwarrow</code>
	<code>\cwcirclearrowdown</code>		<code>\Longmapsto</code>		<code>\twoheadrightarrow</code>
	<code>\cwcirclearrowleft</code>		<code>\longmapsto</code>		<code>\twoheadsearrow</code>
	<code>\cwcirclearrowright</code>		<code>\longrightarrow</code>		<code>\twoheadswarrow</code>
	<code>\cwcirclearrowup</code>		<code>\Longrightarrow</code>		<code>\twoheaduparrow</code>
	<code>\cwleftarcarrow</code>		<code>\longrightwvearrow</code>		<code>\uparrow</code>
	<code>\cwnearcarrow</code>		<code>\looparrowleft</code>		<code>\Uparrow</code>
	<code>\cwnwarcarrow</code>		<code>\looparrowright</code>		<code>\uparrowtail</code>
	<code>\cwoverarcarrow</code>		<code>\Lsh</code>		<code>\upbkarrow</code>
	<code>\cwrightarcarrow</code>		<code>\nearrow</code>		<code>\Updownarrow</code>
	<code>\cwsearcarrow</code>		<code>\Nearrow</code>		<code>\updownarrow</code>
	<code>\cswwarcarrow</code>		<code>\nearrowtail</code>		<code>\updownarrows</code>
	<code>\cwunderarcarrow</code>		<code>\nebkarrow</code>		<code>\updownwvearrow</code>
	<code>\Ddownarrow</code>		<code>\nenearrows</code>		<code>\upmapsto</code>
	<code>\Downarrow</code>		<code>\Neswarrow</code>		<code>\Upmapsto</code>
	<code>\downarrow</code>		<code>\neswarrow</code>		<code>\upuparrows</code>
	<code>\downarrowtail</code>		<code>\neswarrows</code>		<code>\upwvearrow</code>
	<code>\downnbkarrow</code>		<code>\Nwarrow</code>		<code>\Uparrow</code>
	<code>\downdownarrows</code>		<code>\nwarrow</code>		<code>\vardownwvearrow</code>
	<code>\Downmapsto</code>		<code>\nwarrowtail</code>		<code>\varhookdownarrow</code>
	<code>\downmapsto</code>		<code>\nwbkarrow</code>		<code>\varhookleftarrow</code>
	<code>\downuparrows</code>		<code>\nwnwarrows</code>		<code>\varhooknearrow</code>
	<code>\downwvearrow</code>		<code>\Nwsearrow</code>		<code>\varhooknwarrow</code>
	<code>\hookdownarrow</code>		<code>\nwsearrow</code>		<code>\varhookrightarrow</code>
	<code>\hookleftarrow</code>		<code>\nwsearrows</code>		<code>\varhooksearrow</code>
	<code>\hooknearrow</code>		<code>\Rdsh</code>		<code>\varhookswarrow</code>
	<code>\hooknwarrow</code>		<code>\Rightarrow</code>		<code>\varhookuparrow</code>
	<code>\hookrightarrow</code>		<code>\rightarrow</code>		<code>\varleftrightwvearrow</code>
	<code>\hooksearrow</code>		<code>\rightarrowtail</code>		<code>\varleftwvearrow</code>
	<code>\hookswarrow</code>		<code>\rightbkarrow</code>		<code>\varrightwvearrow</code>
	<code>\hookuparrow</code>		<code>\rightleftarrows</code>		<code>\varupdownwvearrow</code>
	<code>\Ldsh</code>		<code>\Rightmapsto</code>		<code>\varupwvearrow</code>

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(continued from previous page)

$\Leftarrow$ `\Leftarrow` $\mapsto$ `\rightmapsto`

`fdsymbol` defines synonyms for most of the preceding symbols:

	<code>\acwgapcirclearrow</code>		<code>\leftrightsquigarrow</code>		<code>\rhookknwarrow</code>
	<code>\acwopencirclearrow</code>		<code>\leftrsquigarrow</code>		<code>\rhookrightarrow</code>
	<code>\circlearrowleft</code>		<code>\leftsquigarrow</code>		<code>\rhooksearrow</code>
	<code>\circlearrowright</code>		<code>\leftupcurvedarrow</code>		<code>\rhookswarrow</code>
	<code>\curvearrowleft</code>		<code>\lhookdownarrow</code>		<code>\rhookuparrow</code>
	<code>\curvearrowright</code>		<code>\lhookleftarrow</code>		<code>\rightcurvedarrow</code>
	<code>\cwgapcirclearrow</code>		<code>\lhooknearrow</code>		<code>\rightdowncurvedarrow</code>
	<code>\cwopencirclearrow</code>		<code>\lhooknwarrow</code>		<code>\righttlcurvearrow</code>
	<code>\dasharrow</code>		<code>\lhookrightarrow</code>		<code>\rightleftcurvearrow</code>
	<code>\dashleftarrow</code>		<code>\lhooksearrow</code>		<code>\rightleftsquigarrow</code>
	<code>\dashrightarrow</code>		<code>\lhookswarrow</code>		<code>\rightlsquigarrow</code>
	<code>\downlcurvearrow</code>		<code>\lhookuparrow</code>		<code>\rightrcurvearrow</code>
	<code>\downleftcurvedarrow</code>		<code>\longleadsto</code>		<code>\rightrsquigarrow</code>
	<code>\downlsquigarrow</code>		<code>\longleftsquigarrow</code>		<code>\rightsquigarrow</code>
	<code>\downrcurvearrow</code>		<code>\longrightsquigarrow</code>		<code>\rightupcurvedarrow</code>
	<code>\downrightcurvedarrow</code>		<code>\mapsdown</code>		<code>\selcurvearrow</code>
	<code>\downrsquigarrow</code>		<code>\Mapsdown</code>		<code>\senwcurvearrow</code>
	<code>\downupcurvearrow</code>		<code>\mapsfrom</code>		<code>\sercurvearrow</code>
	<code>\downupsquigarrow</code>		<code>\Mapsfrom</code>		<code>\swlcurvearrow</code>
	<code>\downzigzagarrow</code>		<code>\mapsto</code>		<code>\swnecurvearrow</code>
	<code>\gets</code>		<code>\Mapsto</code>		<code>\swrcurvearrow</code>
	<code>\hknearrow</code>		<code>\mapsup</code>		<code>\to</code>
	<code>\hknwarrow</code>		<code>\Mapsup</code>		<code>\updowncurvearrow</code>
	<code>\hksearrow</code>		<code>\nelcurvearrow</code>		<code>\updownsquigarrow</code>
	<code>\hkswarrow</code>		<code>\nercurvearrow</code>		<code>\uplcurvearrow</code>
	<code>\leadsto</code>		<code>\neswcurvearrow</code>		<code>\upleftcurvedarrow</code>
	<code>\leftcurvedarrow</code>		<code>\nwlcurvearrow</code>		<code>\uplsquigarrow</code>
	<code>\leftdowncurvedarrow</code>		<code>\nwrcurvearrow</code>		<code>\uprcurvearrow</code>
	<code>\lefttlcurvearrow</code>		<code>\nwsecurvearrow</code>		<code>\uprightcurvearrow</code>
	<code>\leftlsquigarrow</code>		<code>\rhookdownarrow</code>		<code>\uprsquigarrow</code>
	<code>\leftrcurvearrow</code>		<code>\rhookleftarrow</code>		
	<code>\leftrightcurvearrow</code>		<code>\rhooknearrow</code>		

TABLE 154: `fdsymbol` Negated Arrows

	<code>\nacwcirclearrowdown</code>		<code>\nleftarrow</code>		<code>\nrightarrow</code>
	<code>\nacwcirclearrowleft</code>		<code>\nLeftarrow</code>		<code>\nsearrow</code>
	<code>\nacwcirclearrowright</code>		<code>\nleftarrowtail</code>		<code>\nsearrowtail</code>
	<code>\nacwcirclearrowup</code>		<code>\nleftbktarrow</code>		<code>\nsearrowtail</code>
	<code>\nacwleftarcarrow</code>		<code>\nleftleftarrows</code>		<code>\nsebkarrow</code>
	<code>\nacwnearcarrow</code>		<code>\nleftmapsto</code>		<code>\nsenwarrows</code>
	<code>\nacwnwarcarrow</code>		<code>\nLeftmapsto</code>		<code>\nsesearrows</code>
	<code>\nacwoverarcarrow</code>		<code>\nleftrightarrow</code>		<code>\nswarrow</code>

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	<code>\nacwrightararrow</code>		<code>\nLefttrightarrow</code>		<code>\nSwarrow</code>
	<code>\nacwseararrow</code>		<code>\nlefttrightarrows</code>		<code>\nswarrowtail</code>
	<code>\nacswararrow</code>		<code>\nlefttrightwavearrow</code>		<code>\nswbkarrow</code>
	<code>\nacwunderararrow</code>		<code>\nleftwavearrow</code>		<code>\nswnearrows</code>
	<code>\nbdleftararrow</code>		<code>\nLleftarrow</code>		<code>\nswswarrows</code>
	<code>\nbdneararrow</code>		<code>\nlongleftarrow</code>		<code>\ntwoheaddownarrow</code>
	<code>\nbdnwararrow</code>		<code>\nLongleftarrow</code>		<code>\ntwoheadleftarrow</code>
	<code>\nbdoverararrow</code>		<code>\nlongleftrightarrow</code>		<code>\ntwoheadnearrow</code>
	<code>\nbdrightararrow</code>		<code>\nLongleftrightarrow</code>		<code>\ntwoheadnwarrow</code>
	<code>\nbdseararrow</code>		<code>\nlongleftwavearrow</code>		<code>\ntwoheadrightarrow</code>
	<code>\nbdswararrow</code>		<code>\nlongmapsfrom</code>		<code>\ntwoheadsearrow</code>
	<code>\nbdunderararrow</code>		<code>\nLongmapsfrom</code>		<code>\ntwoheadswarrow</code>
	<code>\ncwcirculararrowdown</code>		<code>\nlongmapsto</code>		<code>\ntwoheaduparrow</code>
	<code>\ncwcirculararrowleft</code>		<code>\nLongmapsto</code>		<code>\nuparrow</code>
	<code>\ncwcirculararrowright</code>		<code>\nlongrightarrow</code>		<code>\nUparrow</code>
	<code>\ncwcirculararrowup</code>		<code>\nLongrightarrow</code>		<code>\nuparrowtail</code>
	<code>\ncwleftararrow</code>		<code>\nlongrightwavearrow</code>		<code>\nupbkarrow</code>
	<code>\ncwneararrow</code>		<code>\nnearrow</code>		<code>\nupdownarrow</code>
	<code>\ncwnwararrow</code>		<code>\nNearrow</code>		<code>\nUpdownarrow</code>
	<code>\ncwoverararrow</code>		<code>\nnearrowtail</code>		<code>\nupdownarrows</code>
	<code>\ncwrightararrow</code>		<code>\nnbkarrow</code>		<code>\nupdownwavearrow</code>
	<code>\ncwseararrow</code>		<code>\nnenearrows</code>		<code>\nupmapsto</code>
	<code>\ncswararrow</code>		<code>\nneswarrow</code>		<code>\nUpmapsto</code>
	<code>\ncwunderararrow</code>		<code>\nNeswarrow</code>		<code>\nupuparrows</code>
	<code>\nDdownarrow</code>		<code>\nneswarrows</code>		<code>\nupwavearrow</code>
	<code>\ndownarrow</code>		<code>\nnwarrow</code>		<code>\nUparrow</code>
	<code>\nDownarrow</code>		<code>\nNwarrow</code>		<code>\nvardownwavearrow</code>
	<code>\ndownarrowtail</code>		<code>\nnwarrowtail</code>		<code>\nvarhookdownarrow</code>
	<code>\ndownbkarrow</code>		<code>\nnwbkarrow</code>		<code>\nvarhookleftarrow</code>
	<code>\ndowndownarrows</code>		<code>\nnwnwarrows</code>		<code>\nvarhooknearrow</code>
	<code>\ndownmapsto</code>		<code>\nnwsearrow</code>		<code>\nvarhooknwarrow</code>
	<code>\nDownmapsto</code>		<code>\nNwsearrow</code>		<code>\nvarhookrightarrow</code>
	<code>\ndownuparrows</code>		<code>\nnwsearrows</code>		<code>\nvarhooksearrow</code>
	<code>\ndownwavearrow</code>		<code>\nrightarrow</code>		<code>\nvarhookswarrow</code>
	<code>\nhookdownarrow</code>		<code>\nRightarrow</code>		<code>\nvarhookuparrow</code>
	<code>\nhookleftarrow</code>		<code>\nrightarrowtail</code>		<code>\nvarlefttrightwavearrow</code>
	<code>\nhooknearrow</code>		<code>\nrightbkarrow</code>		<code>\nvarleftwavearrow</code>
	<code>\nhooknwarrow</code>		<code>\nrightleftarrows</code>		<code>\nvarrightwavearrow</code>
	<code>\nhookrightarrow</code>		<code>\nrightmapsto</code>		<code>\nvarupdownwavearrow</code>
	<code>\nhooksearrow</code>		<code>\nRightmapsto</code>		<code>\nvarupwavearrow</code>
	<code>\nhookswarrow</code>		<code>\nrightrightarrows</code>		
	<code>\nhookuparrow</code>		<code>\nrightwavearrow</code>		

fdsymbol defines synonyms for most of the preceding symbols:

	<code>\nacwgapcirculararrow</code>		<code>\nleftdowncurvedarrow</code>		<code>\nrightcurvedarrow</code>
	<code>\nacwopencirculararrow</code>		<code>\nleftlcurvearrow</code>		<code>\nrightdowncurvedarrow</code>
	<code>\ncirculararrowleft</code>		<code>\nleftlsquigarrow</code>		<code>\nrightlcurvearrow</code>
	<code>\ncirculararrowright</code>		<code>\nleftrcurvearrow</code>		<code>\nrightleftcurvearrow</code>
	<code>\ncurvearrowleft</code>		<code>\nleftrightcurvearrow</code>		<code>\nrightleftsquigarrow</code>
	<code>\ncurvearrowright</code>		<code>\nleftrightsquigarrow</code>		<code>\nrightlsquigarrow</code>
	<code>\ncwgapcirculararrow</code>		<code>\nleftrsquigarrow</code>		<code>\nrightrcurvearrow</code>
	<code>\ncwopencirculararrow</code>		<code>\nleftsquigarrow</code>		<code>\nrightrsquigarrow</code>

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$\dashrightarrow$	<code>\ndasharrow</code>	$\curvearrowleft$	<code>\nleftupcurvedarrow</code>	$\curvearrowright$	<code>\nrightsquigarrow</code>
$\dashleftarrow$	<code>\ndashleftarrow</code>	$\leadsto$	<code>\nlongleadsto</code>	$\curvearrowright$	<code>\nrightupcurvedarrow</code>
$\dashrightarrow$	<code>\ndashrightarrow</code>	$\rightsquigarrow$	<code>\nlongleftsquigarrow</code>	$\curvearrowleft$	<code>\nselcurvearrow</code>
$\downarrow$	<code>\ndownlcurvearrow</code>	$\rightsquigarrow$	<code>\nlongrightsquigarrow</code>	$\curvearrowleft$	<code>\nsenwcurvearrow</code>
$\downarrow$	<code>\ndownleftcurvedarrow</code>	$\Downarrow$	<code>\nmapsdown</code>	$\curvearrowleft$	<code>\nsercurvearrow</code>
$\downarrow$	<code>\ndownlsquigarrow</code>	$\Downarrow$	<code>\nMapsdown</code>	$\curvearrowleft$	<code>\nswlcurvearrow</code>
$\downarrow$	<code>\ndownrcurvearrow</code>	$\Leftarrow$	<code>\nmapsfrom</code>	$\curvearrowleft$	<code>\nswnecurvearrow</code>
$\downarrow$	<code>\ndownrightcurvedarrow</code>	$\Leftarrow$	<code>\nMapsfrom</code>	$\curvearrowleft$	<code>\nswrcurvearrow</code>
$\downarrow$	<code>\ndownrsquigarrow</code>	$\mapsto$	<code>\nmapsto</code>	$\rightarrow$	<code>\nto</code>
$\updownarrow$	<code>\ndownupcurvearrow</code>	$\mapsto$	<code>\nMapsto</code>	$\updownarrow$	<code>\nupdowncurvearrow</code>
$\updownarrow$	<code>\ndownupsquigarrow</code>	$\Uparrow$	<code>\nmapsup</code>	$\updownarrow$	<code>\nupdownsquigarrow</code>
$\leftarrow$	<code>\ngets</code>	$\Uparrow$	<code>\nMapsup</code>	$\updownarrow$	<code>\nuplcurvearrow</code>
$\nearrow$	<code>\nhknearrow</code>	$\rightarrow$	<code>\nnelcurvearrow</code>	$\rightarrow$	<code>\nupleftcurvedarrow</code>
$\nearrow$	<code>\nhknwarrow</code>	$\rightarrow$	<code>\nnercurvearrow</code>	$\rightarrow$	<code>\nuplsquigarrow</code>
$\nearrow$	<code>\nhksearrow</code>	$\rightarrow$	<code>\nneswcurvearrow</code>	$\rightarrow$	<code>\nuprcurvearrow</code>
$\nearrow$	<code>\nhkswarrow</code>	$\rightarrow$	<code>\nnwlcurvearrow</code>	$\rightarrow$	<code>\nuprightcurvearrow</code>
$\rightarrow$	<code>\nleadsto</code>	$\curvearrowleft$	<code>\nnwrcurvearrow</code>	$\rightarrow$	<code>\nuprsquigarrow</code>
$\rightarrow$	<code>\nleftcurvedarrow</code>	$\curvearrowleft$	<code>\nnwsecurvearrow</code>		

TABLE 155: fdsymbol Harpoons

$\downarrow$	<code>\downharpoonleft</code>	$\nearrow$	<code>\neswharpoons</code>	$\searrow$	<code>\seharpoonsw</code>
$\downarrow$	<code>\downharpoonright</code>	$\nearrow$	<code>\neswharpoonsenw</code>	$\searrow$	<code>\senwharpoons</code>
$\updownarrow$	<code>\downupharpoons</code>	$\searrow$	<code>\nwharpoonne</code>	$\swarrow$	<code>\swharpoonnw</code>
$\leftarrow$	<code>\leftharpoondown</code>	$\searrow$	<code>\nwharpoonsw</code>	$\swarrow$	<code>\swharpoonse</code>
$\leftarrow$	<code>\leftharpoonup</code>	$\searrow$	<code>\nwseharpoonnesw</code>	$\swarrow$	<code>\swneharpoons</code>
$\rightleftarrows$	<code>\leftrightharpoondownup</code>	$\searrow$	<code>\nwseharpoons</code>	$\updownarrow$	<code>\updownharpoonleftright</code>
$\rightleftarrows$	<code>\leftrightharpoons</code>	$\searrow$	<code>\nwseharpoonswne</code>	$\updownarrow$	<code>\updownharpoonrightleft</code>
$\rightleftarrows$	<code>\leftrightharpoonupdown</code>	$\rightarrow$	<code>\rightharpoondown</code>	$\updownarrow$	<code>\updownharpoons</code>
$\nearrow$	<code>\neharpoonnw</code>	$\rightarrow$	<code>\rightharpoonup</code>	$\up$	<code>\upharpoonleft</code>
$\nearrow$	<code>\neharpoonse</code>	$\rightleftarrows$	<code>\rightleftharpoons</code>	$\up$	<code>\upharpoonright</code>
$\nearrow$	<code>\neswharpoonnwse</code>	$\searrow$	<code>\seharpoonne</code>		

fdsymbol defines `\restriction` as a synonym for `\upharpoonright`,
`\updownharpoonsleftright` as a synonym for `\updownharpoons`, and
`\downupharpoonsleftright` as a synonym for `\downupharpoons`.

TABLE 156: fdsymbol Negated Harpoons

$\dagger$	<code>\ndownharpoonleft</code>	$\nrightarrow$	<code>\nneswharpoons</code>	$\nwarrow$	<code>\nseharpoonsw</code>
$\ddagger$	<code>\ndownharpoonright</code>	$\nleftarrow$	<code>\nneswharpoonsenw</code>	$\nwarrow$	<code>\nsenwharpoons</code>
$\ddagger$	<code>\ndownupharpoons</code>	$\nwarrow$	<code>\nnwharpoonne</code>	$\nwarrow$	<code>\nswharpoonnw</code>
$\nleftarrow$	<code>\nleftharpoondown</code>	$\nwarrow$	<code>\nnwharpoonsw</code>	$\nwarrow$	<code>\nswharpoonse</code>
$\nleftarrow$	<code>\nleftharpoonup</code>	$\nwarrow$	<code>\nnwseharpoonsesw</code>	$\nwarrow$	<code>\nswneharpoons</code>
$\nleftarrow$	<code>\nleftrightharpoondownup</code>	$\nwarrow$	<code>\nnwseharpoons</code>	$\nrightarrow$	<code>\nupdownharpoonleftright</code>
$\nleftarrow$	<code>\nleftrightharpoons</code>	$\nwarrow$	<code>\nnwseharpoonswne</code>	$\nrightarrow$	<code>\nupdownharpoonrightleft</code>
$\nleftarrow$	<code>\nleftrightharpoonupdown</code>	$\nrightarrow$	<code>\nrightharpoondown</code>	$\nrightarrow$	<code>\nupdownharpoons</code>
$\nwarrow$	<code>\nneharpoonnw</code>	$\nrightarrow$	<code>\nrightharpoonup</code>	$\nrightarrow$	<code>\nupharpoonleft</code>
$\nwarrow$	<code>\nneharpoonse</code>	$\nrightarrow$	<code>\nrightharpoonright</code>	$\nrightarrow$	<code>\nupharpoonright</code>
$\nwarrow$	<code>\nneswharpoonnwse</code>	$\nwarrow$	<code>\nseharpoonne</code>		

fdsymbol defines `\nrestriction` as a synonym for `\nupharpoonright`,
`\ndownupharpoonsleftright` as a synonym for `\ndownupharpoons`, and
`\nupdownharpoonsleftright` as a synonym for `\nupdownharpoons`.

TABLE 157: boisik Arrows

$\bar{\leftarrow}$	<code>\barleftarrow</code>	$\uparrow$	<code>\Lsh</code>
$\bar{\leftrightarrow}$	<code>\barleftarrowrightarrowbar</code>	$\downarrow$	<code>\mapsdown</code>
$\bar{\nwarrow}$	<code>\barovernorthwestarrow</code>	$\leftarrow$	<code>\Mapsfrom</code>
$\leftarrow$	<code>\carriagereturn</code>	$\leftarrow$	<code>\mapsfrom</code>
$\circlearrowleft$	<code>\circlearrowleft</code>	$\rightarrow$	<code>\Mapsto</code>
$\circlearrowright$	<code>\circlearrowright</code>	$\rightarrow$	<code>\mapsto</code>
$\cupleftarrow$	<code>\cupleftarrow</code>	$\uparrow$	<code>\mapsup</code>
$\curlyvee\downarrow$	<code>\curlyveedownarrow</code>	$\nearrow$	<code>\Nearrow</code>
$\curlyvee\uparrow$	<code>\curlyveeuparrow</code>	$\nearrow$	<code>\nearrowcorner</code>
$\curlywedgedownarrow$	<code>\curlywedgedownarrow</code>	$\nearrow$	<code>\nnearrow</code>
$\curlywedgeuparrow$	<code>\curlywedgeuparrow</code>	$\nearrow$	<code>\nnwarrow</code>
$\curvearrowleft$	<code>\curvearrowleft</code>	$\nearrow$	<code>\Nwarrow</code>
$\curvearrowleft\rightarrow$	<code>\curvearrowleft\rightarrow</code>	$\nearrow$	<code>\nwarrowcorner</code>
$\curvearrowleft\rightarrow$	<code>\curvearrowleft\rightarrow</code>	$\rightarrow$	<code>\rightarrowbar</code>
$\curvearrowleft$	<code>\curvearrowleft</code>	$\rightarrow$	<code>\rightarrowcircle</code>
$\curvearrowleft\rightarrow$	<code>\curvearrowleft\rightarrow</code>	$\rightarrow$	<code>\rightarrowtail</code>
$\curvearrowright$	<code>\curvearrowright</code>	$\rightarrow$	<code>\rightarrowTriangle</code>
$\downarrow$	<code>\dlsh</code>	$\rightarrow$	<code>\rightarrowtriangle</code>
$\downarrow$	<code>\downblackarrow</code>	$\rightarrow$	<code>\rightblackarrow</code>
$\downarrow$	<code>\downdasharrow</code>	$\rightarrow$	<code>\rightdasharrow</code>
$\downarrow$	<code>\downdownarrows</code>	$\rightarrow$	<code>\rightleftarrows</code>
$\downarrow$	<code>\downtouparrow</code>	$\rightarrow$	<code>\rightrightarrows</code>
$\downarrow$	<code>\downwhitearrow</code>	$\rightarrow$	<code>\rightsquigarrow</code>
$\downarrow$	<code>\downzigzagarrow</code>	$\rightarrow$	<code>\rightthreearrows</code>
$\downarrow$	<code>\drsh</code>	$\rightarrow$	<code>\righttoleftarrow</code>
$\leftrightarrow$	<code>\eqleftarrow</code>	$\rightarrow$	<code>\rightwhitearrow</code>
$\hookleftarrow$	<code>\hookleftarrow</code>	$\rightarrow$	<code>\rightwhiteroundarrow</code>
$\hookrightarrow$	<code>\hookrightarrow</code>	$\Rightarrow$	<code>\Rrightarrow</code>
$\leftarrow$	<code>\leftarrowtail</code>	$\rightarrow$	<code>\Rsh</code>
$\leftarrow$	<code>\leftarrowTriangle</code>	$\rightarrow$	<code>\Searrow</code>

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$\leftarrow$	<code>\leftarrowtriangle</code>	$\searrow$	<code>\ssearrow</code>
$\blackleftarrow$	<code>\leftblackarrow</code>	$\swarrow$	<code>\sswarrow</code>
$\dashleftarrow$	<code>\leftdasharrow</code>	$\swarrow\swarrow$	<code>\Sswarrow</code>
$\leftrightsquigarrow$	<code>\leftrightsquigarrow</code>	$\Downarrow$	<code>\twoheaddownarrow</code>
$\Lleftarrow$	<code>\Lleftarrow</code>	$\Leftarrow$	<code>\twoheadleftarrow</code>
$\looparrowleft$	<code>\looparrowleft</code>	$\rightarrow$	<code>\twoheadrightarrow</code>
$\looparrowright$	<code>\looparrowright</code>	$\Uparrow$	<code>\twoheaduparrow</code>
$\rightarrowtriangle$	<code>\rightarrowtriangle</code>	$\Uparrow$	<code>\twoheadwhiteuparrow</code>
$\rightarrowblacktriangle$	<code>\rightarrowblacktriangle</code>	$\Updownarrow$	<code>\twoheadwhiteuparrowpedestal</code>
$\rightarrowsquigarrow$	<code>\rightarrowsquigarrow</code>	$\Uparrow$	<code>\upblackarrow</code>
$\rightsquigarrow$	<code>\rightsquigarrow</code>	$\Uparrow$	<code>\updasharrow</code>
$\rightarrowtail$	<code>\rightarrowtail</code>	$\Updownarrow$	<code>\updownarrowbar</code>
$\rightarrowwhitearrow$	<code>\rightarrowwhitearrow</code>	$\Updownarrow$	<code>\updownblackarrow</code>
$\rightarrowwhiteroundarrow$	<code>\rightarrowwhiteroundarrow</code>	$\Updownarrow$	<code>\updownwhitearrow</code>
$\rightarrowzigzagarrow$	<code>\rightarrowzigzagarrow</code>	$\Downarrow$	<code>\uptodownarrow</code>
$\linefeed$	<code>\linefeed</code>	$\Uparrow$	<code>\upuparrows</code>
$\Lleftarrow$	<code>\Lleftarrow</code>	$\Uparrow$	<code>\upwhitearrow</code>
$\looparrowdownleft$	<code>\looparrowdownleft</code>	$\Updownarrow$	<code>\whitearrowupfrombar</code>
$\looparrowdownright$	<code>\looparrowdownright</code>	$\Updownarrow$	<code>\whitearrowuppedestal</code>
$\looparrowleft$	<code>\looparrowleft</code>	$\Updownarrow$	<code>\whitearrowuppedestalthbar</code>
$\looparrowright$	<code>\looparrowright</code>	$\Updownarrow$	<code>\whitearrowuppedestaltvbar</code>

Many of these symbols are defined only if the `arrows` package option is specified.

TABLE 158: boisik Negated Arrows

$\nrightarrow$	<code>\nrightarrow</code>	$\nleftarrow$	<code>\nleftarrow</code>	$\nleftrightarrow$	<code>\nleftrightarrow</code>
$\nrightarrow$	<code>\nrightarrow</code>	$\nleftarrow$	<code>\nleftarrow</code>	$\nleftrightarrow$	<code>\nleftrightarrow</code>
$\nrightarrow$	<code>\nrightarrow</code>	$\nleftarrow$	<code>\nleftarrow</code>	$\nleftrightarrow$	<code>\nleftrightarrow</code>
$\nrightarrow$	<code>\nrightarrow</code>	$\nleftarrow$	<code>\nleftarrow</code>	$\nleftrightarrow$	<code>\nleftrightarrow</code>

Many of these symbols are defined only if the `arrows` package option is specified.

TABLE 159: boisik Harpoons

$\Downarrow$	<code>\downharpoonleft</code>	$\Leftrightarrow$	<code>\leftrightharpoons</code>	$\Uparrow$	<code>\upharpoonleft</code>
$\Downarrow$	<code>\downharpoonright</code>	$\rightarrow$	<code>\rightharpoondown</code>	$\Uparrow$	<code>\upharpoonright</code>
$\leftarrow$	<code>\leftharpoondown</code>	$\rightarrow$	<code>\rightharpoonup</code>		
$\leftarrow$	<code>\leftharpoonup</code>	$\Leftrightarrow$	<code>\rightleftharpoons</code>		

TABLE 160: stix Arrows

	<code>\acwcirculararrow</code>		<code>\longmapsto</code>
	<code>\acwgapcirculararrow</code>		<code>\Longmapsto</code>
	<code>\acwleftarcarrow</code>		<code>\longrightarrow</code>
	<code>\acwoverarcarrow</code>		<code>\Longrightarrow</code>
	<code>\acwunderarcarrow</code>		<code>\longrightsquigarrow</code>
	<code>\barleftarrow</code>		<code>\looparrowleft</code>
	<code>\barleftarrowrightarrowbar*</code>		<code>\looparrowright</code>
	<code>\barrightarrowdiamond</code>		<code>\Lsh</code>
	<code>\baruparrow</code>		<code>\mapsdown</code>
	<code>\bsimilarleftarrow</code>		<code>\Mapsfrom</code>
	<code>\bsimilarrightarrow</code>		<code>\mapsfrom</code>
	<code>\carriagereturn*</code>		<code>\mapsto</code>
	<code>\ccwundercurvearrow</code>		<code>\Mapsto</code>
	<code>\circlearrowleft</code>		<code>\mapsup</code>
	<code>\circlearrowright</code>		<code>\Nearrow</code>
	<code>\circleonleftarrow</code>		<code>\nearrow</code>
	<code>\circleonrightarrow</code>		<code>\neovnwarrow*</code>
	<code>\curvearrowleft</code>		<code>\neovsearrow*</code>
	<code>\curvearrowleftplus</code>		<code>\neswarrow</code>
	<code>\curvearrowright</code>		<code>\nwarrow</code>
	<code>\curvearrowrightminus</code>		<code>\Nwarrow</code>
	<code>\cwcirculararrow</code>		<code>\nwovnearrow*</code>
	<code>\cwgapcirculararrow</code>		<code>\nwsearrow</code>
	<code>\cwrightarcarrow</code>		<code>\rdiagovsearrow*</code>
	<code>\cwundercurvearrow</code>		<code>\Rdsh</code>
	<code>\dbkarrow</code>		<code>\Rightarrow</code>
	<code>\DDownarrow</code>		<code>\rightarrow</code>
	<code>\Ddownarrow</code>		<code>\rightarrowapprox</code>
	<code>\diamondleftarrow</code>		<code>\rightarrowbackapprox</code>
	<code>\diamondleftarrowbar</code>		<code>\rightarrowbar</code>
	<code>\downarrow</code>		<code>\rightarrowsimilar</code>
	<code>\Downarrow</code>		<code>\rightarrowdiamond</code>
	<code>\downarrowbar</code>		<code>\rightarrowonoplus</code>
	<code>\downarrowbarred</code>		<code>\rightarrowplus</code>
	<code>\downdasharrow*</code>		<code>\rightarrowshortleftarrow</code>
	<code>\down downarrows</code>		<code>\rightarrowsimilar</code>
	<code>\downrightcurvedarrow*</code>		<code>\rightarrowtail</code>
	<code>\downuparrows</code>		<code>\rightarrowtriangle</code>
	<code>\downwhitearrow*</code>		<code>\rightarrowx</code>
	<code>\downzigzagarrow</code>		<code>\rightarrowbkarrow</code>
	<code>\draftingarrow*</code>		<code>\rightarrowcurvedarrow</code>
	<code>\drbkarrow</code>		<code>\rightarrowdasharrow*</code>
	<code>\eualleftarrow</code>		<code>\rightarrowdotarrow</code>
	<code>\equalrightarrow</code>		<code>\rightarrowdowncurvedarrow</code>
	<code>\fdiagovnearrow*</code>		<code>\rightarrowleftarrows</code>
	<code>\hknearrow</code>		<code>\rightarrowrightarrows</code>
	<code>\hknwarrow</code>		<code>\rightsquigarrow</code>
	<code>\hksearrow</code>		<code>\rightarrowthreearrows</code>
	<code>\hkswarrow</code>		<code>\rightarrowwavearrow</code>
	<code>\hookleftarrow</code>		<code>\rightarrowwhitearrow*</code>
	<code>\hookrightarrow</code>		<code>\RRrightarrow</code>
	<code>\Ldsh</code>		<code>\Rrightarrow</code>

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$\leftarrow$	<code>\leftarrow</code>	$\rightarrow$	<code>\Rsh</code>
$\Leftarrow$	<code>\Leftarrow</code>	$\searrow$	<code>\searrow</code>
$\leftarrowapprox$	<code>\leftarrowapprox</code>	$\searrow$	<code>\searrow</code>
$\leftarrowbackapprox$	<code>\leftarrowbackapprox</code>	$\searrow$	<code>\seovnearrow*</code>
$\leftarrowbsimilar$	<code>\leftarrowbsimilar</code>	$\leftrightarrow$	<code>\shortrightarrowleftarrow</code>
$\leftarrowonoplus$	<code>\leftarrowonoplus</code>	$\leftarrow$	<code>\similarleftarrow</code>
$\leftarrowplus$	<code>\leftarrowplus</code>	$\rightarrow$	<code>\similarrightarrow</code>
$\rightarrowshortrightarrow$	<code>\rightarrowshortrightarrow</code>	$\swarrow$	<code>\swarrow</code>
$\rightarrowsimilar$	<code>\rightarrowsimilar</code>	$\swarrow$	<code>\swarrow</code>
$\rightarrowtail$	<code>\rightarrowtail</code>	$\times$	<code>\toea</code>
$\rightarrowtriangle$	<code>\rightarrowtriangle</code>	$\times$	<code>\tona</code>
$\rightarrowx$	<code>\rightarrowx</code>	$\times$	<code>\tosa</code>
$\leftarrowbkarrow$	<code>\leftarrowbkarrow</code>	$\times$	<code>\towa</code>
$\rightarrowcurvedarrow$	<code>\rightarrowcurvedarrow</code>	$\downarrow$	<code>\twoheaddownarrow</code>
$\rightarrowdasharrow*$	<code>\rightarrowdasharrow*</code>	$\leftarrow$	<code>\twoheadleftarrow</code>
$\leftarrowdbkarrow$	<code>\leftarrowdbkarrow</code>	$\leftarrow$	<code>\twoheadleftarrowtail</code>
$\rightarrowdotarrow$	<code>\rightarrowdotarrow</code>	$\leftarrow$	<code>\twoheadleftdbkarrow</code>
$\rightarrowdowncurvedarrow$	<code>\rightarrowdowncurvedarrow</code>	$\leftarrow$	<code>\twoheadmapsfrom</code>
$\rightarrowleftarrows$	<code>\rightarrowleftarrows</code>	$\rightarrow$	<code>\twoheadmapsto</code>
$\rightarrowrightarrow$	<code>\rightarrowrightarrow</code>	$\rightarrow$	<code>\twoheadrightarrow</code>
$\rightarrowrightarrowcircle$	<code>\rightarrowrightarrowcircle</code>	$\rightarrow$	<code>\twoheadrightarrowtail</code>
$\rightarrowrightarrows$	<code>\rightarrowrightarrows</code>	$\uparrow$	<code>\twoheaduparrow</code>
$\rightarrowrightarrowtriangle$	<code>\rightarrowrightarrowtriangle</code>	$\uparrow$	<code>\twoheaduparrowcircle</code>
$\rightarrowrightsquigarrow$	<code>\rightarrowrightsquigarrow</code>	$\uparrow$	<code>\uparrow</code>
$\rightarrowsquigarrow$	<code>\rightarrowsquigarrow</code>	$\uparrow$	<code>\Upward</code>
$\rightarrowthreearrows$	<code>\rightarrowthreearrows</code>	$\uparrow$	<code>\uparrowbarred</code>
$\rightarrowwvearrow$	<code>\rightarrowwvearrow</code>	$\uparrow$	<code>\updasharrow*</code>
$\rightarrowwhitearrow*$	<code>\rightarrowwhitearrow*</code>	$\updownarrow$	<code>\Updownarrow</code>
$\rightarrowlinefeed*$	<code>\rightarrowlinefeed*</code>	$\updownarrow$	<code>\updownarrow</code>
$\rightarrowLleftarrow$	<code>\rightarrowLleftarrow</code>	$\updownarrow$	<code>\updownarrowbar*</code>
$\rightarrowLleftarrow$	<code>\rightarrowLleftarrow</code>	$\updownarrow$	<code>\updownarrows</code>
$\rightarrowlongleftarrow$	<code>\rightarrowlongleftarrow</code>	$\rightarrow$	<code>\uprightcurvearrow*</code>
$\rightarrowLongleftarrow$	<code>\rightarrowLongleftarrow</code>	$\upuparrows$	<code>\upuparrows</code>
$\rightarrowLongleftarrowrightarrow$	<code>\rightarrowLongleftarrowrightarrow</code>	$\upwhitearrow*$	<code>\upwhitearrow*</code>
$\rightarrowLongleftarrowrightarrow$	<code>\rightarrowLongleftarrowrightarrow</code>	$\Uparrow$	<code>\Uparrow</code>
$\rightarrowlongleftsquigarrow$	<code>\rightarrowlongleftsquigarrow</code>	$\Uparrow$	<code>\Uparrow</code>
$\rightarrowLongmapsfrom$	<code>\rightarrowLongmapsfrom</code>	$\varhookrightarrow$	<code>\varcarriagereturn*</code>
$\rightarrowlongmapsfrom$	<code>\rightarrowlongmapsfrom</code>	$\upwhitearrow*$	<code>\whitearrowupfrombar*</code>

* Defined as an ordinary character, not as a binary relation.

stix defines `\acwopencirclearrow` as a synonym for `\circlearrowleft`, `\cwopencirclearrow` as a synonym for `\circlearrowright`, `\leadsto` as a synonym for `\rightsquigarrow`, `\dashleftarrow` as a synonym for `\leftarrowdbkarrow`, and `\dashrightarrow` and `\dasharrow` as synonyms for `\dbkarrow`.

TABLE 161: stix Negated Arrows

$\nrightarrow$	<code>\nHdownarrow*</code>	$\nleftrightarrow$	<code>\nvLeftrightarrow</code>
$\nrightarrow$	<code>\nHuparrow*</code>	$\nrightarrow$	<code>\nVrightarrow</code>
$\nleftarrow$	<code>\nleftarrow[†]</code>	$\nrightarrow$	<code>\nvrightarrow</code>
$\nleftarrow$	<code>\nLeftarrow</code>	$\rightarrow$	<code>\nvrightarrow</code>
$\nleftrightarrow$	<code>\nleftrightarrow</code>	$\rightarrow$	<code>\nVrightarrowtail</code>
$\nleftrightarrow$	<code>\nLeftrightarrow</code>	$\rightarrow$	<code>\nvrightarrowtail</code>
$\rightarrow$	<code>\nrightarrow</code>	$\nleftarrow$	<code>\nVtwoheadleftarrow</code>
$\rightarrow$	<code>\nrightarrow</code>	$\nleftarrow$	<code>\nVtwoheadleftarrow</code>
$\nleftarrow$	<code>\nvleftarrow</code>	$\nleftarrow$	<code>\nVtwoheadleftarrowtail</code>
$\nleftarrow$	<code>\nvLeftarrow</code>	$\nleftarrow$	<code>\nVtwoheadleftarrowtail</code>
$\nleftarrow$	<code>\nVleftarrow</code>	$\rightarrow$	<code>\nVtwoheadrightarrow</code>
$\nleftarrow$	<code>\nVleftarrowtail</code>	$\rightarrow$	<code>\nVtwoheadrightarrow</code>
$\nleftarrow$	<code>\nvleftarrowtail</code>	$\rightarrow$	<code>\nVtwoheadrightarrowtail</code>
$\nleftrightarrow$	<code>\nvleftrightarrow</code>	$\rightarrow$	<code>\nVtwoheadrightarrowtail</code>
$\nleftrightarrow$	<code>\nVleftrightarrow</code>		

* Defined as an ordinary character, not as a binary relation.

[†] stix defines `\ngets` as a synonym for `\nleftarrow`.

TABLE 162: stix Harpoons

$\nrightarrow$	<code>\bardownharpoonleft</code>	$\nleftrightarrow$	<code>\leftrightharpoons</code>
$\nrightarrow$	<code>\bardownharpoonright</code>	$\nleftrightarrow$	<code>\leftrightharpoonsdown</code>
$\nrightarrow$	<code>\barleftharpoonup</code>	$\nleftrightarrow$	<code>\leftrightharpoonsup</code>
$\nrightarrow$	<code>\barleftharpoonup</code>	$\nleftrightarrow$	<code>\leftrightharpoonupdown</code>
$\nrightarrow$	<code>\barleftharpoonup</code>	$\nleftrightarrow$	<code>\leftrightharpoonupup</code>
$\nrightarrow$	<code>\barleftharpoonup</code>	$\nleftrightarrow$	<code>\leftrightharpoonupup</code>
$\nrightarrow$	<code>\barupharpoonleft</code>	$\nleftrightarrow$	<code>\rightharpoonupdownbar</code>
$\nrightarrow$	<code>\barupharpoonright</code>	$\nleftrightarrow$	<code>\rightharpoonupdownbar</code>
$\nleftrightarrow$	<code>\dashleftharpoonup</code>	$\nleftrightarrow$	<code>\rightharpoonup</code>
$\nleftrightarrow$	<code>\dashrightharpoonup</code>	$\nleftrightarrow$	<code>\rightharpoonupbar</code>
$\nleftrightarrow$	<code>\downharpoonleft</code>	$\nleftrightarrow$	<code>\rightharpoonupdash</code>
$\nleftrightarrow$	<code>\downharpoonleftbar</code>	$\nleftrightarrow$	<code>\rightleftharpoons</code>
$\nleftrightarrow$	<code>\downharpoonright</code>	$\nleftrightarrow$	<code>\rightleftharpoonsdown</code>
$\nleftrightarrow$	<code>\downharpoonrightbar</code>	$\nleftrightarrow$	<code>\rightleftharpoonsup</code>
$\nleftrightarrow$	<code>\downharpoonsleftright</code>	$\nleftrightarrow$	<code>\updownharpoonleftleft</code>
$\nleftrightarrow$	<code>\downupharpoonsleftright</code>	$\nleftrightarrow$	<code>\updownharpoonleftright</code>
$\nleftrightarrow$	<code>\leftharpoonupdown</code>	$\nleftrightarrow$	<code>\updownharpoonrightleft</code>
$\nleftrightarrow$	<code>\leftharpoonupdownbar</code>	$\nleftrightarrow$	<code>\updownharpoonrightright</code>
$\nleftrightarrow$	<code>\leftharpoonsupdown</code>	$\nleftrightarrow$	<code>\updownharpoonsleftright</code>
$\nleftrightarrow$	<code>\leftharpoonup</code>	$\nleftrightarrow$	<code>\upharpoonleft</code>
$\nleftrightarrow$	<code>\leftharpoonupbar</code>	$\nleftrightarrow$	<code>\upharpoonleftbar</code>
$\nleftrightarrow$	<code>\leftharpoonupdash</code>	$\nleftrightarrow$	<code>\upharpoonright*</code>
$\nleftrightarrow$	<code>\leftrightharpoonupdown</code>	$\nleftrightarrow$	<code>\upharpoonrightbar</code>
$\nleftrightarrow$	<code>\leftrightharpoonupdown</code>	$\nleftrightarrow$	<code>\upharpoonsleftright</code>

* stix defines `\restriction` as a synonym for `\upharpoonright`.

TABLE 163: harpoon Extensible Harpoons

$\overleftarrow{abc}$	<code>\overleftharp{abc}</code>	$\overrightarrow{abc}$	<code>\overrightharpdown{abc}</code>	$\underleftarrow{abc}$	<code>\underrightharp{abc}</code>
$\overleftarrow{abc}$	<code>\overleftharpdown{abc}</code>	$\underleftarrow{abc}$	<code>\underleftharp{abc}</code>	$\underleftarrow{abc}$	<code>\underrightharpdown{abc}</code>
$\overrightarrow{abc}$	<code>\overrightharp{abc}</code>	$\underleftarrow{abc}$	<code>\underleftharpdown{abc}</code>		

All of the `harpoon` symbols are implemented using the `graphics` package (specifically, `graphics`'s `\resizebox` command). Consequently, only T_EX backends that support graphical transformations (e.g., *not* Xdvi) can properly display these symbols.

TABLE 164: chemarrow Arrows

$\rightarrow$ `\chemarrow`

TABLE 165: fge Arrows

$\Rightarrow$ `\fgerightarrow` $\Uparrow$ `\fgeuparrow`

TABLE 166: old-arrows Arrows

$\downarrow$	<code>\downarrow</code>	$\longleftrightarrow$	<code>\longlefttrightarrow</code>	$\nwarrow$	<code>\nwarrow</code>
$\hookleftarrow$	<code>\hookleftarrow</code>	$\longleftarrow$	<code>\longmapsfrom*</code>	$\rightarrow$	<code>\rightarrow</code>
$\hookrightarrow$	<code>\hookrightarrow</code>	$\mapsto$	<code>\longmapsto</code>	$\searrow$	<code>\searrow</code>
$\leftarrow$	<code>\leftarrow</code>	$\longrightarrow$	<code>\longrightarrow</code>	$\swarrow$	<code>\swarrow</code>
$\leftrightarrow$	<code>\leftrightarrow</code>	$\mapsto$	<code>\mapsfrom*</code>	$\uparrow$	<code>\uparrow</code>
$\longrightarrow$	<code>\longrightarrow</code>	$\mapsto$	<code>\mapsto</code>	$\updownarrow$	<code>\updownarrow</code>
$\longleftarrow$	<code>\longleftarrow</code>	$\nearrow$	<code>\nearrow</code>		

The arrows provided by `old-arrows` represent Donald Knuth's pre-1992 Computer Modern glyphs, which feature smaller arrowheads. Contrast the following:

$\rightarrow$ vs. $\rightarrow$
default old-arrows

In addition to the arrows shown above, `old-arrows` also reduces the arrowhead size for $\mathcal{A}\mathcal{M}\mathcal{S}$'s `\overleftarrow`, `\overrightarrow`, `\overleftrightarrow`, `\underleftarrow`, `\underrightarrow`, `\underleftrightarrow`, `\xleftarrow`, `\xrightarrow`, `\varinjlim`, and `\varprojlim` symbols (Table 240 on page 104, Table 256 on page 107, and Table 182 on page 89) and `mathtools`'s `\xleftrightarrow`, `\xhookleftarrow`, `\xhookrightarrow`, and `\xmapsto` symbols (Table 257 on page 108).

With the new package option, `old-arrows` prefixes all of the above with “`var`” (i.e., `\vardownarrow`, `\varhookleftarrow`, etc.) so both old and new glyphs can be used in the same document. See the `old-arrows` documentation for more information.

* Requires `stmaryrd`.

TABLE 167: old-arrows Harpoons

	<code>\longleftharpoondown</code>		<code>\longrightharpoondown</code>
	<code>\longleftharpoonup</code>		<code>\longrightharpoonup</code>

Unlike the symbols shown in Table 166 on the previous page, the `new` package option does not define a `\var...` version of the symbols in this table. Also unlike the symbols shown in Table 166, the harpoon arrowheads in this table are not reduced in size (i.e., relative to the size of those shown in Table 139 on page 70).

TABLE 168: esrelation Restrictions

	<code>\restrictbar</code>		<code>\restrictmallet</code>		<code>\restrictwand</code>
	<code>\restrictbarup</code>		<code>\restrictmalletup</code>		<code>\restrictwandup</code>

TABLE 169: MnSymbol Spoons

	<code>\downfilledspoon</code>		<code>\nnespoon</code>		<code>\nwfilledspoon</code>
	<code>\downspoon</code>		<code>\nnwfilledspoon</code>		<code>\nwspoon</code>
	<code>\leftfilledspoon</code>		<code>\nnwspoon</code>		<code>\rightfilledspoon</code>
	<code>\leftspoon</code>		<code>\nrrightfilledspoon</code>		<code>\rightspoon*</code>
	<code>\ndownfilledspoon</code>		<code>\nrrightspoon*</code>		<code>\sefilledspoon</code>
	<code>\ndownspoon</code>		<code>\nsefilledspoon</code>		<code>\sespoon</code>
	<code>\nefilledspoon</code>		<code>\nsespoon</code>		<code>\swfilledspoon</code>
	<code>\nespoon</code>		<code>\nswfilledspoon</code>		<code>\swspoon</code>
	<code>\nleftfilledspoon</code>		<code>\nswspoon</code>		<code>\upfilledspoon</code>
	<code>\nleftspoon</code>		<code>\nupfilledspoon</code>		<code>\upspoon</code>
	<code>\nnefilledspoon</code>		<code>\nupspoon</code>		

* MnSymbol defines `\multimap` as a synonym for `\rightspoon` and `\nmultimap` as a synonym for `\nrrightspoon`.

TABLE 170: MnSymbol Pitchforks

	<code>\downpitchfork</code>		<code>\nnwpitchfork</code>		<code>\rightpitchfork</code>
	<code>\leftpitchfork</code>		<code>\nrrightpitchfork</code>		<code>\sepitchfork</code>
	<code>\ndownpitchfork</code>		<code>\nsepitchfork</code>		<code>\swpitchfork</code>
	<code>\nepitchfork</code>		<code>\nswpitchfork</code>		<code>\uppitchfork</code>
	<code>\nleftpitchfork</code>		<code>\nuppitchfork</code>		
	<code>\nnepitchfork</code>		<code>\nwpitchfork</code>		

* MnSymbol defines `\pitchfork` as a synonym for `\uppitchfork` and `\npitchfork` as a synonym for `\nuppitchfork`.

TABLE 171: MnSymbol Smiles and Frowns

$\curvearrowright$	<code>\doublefrown</code>	$\smile$	<code>\nsmileeq</code>	$\smile$	<code>\smileeq</code>
$\curvearrowright$	<code>\doublefrowneq</code>	$\smile$	<code>\nsmileeqfrown</code>	$\smile$	<code>\smileeqfrown</code>
$\smile$	<code>\doublesmile</code>	$\smile$	<code>\nsmilefrown</code>	$\smile$	<code>\smilefrown</code>
$\smile$	<code>\doublesmileeq</code>	$\smile$	<code>\nsmilefrowneq</code>	$\smile$	<code>\smilefrowneq</code>
$\frown$	<code>\eqfrown</code>	$\frown$	<code>\nsqdoublefrown</code>	$\frown$	<code>\sqdoublefrown</code>
$\frown$	<code>\eqsmile</code>	$\frown$	<code>\nsqdoublefrowneq</code>	$\frown$	<code>\sqdoublefrowneq</code>
$\frown$	<code>\frown</code>	$\frown$	<code>\nsqdoublesmile</code>	$\frown$	<code>\sqdoublesmile</code>
$\frown$	<code>\frowneq</code>	$\frown$	<code>\nsqdoublesmileeq</code>	$\frown$	<code>\sqdoublesmileeq</code>
$\frown$	<code>\frowneqsmile</code>	$\frown$	<code>\nsqeqfrown</code>	$\frown$	<code>\sqeqfrown</code>
$\frown$	<code>\frownsmile</code>	$\frown$	<code>\nsqeqsmile</code>	$\frown$	<code>\sqeqsmile</code>
$\frown$	<code>\frownsmileeq</code>	$\frown$	<code>\nsqfrown</code>	$\frown$	<code>\sqfrown</code>
$\frown$	<code>\ndoublefrown</code>	$\frown$	<code>\nsqfrowneq</code>	$\frown$	<code>\sqfrowneq</code>
$\frown$	<code>\ndoublefrowneq</code>	$\frown$	<code>\nsqfrowneqsmile</code>	$\frown$	<code>\sqfrowneqsmile</code>
$\frown$	<code>\ndoublesmile</code>	$\frown$	<code>\nsqfrownsmile</code>	$\frown$	<code>\sqfrownsmile</code>
$\frown$	<code>\ndoublesmileeq</code>	$\frown$	<code>\nsqsmile</code>	$\frown$	<code>\sqsmile</code>
$\frown$	<code>\neqfrown</code>	$\frown$	<code>\nsqsmileeq</code>	$\frown$	<code>\sqsmileeq</code>
$\frown$	<code>\neqsmile</code>	$\frown$	<code>\nsqsmileeqfrown</code>	$\frown$	<code>\sqsmileeqfrown</code>
$\frown$	<code>\nfrown</code>	$\frown$	<code>\nsqsmilefrown</code>	$\frown$	<code>\sqsmilefrown</code>
$\frown$	<code>\nfrowneq</code>	$\frown$	<code>\nsqtriplefrown</code>	$\frown$	<code>\sqtriplefrown</code>
$\frown$	<code>\nfrowneqsmile</code>	$\frown$	<code>\nsqtriplesmile</code>	$\frown$	<code>\sqtriplesmile</code>
$\frown$	<code>\nfrownsmile</code>	$\frown$	<code>\ntriplefrown</code>	$\frown$	<code>\triplefrown</code>
$\frown$	<code>\nfrownsmileeq</code>	$\frown$	<code>\ntriplesmile</code>	$\frown$	<code>\triplesmile</code>
$\frown$	<code>\nsmile</code>	$\frown$	<code>\smile</code>		

* MnSymbol defines `\smallsmile` as a synonym for `\smile`, `\smallfrown` as a synonym for `\frown`, `\asymp` as a synonym for `\smilefrown`, and `\nasymp` as a synonym for `\nsmilefrown`.

TABLE 172: fdsymbol Spoons

$\blacklozenge$	<code>\blackwhitespoon</code>	$\blacklozenge$	<code>\downblackspoon</code>	$\blacklozenge$	<code>\nupblackspoon</code>
$\blacklozenge$	<code>\downblackspoon</code>	$\blacklozenge$	<code>\downspoon</code>	$\blacklozenge$	<code>\nupspoon</code>
$\blacklozenge$	<code>\downspoon</code>	$\blacklozenge$	<code>\nleftblackspoon</code>	$\blacklozenge$	<code>\nwhiteblackspoon</code>
$\blacklozenge$	<code>\leftblackspoon</code>	$\blacklozenge$	<code>\nleftrightblackspoon</code>	$\blacklozenge$	<code>\rightblackspoon</code>
$\blacklozenge$	<code>\leftrightblackspoon</code>	$\blacklozenge$	<code>\nleftrightspoon</code>	$\blacklozenge$	<code>\rightspoon</code>
$\blacklozenge$	<code>\leftrightspoon</code>	$\blacklozenge$	<code>\nleftspoon</code>	$\blacklozenge$	<code>\upblackspoon</code>
$\blacklozenge$	<code>\leftspoon</code>	$\blacklozenge$	<code>\nrightblackspoon</code>	$\blacklozenge$	<code>\upspoon</code>
$\blacklozenge$	<code>\nblackwhitespoon</code>	$\blacklozenge$	<code>\nrightspoon</code>	$\blacklozenge$	<code>\whiteblackspoon</code>

fdsymbol defines synonyms for many of the preceding symbols:

$\circ$	<code>\cirmid</code>	$\circ$	<code>\multimapinv</code>	$\circ$	<code>\nmultimap</code>
$\circ$	<code>\dualmap</code>	$\circ$	<code>\ncirmid</code>	$\circ$	<code>\nmultimapinv</code>
$\circ$	<code>\imageof</code>	$\circ$	<code>\ndualmap</code>	$\circ$	<code>\norigof</code>
$\circ$	<code>\midcir</code>	$\circ$	<code>\nimageof</code>	$\circ$	<code>\origof</code>
$\circ$	<code>\multimap</code>	$\circ$	<code>\nmidcir</code>		

TABLE 173: fdsymbol Pitchforks

Ψ	<code>\downpitchfork</code>	$\nleftpitchfork$	<code>\nleftpitchfork</code>	$\nrightpitchfork$	<code>\nrightpitchfork</code>
$\nleftpitchfork$	<code>\leftpitchfork</code>	$\nrightpitchfork$	<code>\rightpitchfork</code>	$\uppitchfork$	<code>\uppitchfork</code>
Ψ	<code>\downpitchfork</code>	$\nuppitchfork$	<code>\nuppitchfork</code>		

`fdsymbol` defines `\npitchfork` as a synonym for `\nuppitchfork` and `\pitchfork` as a synonym for `\uppitchfork`.

TABLE 174: fdsymbol Smiles and Frowns

$\frown$	<code>\frown</code>	$\nfrown$	<code>\nfrown</code>	$\smilefrown$	<code>\smilefrown</code>
$\frown$	<code>\frown</code>	$\nfrown$	<code>\nfrown</code>	$\smile$	<code>\smile</code>
$\frown$	<code>\frown</code>	$\nfrown$	<code>\nfrown</code>	$\smile$	<code>\smile</code>
$\frown$	<code>\frown</code>	$\nfrown$	<code>\nfrown</code>	$\smile$	<code>\smile</code>
$\frown$	<code>\frown</code>	$\nfrown$	<code>\nfrown</code>	$\smile$	<code>\smile</code>

`fdsymbol` defines `\arceq` as a synonym for `\frowneq`, `\asym` as a synonym for `\smilefrown`, `\closure` as a synonym for `\frownsmile`, `\narceq` as a synonym for `\nfrowneq`, `\nasym` as a synonym for `\nsmilefrown`, `\nclosure` as a synonym for `\nfrownsmile`, `\smallfrown` as a synonym for `\frown`, and `\smallsmile` as a synonym for `\smile`.

TABLE 175: ulsy Contradiction Symbols

$\blitza$	<code>\blitza</code>	$\blitzb$	<code>\blitzb</code>	$\blitzc$	<code>\blitzc</code>	$\blitzd$	<code>\blitzd</code>	$\blitze$	<code>\blitze</code>
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TABLE 176: Extension Characters

$\relbar$	<code>\relbar</code>	$\Relbar$	<code>\Relbar</code>
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TABLE 177: stmaryrd Extension Characters

$\Arrownot$	<code>\Arrownot</code>	$\Mapsfromchar$	<code>\Mapsfromchar</code>	$\Mapstochar$	<code>\Mapstochar</code>
$\arrownot$	<code>\arrownot</code>	$\mapsfromchar$	<code>\mapsfromchar</code>	$\mapstochar$	<code>\mapstochar</code>

TABLE 178: txfonts/pxfonts Extension Characters

$\Mappedfromchar$	<code>\Mappedfromchar</code>	$\Mmappedfromchar$	<code>\Mmappedfromchar</code>	$\Mmapstochar$	<code>\Mmapstochar</code>
$\mappedfromchar$	<code>\mappedfromchar</code>	$\mmappedfromchar$	<code>\mmappedfromchar</code>	$\mmapstochar$	<code>\mmapstochar</code>

TABLE 179: mathabx Extension Characters

$\mapsfromchar$	<code>\mapsfromchar</code>	$\mapstochar$	<code>\mapstochar</code>
$\Mapsfromchar$	<code>\Mapsfromchar</code>	$\Mapstochar$	<code>\Mapstochar</code>

TABLE 180: stix Extension Characters

$\hookleftarrow$	<code>\lhook</code>	$\bar{}$	<code>\relbar</code>	$\equiv$	<code>\RRelbar</code>
$\mapsto$	<code>\mapsfromchar</code>	$\bar{}$	<code>\Relbar</code>	$\equiv$	<code>\Rrelbar</code>
$\hookrightarrow$	<code>\mapstochar</code>	$\hookrightarrow$	<code>\rhook</code>		

TABLE 181: Log-like Symbols

<code>\arccos</code>	<code>\cos</code>	<code>\csc</code>	<code>\exp</code>	<code>\ker</code>	<code>\limsup</code>	<code>\min</code>	<code>\sinh</code>
<code>\arcsin</code>	<code>\cosh</code>	<code>\deg</code>	<code>\gcd</code>	<code>\lg</code>	<code>\ln</code>	<code>\Pr</code>	<code>\sup</code>
<code>\arctan</code>	<code>\cot</code>	<code>\det</code>	<code>\hom</code>	<code>\lim</code>	<code>\log</code>	<code>\sec</code>	<code>\tan</code>
<code>\arg</code>	<code>\coth</code>	<code>\dim</code>	<code>\inf</code>	<code>\liminf</code>	<code>\max</code>	<code>\sin</code>	<code>\tanh</code>

Calling the above “symbols” may be a bit misleading.³ Each log-like symbol merely produces the eponymous textual equivalent, but with proper surrounding spacing. See Section 10.4 for more information about log-like symbols. As `\bmod` and `\pmod` are arguably not symbols we refer the reader to the Short Math Guide for L^AT_EX [Dow00] for samples.

TABLE 182: $\mathcal{A}\mathcal{M}\mathcal{S}$ Log-like Symbols

<code>\injlim</code>	<code>\injlim</code>	$\varinjlim$	<code>\varinjlim</code>	$\overline{\lim}$	<code>\varlimsup</code>
<code>\projlim</code>	<code>\projlim</code>	$\varprojlim$	<code>\varprojlim</code>	$\varprojlim$	<code>\varprojlim</code>

Load the `amsmath` package to get these symbols. See Section 10.4 for some additional comments regarding log-like symbols. As `\mod` and `\pod` are arguably not symbols we refer the reader to the Short Math Guide for L^AT_EX [Dow00] for samples.

TABLE 183: G_U^NA₂e Number Sets

$\mathbb{C}$	<code>\Complex</code>	$\mathbb{Z}$	<code>\Integer</code>	$\mathbb{N}$	<code>\Natural</code>	$\mathbb{Q}$	<code>\Rational</code>	$\mathbb{R}$	<code>\Real</code>
$\mathbb{C}$	<code>\COMPLEX</code>	$\mathbb{Z}$	<code>\INTEGER</code>	$\mathbb{N}$	<code>\NATURAL</code>	$\mathbb{Q}$	<code>\RATIONAL</code>	$\mathbb{R}$	<code>\REAL</code>

³Michael J. Downes prefers the more general term, “atomic math objects”.

TABLE 184: Greek Letters

α	<code>\alpha</code>	θ	<code>\theta</code>	o	<code>o</code>	τ	<code>\tau</code>
β	<code>\beta</code>	ϑ	<code>\vartheta</code>	π	<code>\pi</code>	υ	<code>\upsilon</code>
γ	<code>\gamma</code>	ι	<code>\iota</code>	ϖ	<code>\varpi</code>	ϕ	<code>\phi</code>
δ	<code>\delta</code>	κ	<code>\kappa</code>	ρ	<code>\rho</code>	φ	<code>\varphi</code>
ϵ	<code>\epsilon</code>	λ	<code>\lambda</code>	ϱ	<code>\varrho</code>	χ	<code>\chi</code>
ε	<code>\varepsilon</code>	μ	<code>\mu</code>	σ	<code>\sigma</code>	ψ	<code>\psi</code>
ζ	<code>\zeta</code>	ν	<code>\nu</code>	ς	<code>\varsigma</code>	ω	<code>\omega</code>
η	<code>\eta</code>	ξ	<code>\xi</code>				
Γ	<code>\Gamma</code>	Λ	<code>\Lambda</code>	Σ	<code>\Sigma</code>	Ψ	<code>\Psi</code>
Δ	<code>\Delta</code>	Ξ	<code>\Xi</code>	Υ	<code>\Upsilon</code>	Ω	<code>\Omega</code>
Θ	<code>\Theta</code>	Π	<code>\Pi</code>	Φ	<code>\Phi</code>		

The remaining Greek majuscules can be produced with ordinary Latin letters. The symbol “M”, for instance, is used for both an uppercase “m” and an uppercase “ μ ”. To make available commands for *all* of the Greek majuscules, either use the `mathspec` package, which requires `XYLaTeX`, or copy `mathspec.sty`’s Greek-letter definitions to your document’s preamble:

```

\DeclareMathSymbol{\Alpha}{\mathalpha}{operators}{"41}
\DeclareMathSymbol{\Beta}{\mathalpha}{operators}{"42}
\DeclareMathSymbol{\Epsilon}{\mathalpha}{operators}{"45}
\DeclareMathSymbol{\Zeta}{\mathalpha}{operators}{"5A}
\DeclareMathSymbol{\Eta}{\mathalpha}{operators}{"48}
\DeclareMathSymbol{\Iota}{\mathalpha}{operators}{"49}
\DeclareMathSymbol{\Kappa}{\mathalpha}{operators}{"4B}
\DeclareMathSymbol{\Mu}{\mathalpha}{operators}{"4D}
\DeclareMathSymbol{\Nu}{\mathalpha}{operators}{"4E}
\DeclareMathSymbol{\Omicron}{\mathalpha}{operators}{"4F}
\DeclareMathSymbol{\Rho}{\mathalpha}{operators}{"50}
\DeclareMathSymbol{\Tau}{\mathalpha}{operators}{"54}
\DeclareMathSymbol{\Chi}{\mathalpha}{operators}{"58}
\DeclareMathSymbol{\omicron}{\mathord}{letters}{"6F}

```

See Section 10.5 for examples of how to produce bold Greek letters.

The symbols in this table are intended to be used in mathematical typesetting. Greek body text can be typeset using the `babel` package’s `greek` (or `polutoniko-greek`) option—and, of course, a font that provides the glyphs for the Greek alphabet.

TABLE 185: $\mathcal{AMS}$ Greek Letters

F `\digamma` $\varkappa$ `\varkappa`

TABLE 186: txfonts/pxfonts Upright Greek Letters

α	<code>\alphaup</code>	θ	<code>\thetaup</code>	π	<code>\piup</code>	ϕ	<code>\phiup</code>
β	<code>\betaup</code>	ϑ	<code>\varthetaup</code>	ϖ	<code>\varpiup</code>	φ	<code>\varphiup</code>
γ	<code>\gammaup</code>	ι	<code>\iotaup</code>	ρ	<code>\rhoup</code>	χ	<code>\chiup</code>
δ	<code>\deltaup</code>	κ	<code>\kappaup</code>	ϱ	<code>\varrhoup</code>	ψ	<code>\psiup</code>
ϵ	<code>\epsilonup</code>	λ	<code>\lambdaup</code>	σ	<code>\sigmaup</code>	ω	<code>\omegaup</code>
ε	<code>\varepsilonup</code>	μ	<code>\muup</code>	ς	<code>\varsigmaup</code>		
ζ	<code>\zetaup</code>	ν	<code>\nuup</code>	τ	<code>\tauup</code>		
η	<code>\etaup</code>	ξ	<code>\xiup</code>	υ	<code>\upsilonup</code>		

The symbols in this table are intended to be used sporadically throughout a document (e.g., to represent mathematical units or numerical quantities—“ $\pi \approx 3.14159$ ”). In contrast, Greek body text can be typeset using the `babel` package’s `greek` (or `polutonikogreek`) option—and, of course, a font that provides the glyphs for the Greek alphabet.

TABLE 187: upgreek Upright Greek Letters

α	<code>\upalpha</code>	θ	<code>\uptheta</code>	π	<code>\uppi</code>	ϕ	<code>\upphi</code>
β	<code>\upbeta</code>	ϑ	<code>\upvartheta</code>	ϖ	<code>\upvarpi</code>	φ	<code>\upvarphi</code>
γ	<code>\upgamma</code>	ι	<code>\upiota</code>	ρ	<code>\uprho</code>	χ	<code>\upchi</code>
δ	<code>\updelta</code>	κ	<code>\upkappa</code>	ϱ	<code>\upvarrho</code>	ψ	<code>\uppsi</code>
ϵ	<code>\upepsilon</code>	λ	<code>\uplambda</code>	σ	<code>\upsigma</code>	ω	<code>\upomega</code>
ε	<code>\upvarepsilon</code>	μ	<code>\upmu</code>	ς	<code>\upvarsigma</code>		
ζ	<code>\upzeta</code>	ν	<code>\upnu</code>	τ	<code>\uptau</code>		
η	<code>\upeta</code>	ξ	<code>\upxi</code>	υ	<code>\upupsilon</code>		
Γ	<code>\Upgamma</code>	Λ	<code>\Uplambda</code>	Σ	<code>\Upsilonsigma</code>	Ψ	<code>\Uppsi</code>
Δ	<code>\Updelta</code>	Ξ	<code>\Upxi</code>	Υ	<code>\Upupsilon</code>	Ω	<code>\Upomega</code>
Θ	<code>\Uptheta</code>	Π	<code>\Uppi</code>	Φ	<code>\Upphi</code>		

`upgreek` utilizes upright Greek characters from either Euler Roman (depicted above) or the PostScript Symbol font. As a result, the glyphs may appear slightly different from the above. Contrast, for example, “ $\Gamma\Delta\Theta\alpha\beta\gamma$ ” (Euler) with “ $\Gamma\Delta\Theta\alpha\beta\gamma$ ” (Symbol). Also note that the `\var...` forms do not always produce a distinct glyph.

Unlike `textgreek` (Table 6 on page 15), `upgreek` works in math mode.

The symbols in this table are intended to be used sporadically throughout a document (e.g., to represent mathematical units or numerical quantities—“ $\pi \approx 3.14159$ ”). In contrast, Greek body text can be typeset using the `babel` package’s `greek` (or `polutonikogreek`) option—and, of course, a font that provides the glyphs for the Greek alphabet.

TABLE 188: fourier Variant Greek Letters

π	<code>\pi</code>	ρ	<code>\rho</code>
ϖ	<code>\varpi</code>	ϱ	<code>\varrho</code>
ϖ	<code>\varvarpi</code>	ϱ	<code>\varvarrho</code>

TABLE 189: txfonts/pxfonts Variant Latin Letters

g `\varg` v `\varv` w `\varw` y `\vary`

Pass the `varg` option to txfonts/pxfonts to replace g , v , w , and y with g , v , w , and y in every mathematical expression in your document.

TABLE 190: boisik Variant Greek Letters

β `\varbeta` κ `\varkappa` ϖ `\varpi` ς `\varsigma`
 ϵ `\varepsilon` φ `\varphi` ϱ `\varrho` ϑ `\vartheta`

TABLE 191: boisik Variant Latin Letters

g `\varg`

TABLE 192: stix Variant Greek Letters

ϵ `\varepsilon` φ `\varphi` ϱ `\varrho` ϑ `\vartheta`
 κ `\varkappa` ϖ `\varpi` ς `\varsigma`

TABLE 193: stix Transformed Greek Letters

ϵ `\backepsilon` turnediota `\turnediota`
 mho `\mho` upbackepsilon `\upbackepsilon`

TABLE 194: $\mathcal{AMS}$ Hebrew Letters

$\beth$ `\beth` $\gimel$ `\gimel` $\daleth$ `\daleth`

$\aleph$ ($\aleph$) appears in Table 294 on page 115.

TABLE 195: MnSymbol Hebrew Letters

$\aleph$ `\aleph` $\beth$ `\beth` $\gimel$ `\gimel` $\daleth$ `\daleth`

TABLE 196: fdsymbol Hebrew Letters

$\aleph$ `\aleph` $\beth$ `\beth` $\gimel$ `\gimel` $\daleth$ `\daleth`

TABLE 197: boisik Hebrew Letters

$\beth$ `\beth` $\gimel$ `\gimel` $\daleth$ `\daleth`

TABLE 198: stix Hebrew Letters

$\aleph$	<code>\aleph</code>	$\beth$	<code>\beth</code>	$\gimel$	<code>\gimel</code>	$\daleth$	<code>\daleth</code>
----------	---------------------	---------	--------------------	----------	---------------------	-----------	----------------------

TABLE 199: Letter-like Symbols

$\bot$	<code>\bot</code>	$\forall$	<code>\forall</code>	$\imath$	<code>\imath</code>	$\ni$	<code>\ni</code>	$\top$	<code>\top</code>
ℓ	<code>\ell</code>	$\hbar$	<code>\hbar</code>	$\in$	<code>\in</code>	∂	<code>\partial</code>	$\wp$	<code>\wp</code>
$\exists$	<code>\exists</code>	$\Im$	<code>\Im</code>	j	<code>j</code>	$\Re$	<code>\Re</code>		

TABLE 200: $\mathcal{AMS}$ Letter-like Symbols

$\mathbb{k}$	<code>\Bbbk</code>	$\mathbb{C}$	<code>\complement</code>	$\hbar$	<code>\hbar</code>
$\mathbb{R}$	<code>\circledR</code>	$\Finv$	<code>\Finv</code>	$\hslash$	<code>\hslash</code>
$\mathbb{S}$	<code>\circledS</code>	$\Game$	<code>\Game</code>	$\nexists$	<code>\nexists</code>

TABLE 201: txfonts/pxfonts Letter-like Symbols

$\mathfrak{C}$	<code>\mathcent</code>	$\mathfrak{f}$	<code>\mathsterling*</code>	$\mathfrak{e}$	<code>\notin</code>	$\mathfrak{p}$	<code>\notin</code>
----------------	------------------------	----------------	-----------------------------	----------------	---------------------	----------------	---------------------

* It's generally preferable to use the corresponding symbol from Table 3 on page 15 because the symbols in that table work properly in both text mode and math mode.

TABLE 202: mathabx Letter-like Symbols

$\bar{\in}$	<code>\barin</code>	$\in$	<code>\in</code>	$\nottop$	<code>\nottop</code>	$\varnotin$	<code>\varnotin</code>
$\mathbb{C}$	<code>\complement</code>	$\nexists$	<code>\nexists</code>	$\owns$	<code>\owns</code>	$\varnotowner$	<code>\varnotowner</code>
$\exists$	<code>\exists</code>	$\notbot$	<code>\notbot</code>	$\ownsbar$	<code>\ownsbar</code>		
$\Finv$	<code>\Finv</code>	$\notin$	<code>\notin</code>	∂	<code>\partial</code>		
$\Game$	<code>\Game</code>	$\notowner$	<code>\notowner</code>	$\partialslash$	<code>\partialslash</code>		

TABLE 203: MnSymbol Letter-like Symbols

$\bot$	<code>\bot</code>	$\in$	<code>\in</code>	$\nexists^*$	<code>\nexists^*</code>	$\top$	<code>\top</code>
$\exists$	<code>\exists</code>	$\nexists$	<code>\nexists</code>	$\owns$	<code>\owns</code>	$\wp$	<code>\wp</code>
$\forall$	<code>\forall</code>	$\in^*$	<code>\in^*</code>	$\mathcal{P}$	<code>\powerset</code>		

* MnSymbol provides synonyms `\notin` for `\nin`, `\ni` for `\owns`, and `\intercal` for `\top`.

TABLE 204: fdsymbol Letter-like Symbols

$\perp$	<code>\bot</code>	$\forall$	<code>\forall</code>	$\in$	<code>\in</code>	$\ni$	<code>\owns</code>
$\complement$	<code>\complement</code>	$\Game$	<code>\Game</code>	$\nexists$	<code>\nexists</code>	$\top$	<code>\top</code>
$\exists$	<code>\exists</code>	$\hbar$	<code>\hbar</code>	$\notin$	<code>\notin</code>	$\wp$	<code>\wp</code>
$\Finv$	<code>\Finv</code>	$\hslash$	<code>\hslash</code>	$\nexists$	<code>\nexists</code>		

`fdsymbol` provides synonyms `\notin` for `\nin`, `\ni` for `\owns`, and `\nni` for `\nowns`.

TABLE 205: boisik Letter-like Symbols

$\Bbbk$	<code>\Bbbk</code>	$\Game$	<code>\Game</code>	$\imath$	<code>\imath</code>	$\nexists$	<code>\nexists</code>
$\complement$	<code>\complement</code>	$\hbar$	<code>\hbar</code>	$\intercal$	<code>\intercal</code>	$\wp$	<code>\wp</code>
$\Finv$	<code>\Finv</code>	$\hslash$	<code>\hslash</code>	$\jmath$	<code>\jmath</code>		

TABLE 206: stix Letter-like Symbols

$\text{\AA}$	<code>\Angstrom</code>	$\mathcal{E}$	<code>\Eulerconst</code>	$\imath$	<code>\imath</code>	$\top$	<code>\top</code>
$\Bbbk$	<code>\Bbbk</code>	$\exists$	<code>\exists</code>	$\intercal$	<code>\intercal</code>	$\topbot$	<code>\topbot</code>
$\perp$	<code>\bot</code>	$\Finv$	<code>\Finv</code>	$\jmath$	<code>\jmath</code>	$\wp$	<code>\wp</code>
$\text{\textcircled{R}}$	<code>\circledR</code>	$\forall$	<code>\forall</code>	$\mathbb{S}$	<code>\mathdollar</code>	Υ	<code>\Yup</code>
$\text{\textcircled{S}}$	<code>\circledS</code>	$\Game$	<code>\Game</code>	$\mathbb{P}$	<code>\mathparagraph</code>	$\mathbb{Z}$	<code>\Zbar</code>
$\complement$	<code>\complement</code>	$\hbar$	<code>\hbar</code>	$\mathbb{L}$	<code>\mathsterling</code>		
$\digamma$	<code>\digamma</code>	$\hslash$	<code>\hslash</code>	$\nexists$	<code>\nexists</code>		
ℓ	<code>\ell</code>	$\Im$	<code>\Im</code>	$\Re$	<code>\Re</code>		

TABLE 207: trfsigns Letter-like Symbols

$\mathfrak{e}$	<code>\e</code>	$\mathfrak{j}$	<code>\im</code>
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TABLE 208: mathdesign Letter-like Symbols

$\in$	<code>\in</code>	$\ni$	<code>\owns</code>
$\notin$	<code>\notin</code>	$\in$	<code>\smallin</code>
$\not\in$	<code>\notsmallin</code>	$\ni$	<code>\smallowns</code>
$\not\ni$	<code>\notsmallowns</code>		

The `mathdesign` package additionally provides versions of each of the letter-like symbols shown in Table 200 on the previous page.

TABLE 209: fge Letter-like Symbols

$\mathfrak{A}$	<code>\fgeA</code>	$\mathfrak{g}$	<code>\fgeeszett</code>	$\mathfrak{B}$	<code>\fgeleftB</code>	$\mathfrak{U}$	<code>\fgeU</code>
$\mathfrak{C}$	<code>\fgeC</code>	$\mathfrak{F}$	<code>\fgeF</code>	$\mathfrak{C}$	<code>\fgeleftC</code>		
$\mathfrak{p}$	<code>\fged</code>	$\mathfrak{f}$	<code>\fgef</code>	$\mathfrak{B}$	<code>\fgerightB</code>		
$\mathfrak{e}$	<code>\fgee</code>	$\mathfrak{b}$	<code>\fgeleftB*</code>	$\mathfrak{f}$	<code>\fges</code>		

* The `fge` package defines `\fgeeta`, `\fgeN`, and `\fgeoverU` as synonyms for `\fgeleftB`.

TABLE 210: fourier Letter-like Symbols

 ∂ `\partial` ∂ `\varpartialdiff`

TABLE 211: cml Letter-like Symbols

 $\perp$ `\Bot` $\hookdown$ `\simbot`
TABLE 212: $\mathcal{AMS}$ Delimiters
 $\lrcorner$ `\ulcorner` $\urcorner$ `\urcorner`
 $\llcorner$ `\llcorner` $\lrcorner$ `\lrcorner`

TABLE 213: stmaryrd Delimiters

 $\Leftrightarrow$ `\Lbag` $\Rrightarrow$ `\Rbag` $\llcorner$ `\lbag` $\llcorner$ `\lbag`
 $\lceil$ `\llceil` $\rceil$ `\rrceil` $\llcorner$ `\llfloor` $\llcorner$ `\llfloor`
 $\lparen$ `\llparenthesis` $\rrparen$ `\rrparenthesis`

TABLE 214: mathabx Delimiters

 $\lrcorner$ `\lrcorner` $\lrcorner$ `\lrcorner`
 $\lrcorner$ `\lrcorner` $\lrcorner$ `\lrcorner`
 $\lrcorner$ `\lrcorner` $\lrcorner$ `\lrcorner`

TABLE 215: boisik Delimiters

 $\lrcorner$ `\ulcorner` $\lrcorner$ `\urcorner`
 $\lrcorner$ `\llcorner` $\lrcorner$ `\lrcorner`

TABLE 216: stix Delimiters

 $\langle$ `\langedot` $\rangle$ `\rangedot` $\langle$ `\llangle` $\rangle$ `\rrangle`
 $\lrcorner$ `\lbag` $\lrcorner$ `\rbag` $\lrcorner$ `\llcorner` $\lrcorner$ `\lrcorner`
 $\lrcorner$ `\lbrackbrak` $\lrcorner$ `\rbrackbrak` $\lrcorner$ `\llparenthesis` $\lrcorner$ `\rrparenthesis`
 $\lrcorner$ `\lbracklltick` $\lrcorner$ `\rbracklltick` $\lrcorner$ `\lparenstr` $\lrcorner$ `\Rparenless`
 $\lrcorner$ `\lbrackubar` $\lrcorner$ `\rbrackubar` $\lrcorner$ `\lparenless` $\lrcorner$ `\rparenstr`
 $\lrcorner$ `\lbrackultick` $\lrcorner$ `\rbrackultick` $\lrcorner$ `\lvzigzag` $\lrcorner$ `\rvzigzag`
 $\lrcorner$ `\lbrbrak` $\lrcorner$ `\Rbrbrak` $\lrcorner$ `\Lvzigzag` $\lrcorner$ `\Rvzigzag`
 $\lrcorner$ `\lcurvyangle` $\lrcorner$ `\rcurvyangle` $\lrcorner$ `\ulcorner` $\lrcorner$ `\urcorner`

TABLE 217: nath Delimiters

 $\lrcorner$ `\niv` $\lrcorner$ `\vin`

TABLE 218: Variable-sized Delimiters

$\downarrow$	$\Downarrow$	<code>\downarrow</code>	$\Downarrow$	<code>\Downarrow</code>	$[$	$[$	$[$	$]$	$]$	$]$
$\langle$	$\rangle$	<code>\langle</code>	$\rangle$	<code>\rangle</code>	$ $	$ $	$ $	$\parallel$	$\parallel$	<code>\ </code>
$\lceil$	$\rceil$	<code>\lceil</code>	$\rceil$	<code>\rceil</code>	$\uparrow$	$\uparrow$	<code>\uparrow</code>	$\Uparrow$	$\Uparrow$	<code>\Uparrow</code>
$\lfloor$	$\rfloor$	<code>\lfloor</code>	$\rfloor$	<code>\rfloor</code>	$\updownarrow$	$\updownarrow$	<code>\updownarrow</code>	$\Updownarrow$	$\Updownarrow$	<code>\Updownarrow</code>
$($	$($	$($	$)$	$)$	$\{$	$\{$	<code>\{</code>	$\}$	$\}$	<code>\}</code>
$/$	$/$	$/$	$\backslash$	$\backslash$	$\backslash$	$\backslash$	<code>\backslash</code>			

When used with `\left` and `\right`, these symbols expand to the height of the enclosed math expression. Note that `\vert` is a synonym for `|`, and `\Vert` is a synonym for `\|`.

ε -TeX provides a `\middle` analogue to `\left` and `\right`. `\middle` can be used, for example, to make an internal “|” expand to the height of the surrounding `\left` and `\right` symbols. (This capability is commonly needed when typesetting adjacent bras and kets in Dirac notation: “ $\langle\phi|\psi\rangle$ ”). A similar effect can be achieved in conventional L^AT_EX using the `braket` package.

TABLE 219: Large, Variable-sized Delimiters

$\int$	$\int$	<code>\lmoustache</code>	$\int$	$\int$	<code>\rmoustache</code>	$($	$($	<code>\lgroup</code>	$)$	$)$	<code>\rgroup</code>
$ $	$ $	<code>\arrowvert</code>	$\parallel$	$\parallel$	<code>\Arrowvert</code>	$ $	$ $	<code>\bracevert</code>			

These symbols *must* be used with `\left` and `\right`. The `mathabx` package, however, redefines `\lgroup` and `\rgroup` so that those symbols can work without `\left` and `\right`.

TABLE 220: $\mathcal{A}\mathcal{M}\mathcal{S}$ Variable-sized Delimiters

$ $	$ $	<code>\lvert</code>	$ $	$ $	<code>\rvert</code>
$\parallel$	$\parallel$	<code>\lVert</code>	$\parallel$	$\parallel$	<code>\rVert</code>

According to the `amsmath` documentation [AMS99], the preceding symbols are intended to be used as delimiters (e.g., as in “ $| - z |$ ”) while the `\vert` and `\Vert` symbols (Table 218) are intended to be used as operators (e.g., as in “ $p|q$ ”).

TABLE 221: `stmaryrd` Variable-sized Delimiters

$\llbracket$	$\llbracket$	<code>\llbracket</code>	$\rrbracket$	$\rrbracket$	<code>\rrbracket</code>
--------------	--------------	-------------------------	--------------	--------------	-------------------------

TABLE 222: mathabx Variable-sized Delimiters

$\llbracket$	$\llbracket$	<code>\ldbrack</code>	$\rrbracket$	<code>\rdbrack</code>
$\lrcorner$	$\lrcorner$	<code>\lfilet</code>	$\rrcorner$	<code>\rfilet</code>
$\! $	$\! $	<code>\thickvert</code>	$\! $	<code>\vvvert</code>

TABLE 223: MnSymbol Variable-sized Delimiters

$\Uparrow$	$\Uparrow$	<code>\Arrowvert</code>	$\{$	$\{$	<code>\lbrace</code>	$\}$	$\}$	<code>\rceil</code>
$\! $	$\! $	<code>\arrowvert</code>	$\lceil$	$\lceil$	<code>\lceil</code>	$\rceil$	$\rceil$	<code>\rfloor</code>
$\backslash$	$\backslash$	<code>\backslash</code>	$\lfloor$	$\lfloor$	<code>\lfloor</code>	$\rfloor$	$\rfloor$	<code>\rgroup</code>
$\! $	$\! $	<code>\bracevert</code>	$\lgroup$	$\lgroup$	<code>\lgroup</code>	$\rgroup$	$\rgroup$	<code>\rmoustache</code>
$\llbracket$	$\llbracket$	$\llbracket$	$\llcorner$	$\llcorner$	<code>\llangle</code>	$\ggcorner$	$\ggcorner$	<code>\rrangle</code>
$\llcorner$	$\llcorner$	$\llcorner$	$\llcorner$	$\llcorner$	<code>\llcorner</code>	$\llcorner$	$\llcorner$	<code>\rsem</code>
$\lgroup$	$\lgroup$	$\lgroup$	$\lgroup$	$\lgroup$	<code>\lmoustache</code>	$\lgroup$	$\lgroup$	<code>\rWavy</code>
$\rgroup$	$\rgroup$	$\rgroup$	$\rgroup$	$\rgroup$	<code>\lrcorner</code>	$\rgroup$	$\rgroup$	<code>\rwavy</code>
$\lgroup$	$\lgroup$	$\lgroup$	$\lgroup$	$\lgroup$	<code>\lsem</code>	$\lgroup$	$\lgroup$	<code>\ulcorner</code>
$\lgroup$	$\lgroup$	$\lgroup$	$\lgroup$	$\lgroup$	<code>\lwavy</code>	$\lgroup$	$\lgroup$	<code>\ullcorner</code>
$\lgroup$	$\lgroup$	$\lgroup$	$\lgroup$	$\lgroup$	<code>\lWavy</code>	$\lgroup$	$\lgroup$	<code>\ulrcorner</code>
$\lgroup$	$\lgroup$	$\lgroup$	$\lgroup$	$\lgroup$	<code>\rangle</code>	$\lgroup$	$\lgroup$	<code>\urcorner</code>

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$\langle$	$\langle$	<code>\langle</code>	$\rangle$	$\rangle$	<code>\ranglebar</code>	$\parallel$	$\parallel$	<code>\lvert</code>
$\langle$	$\langle$	<code>\ranglebar</code>	$\rangle$	$\rangle$	<code>\rbrace</code>			

`\vert` is a synonym for `|`. `\Vert` is a synonym for `\lvert`. `\mid` and `\mvert` produce the same symbol as `\vert` but designated as math relations instead of ordinals. `\divides` produces the same symbol as `\vert` but designated as a binary operator instead of an ordinal. `\parallel` and `\mVert` produce the same symbol as `\Vert` but designated as math relations instead of ordinals.

TABLE 224: `fdsymbol` Variable-sized Delimiters

$\backslash$	$\backslash$	<code>\backslash</code>	$\lrcorner$	$\lrcorner$	<code>\lrcorner</code>	$\rangle$	$\rangle$	<code>\rparen</code>
$\downarrow$	$\downarrow$	<code>\downarrow</code>	$\lvert$	$\lvert$	<code>\lvert</code>	$\lvert$	$\lvert$	<code>\rvert</code>
$\Downarrow$	$\Downarrow$	<code>\Downarrow</code>	$\parallel$	$\parallel$	<code>\lVert</code>	$\parallel$	$\parallel$	<code>\rVert</code>
$\llcorner$	$\llcorner$	<code>\lAngle</code>	$\lll$	$\lll$	<code>\lVvert</code>	$\lll$	$\lll$	<code>\rVvert</code>
$\langle$	$\langle$	<code>\langle</code>	$/$	$/$	<code>\mathslash</code>	$\ulcorner$	$\ulcorner$	<code>\ulcorner</code>
$\langle$	$\langle$	<code>\langledot</code>	$\rangle$	$\rangle$	<code>\rangle</code>	$\llcorner$	$\llcorner$	<code>\ullcorner</code>
$\{$	$\{$	<code>\lbrace</code>	$\rangle\rangle$	$\rangle\rangle$	<code>\rAngle</code>	$\lrcorner$	$\lrcorner$	<code>\ulrcorner</code>
$[$	$[$	<code>\lbrack</code>	$\rangle$	$\rangle$	<code>\rangle</code>	$\uparrow$	$\uparrow$	<code>\uparrow</code>
$\llbracket$	$\llbracket$	<code>\lBrack</code>	$\rangle$	$\rangle$	<code>\rbrace</code>	$\Uparrow$	$\Uparrow$	<code>\Uparrow</code>

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$\lceil$	$\lceil$	<code>\lceil</code>	$\rceil$	$\rceil$	<code>\rBrack</code>	$\updownarrow$	$\updownarrow$	<code>\updownarrow</code>
$\lfloor$	$\lfloor$	<code>\lfloor</code>	$\rfloor$	$\rfloor$	<code>\rbrack</code>	$\Updownarrow$	$\Updownarrow$	<code>\Updownarrow</code>
$\lceil$	$\lceil$	<code>\lgroup</code>	$\rceil$	$\rceil$	<code>\rceil</code>	$\urcorner$	$\urcorner$	<code>\urcorner</code>
$\llcorner$	$\llcorner$	<code>\llcorner</code>	$\rfloor$	$\rfloor$	<code>\rfloor</code>	$\lvert$	$\lvert$	<code>\vert</code>
$\int$	$\int$	<code>\lmoustache</code>	$\int$	$\int$	<code>\rgroup</code>	$\parallel$	$\parallel$	<code>\Vert</code>
$($	$($	<code>\lparen</code>	$)$	$)$	<code>\rmoustache</code>	$\equiv$	$\equiv$	<code>\Vvert</code>

fdsymbol defines “(” as a synonym for `\lparen`, “)” as a synonym for `\rparen`, “[” as a synonym for `\lbrack`, “]” as a synonym for `\rbrack`, “{” as a synonym for `\lbrace`, “}” as a synonym for `\rbrace`, “/” as a synonym for `\mathslash`, “|” as a synonym for `\vert`, “\|” as a synonym for `\Vert`, `\lsem` as a synonym for `\lBrack`, and `\rsem` as a synonym for `\rBrack`.

TABLE 225: stix Variable-sized Delimiters

$\llcorner$	$\llcorner$	<code>\Arrowvert</code>	$\llcorner$	$\llcorner$	<code>\lAngle</code>	$\lceil$	$\lceil$	<code>\rceil</code>
$\lrcorner$	$\lrcorner$	<code>\arrowvert</code>	$\lrcorner$	$\lrcorner$	<code>\lbrace</code>	$\rfloor$	$\rfloor$	<code>\rfloor</code>
$\backslash$	$\backslash$	<code>\backslash</code>	$\lrcorner$	$\lrcorner$	<code>\lBrace</code>	$)$	$($	<code>\rgroup</code>
$\Downarrow$	$\Downarrow$	<code>\Ddownarrow</code>	$\lrcorner$	$\lrcorner$	<code>\lBrack</code>	$\lrcorner$	$\lrcorner$	<code>\rmoustache</code>
$\Downarrow$	$\Downarrow$	<code>\DDownarrow</code>	$($	$($	<code>\lbrbrak</code>	$)$	$)$	<code>\rParen</code>

(continued on next page)

(continued from previous page)

$\downarrow$	$\mid$	<code>\downarrow</code>	$\lceil$	$\lceil$	<code>\lceil</code>	$\uparrow$	$\uparrow$	<code>\uparrow</code>
$\Downarrow$	$\Downarrow$	<code>\Downarrow</code>	$\lfloor$	$\lfloor$	<code>\lfloor</code>	$\Uparrow$	$\Uparrow$	<code>\Uparrow</code>
$[$	$[$	$[$	$($	$)$	<code>\lgroup</code>	$\Updownarrow$	$\Updownarrow$	<code>\Updownarrow</code>
$]$	$]$	$]$	$\}$	$\}$	<code>\lmoustache</code>	$\updownarrow$	$\updownarrow$	<code>\updownarrow</code>
$($	$($	$($	$(($	$(($	<code>\lParen</code>	$\Uparrow$	$\Uparrow$	<code>\Uparrow</code>
$)$	$)$	$)$	$\rangle\rangle$	$\rangle\rangle$	<code>\rAngle</code>	$\Uparrow$	$\Uparrow$	<code>\Uparrow</code>
$/$	$/$	$/$	$\rangle$	$\rangle$	<code>\rangle</code>	$\parallel$	$\parallel$	<code>\Vert</code>
$\langle$	$\langle$	$<$	$\}$	$\}$	<code>\rbrace</code>	$ $	$ $	<code>\vert</code>
$\rangle$	$\rangle$	$>$	$\}$	$\}$	<code>\rbrace</code>	$\parallel$	$\parallel$	<code>\Vvert</code>
$ $	$ $	$ $	$\parallel$	$\parallel$	<code>\rBrack</code>			
$\langle$	$\langle$	<code>\langle</code>	$\rangle$	$\rangle$	<code>\rbrbrak</code>			

TABLE 226: `mathdesign` Variable-sized Delimiters

$\left\{$	$\left\{$	<code>\leftwave</code>	$\right\}$	$\right\}$	<code>\rightwave</code>
$\left\{$	$\left\{$	<code>\lefttevaw</code>	$\right\}$	$\right\}$	<code>\righttevaw</code>

The definitions of these symbols include a preceding `\left` or `\right`. It is therefore an error to specify `\left` or `\right` explicitly. The internal, “primitive” versions of these symbols are called `\lwave`, `\rwave`, `\levaw`, and `\revaw`.

TABLE 227: `nath` Variable-sized Delimiters (Double)

$\langle\langle$	<code>\lAngle</code>	$\rangle\rangle$	<code>\rAngle</code>
$\llbracket$	<code>\lBrack</code>	$\rrbracket$	<code>\rBrack</code>
$\lceil$	<code>\lCeil</code>	$\rceil$	<code>\rCeil</code>
$\lfloor$	<code>\lFloor</code>	$\rfloor$	<code>\rFloor</code>
$\ $	<code>\lVert*</code>	$\ $	<code>\rVert*</code>

* `nath` redefines all of the above to include implicit `\left` and `\right` commands. Hence, separate `\lVert` and `\rVert` commands are needed to disambiguate whether “|” is a left or right delimiter.

All of the symbols in Table 227 can also be expressed using the `\double` macro. See the `nath` documentation for examples and additional information.

TABLE 228: `nath` Variable-sized Delimiters (Triple)

$\langle\langle\langle$	<code>\triple<</code>	$\rangle\rangle\rangle$	<code>\triple></code>
$\lllbracket$	<code>\triple[</code>	$\rrrbracket$	<code>\triple]</code>
$\lllvert$	<code>\ltriple *</code>	$\rrrvert$	<code>\rtriple *</code>

* Similar to `\lVert` and `\rVert` in Table 227, `\ltriple` and `\rtriple` must be used instead of `\triple` to disambiguate whether “|” is a left or right delimiter.

Note that `\triple`—and the corresponding `\double`—is actually a macro that takes a delimiter as an argument.

TABLE 229: `fourier` Variable-sized Delimiters

$\llbracket$	<code>\llbracket</code>	$\rrbracket$	<code>\rrbracket</code>
$\ $	<code>\VERT</code>		

TABLE 230: `textcomp` Text-mode Delimiters

$\langle$	<code>\textlangle</code>	$\rangle$	<code>\textrangle</code>
$\llbracket$	<code>\textlbrackdbl</code>	$\rrbracket$	<code>\textrbrackdbl</code>
$\{$	<code>\textlquill</code>	$\}$	<code>\textrquill</code>

TABLE 231: metre Text-mode Delimiters

}	<code>\alad</code>	}	<code>\Alad</code>	†	<code>\crux</code>	†	<code>\Crux</code>
{	<code>\alas</code>	{	<code>\Alas</code>	]	<code>\quadrad</code>	]	<code>\Quadrad</code>
>	<code>\angud</code>	>	<code>\Angud</code>	[	<code>\quadras</code>	[	<code>\Quadras</code>
<	<code>\angus</code>	<	<code>\Angus</code>				

TABLE 232: Math-mode Accents

á	<code>\acute{a}</code>	ǎ	<code>\check{a}</code>	à	<code>\grave{a}</code>	ã	<code>\tilde{a}</code>
ā	<code>\bar{a}</code> *	ä	<code>\ddot{a}</code>	â	<code>\hat{a}</code>	→	<code>\vec{a}</code>
ă	<code>\breve{a}</code>	ȧ	<code>\dot{a}</code>	␣	<code>\mathring{a}</code>		

Note also the existence of `\imath` and `\jmath`, which produce dotless versions of “*i*” and “*j*”. (See Table 294 on page 115.) These are useful when the accent is supposed to replace the dot. For example, “`\hat{\imath}`” produces a correct “*î*”, while “`\hat{i}`” would yield the rather odd-looking “*î*”.

* The `\overline` command (Table 240 on page 104) produces a wider accent than `\bar`: “ $\overline{A}$ ” vs. “ $\bar{A}$ ”. However, unlike adjacent `\bars`, adjacent `\overlines` run together, which is often not desired: “ $\overline{AB}$ ” vs. “ $\overline{\bar{A}\bar{B}}$ ”. If wider bars than `\bar` are needed, the following code from Enrico Gregorio can be used to add the requisite inter-symbol spacing [Gre09]:

```
\newcommand{\closure}[2][3]{%
  {\mkern#1mu\overline{\mkern-#1mu#2}}}
```

With that definition, “`\closure{A}\closure{B}`” produces “ $\overline{A}\overline{B}$ ”, with a visible gap between the two accents. The optional argument can be used to fine-tune the spacing.

TABLE 233: $\mathcal{AMS}$ Math-mode Accents

¨	<code>\dddot{a}</code>	˙˙	<code>\ddddot{a}</code>
---	------------------------	----	-------------------------

These accents are also provided by the `mathabx` and `accents` packages and are redefined by the `mathdots` package if the `amsmath` and `amssymb` packages have previously been loaded. All of the variations except for the original $\mathcal{AMS}$ ones tighten the space between the dots (from $\ddot{a}$ to $\ddot{a}$). The `mathabx` and `mathdots` versions also function properly within subscripts and superscripts ($x^{\ddot{a}}$ instead of $x^{\ddot{a}}$).

TABLE 234: MnSymbol Math-mode Accents

ā	<code>\vec{a}</code>
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TABLE 235: fdsymbol Math-mode Accents

$\overline{a}$	<code>\middlebar{a}</code>	$\not{a}$	<code>\strokethrough{a}</code>
$\overrightarrow{a}$	<code>\middleslash{a}</code>	$\vec{a}$	<code>\vec{a}</code>

`\middlebar` and `\middleslash` are applied here to “ a ” for consistency with the rest of the document, but they generally look better when applied to taller lowercase characters.

TABLE 236: boisik Math-mode Accents

$\vec{a}$	<code>\vec{a}</code>
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TABLE 237: stix Math-mode Accents

$\acute{a}$	<code>\acute{a}</code>	$\hat{a}$	<code>\hat{a}</code>
$\overline{a}$	<code>\annuity{a}</code>	$\overleftarrow{a}$	<code>\leftarrowaccent{a}</code>
$\ast{a}$	<code>\asteraccent{a}</code>	$\overleftarrow{\ast{a}}$	<code>\leftharpoonaccent{a}</code>
$\bar{a}$	<code>\bar{a}</code>	$\overrightarrow{a}$	<code>\letrightarrowaccent{a}</code>
$\breve{a}$	<code>\breve{a}</code>	$\mathring{a}$	<code>\mathring{a}</code>
$\candra{a}$	<code>\candra{a}</code>	$\ocomma{a}$	<code>\ocommatoprigh{a}</code>
$\check{a}$	<code>\check{a}</code>	$\oturnedcomma{a}$	<code>\oturnedcomma{a}</code>
$\ddot{a}$	<code>\dddot{a}</code>	$\overset{\circ}{a}$	<code>\ovhook{a}</code>
$\ddot{a}$	<code>\dddot{a}</code>	$\overrightarrow{\ast{a}}$	<code>\rightharpoonaccent{a}</code>
$\ddot{a}$	<code>\ddot{a}</code>	$\tilde{a}$	<code>\tilde{a}</code>
$\dot{a}$	<code>\dot{a}</code>	$\vec{a}$	<code>\vec{a}</code>
$\grave{a}$	<code>\droang{a}</code>	$\overline{\overline{a}}$	<code>\widebridgeabove{a}</code>
$\grave{a}$	<code>\grave{a}</code>		

TABLE 238: fge Math-mode Accents

$\mathring{A}$	<code>\spirituslenis{A}</code>	$\mathring{a}$	<code>\spirituslenis{a}</code>
----------------	--------------------------------	----------------	--------------------------------

* When `fge` is passed the `crescent` option, `\spirituslenis` instead uses a crescent accent as in “ $\mathring{a}$ ”.

TABLE 239: yhmath Math-mode Accents

$\mathring{a}$	<code>\ring{a}</code>
----------------	-----------------------

This symbol is largely obsolete, as standard $\mathrm{L}^{\mathrm{A}}\mathrm{T}_{\mathrm{E}}\mathrm{X} 2_{\epsilon}$ has supported `\mathring` (Table 232 on the previous page) since June 1998 [L^AT₉₈].

TABLE 240: Extensible Accents

$\widetilde{abc}$	<code>\widetilde{abc}</code> *	$\widehat{abc}$	<code>\widehat{abc}</code> *
$\overleftarrow{abc}$	<code>\overleftarrow{abc}</code> †	$\overrightarrow{abc}$	<code>\overrightarrow{abc}</code> †
$\overline{abc}$	<code>\overline{abc}</code>	$\underline{abc}$	<code>\underline{abc}</code>
$\overbrace{abc}$	<code>\overbrace{abc}</code>	$\underbrace{abc}$	<code>\underbrace{abc}</code>
$\sqrt{abc}$	<code>\sqrt{abc}</code> ‡		

As demonstrated in a 1997 TUGboat article about typesetting long-division problems [Gib97], an extensible long-division sign (“ $\overline{abc}$ ”) can be faked by putting a “`\big`” in a `tabular` environment with an `\hline` or `\cline` in the preceding row. The article also presents a piece of code (uploaded to CTAN as `longdiv.tex`) that automatically solves and typesets—by putting an `\overline` atop “`\big`” and the desired text—long-division problems. More recently, the STIX fonts include a true long-division sign. See `\longdivision` in Table 246 for a sample of this symbol. See also the `polynom` package, which automatically solves and typesets polynomial-division problems in a similar manner.

* These symbols are made more extensible by the `MnSymbol` package (Table 244 on the following page). and even more extensible by the `yhmath` package (Table 242).

† If you’re looking for an extensible *diagonal* line or arrow to be used for canceling or reducing mathematical subexpressions (e.g., “ $x + \cancel{-x}$ ” or “ $\cancel{3} + 2^5$ ”) then consider using the `cancel` package.

‡ With an optional argument, `\sqrt` typesets *nth* roots. For example, “`\sqrt[3]{abc}`” produces “ $\sqrt[3]{abc}$ ” and “`\sqrt[n]{abc}`” produces “ $\sqrt[n]{abc}$ ”.

TABLE 241: `overrightarrow` Extensible Accents

$\overrightarrow{abc}$	<code>\Overrightarrow{abc}</code>
------------------------	-----------------------------------

TABLE 242: `yhmath` Extensible Accents

$\widehat{abc}$	<code>\widehat{abc}</code>	$\widetilde{abc}$	<code>\widetilde{abc}</code>
$\wideparen{abc}$	<code>\wideparen{abc}</code>	$\widetriangle{abc}$	<code>\widetriangle{abc}</code>
$\overset{\circ}{abc}$	<code>\widering{abc}</code>		

TABLE 243: $\mathcal{AMS}$ Extensible Accents

$\overleftrightarrow{abc}$	<code>\overleftrightharrow{abc}</code>	$\overleftarrow{abc}$	<code>\underleftrightharrow{abc}</code>
$\overleftarrow{abc}$	<code>\underleftarrow{abc}</code>	$\overrightarrow{abc}$	<code>\underrightharrow{abc}</code>

TABLE 244: MnSymbol Extensible Accents

$\overbrace{abc}$	<code>\overbrace{abc}</code>	$\undergroup{abc}$	<code>\undergroup{abc}</code>
$\overgroup{abc}$	<code>\overgroup{abc}</code>	$\underline{abc}$	<code>\underline{segment}{abc}</code>
$\overleftharpoon{abc}$	<code>\overleftharpoon{abc}</code>	$\widehat{abc}$	<code>\widehat{abc}</code>
$\overline{abc}$	<code>\overline{segment}{abc}</code>	$\wideparen{abc}$	<code>\wideparen{abc}</code>
$\overrightarrow{abc}$	<code>\overrightarrow{harpoon}{abc}</code>	$\widetilde{abc}$	<code>\widetilde{abc}</code>
$\underbrace{abc}$	<code>\underbrace{abc}</code>		

TABLE 245: fdsymbol Extensible Accents

$\overbrace{abc}$	<code>\overbrace{abc}</code>	$\undergroup{abc}$	<code>\undergroup{abc}</code>
$\overgroup{abc}$	<code>\overgroup{abc}</code>	$\underline{abc}$	<code>\underline{segment}{abc}</code>
$\overleftharpoon{abc}$	<code>\overleftharpoon{abc}</code>	$\widehat{abc}$	<code>\widehat{abc}</code>
$\overline{abc}$	<code>\overline{segment}{abc}</code>	$\wideparen{abc}$	<code>\wideparen{abc}</code>
$\overrightarrow{abc}$	<code>\overrightarrow{harpoon}{abc}</code>	$\widetilde{abc}$	<code>\widetilde{abc}</code>
$\underbrace{abc}$	<code>\underbrace{abc}</code>		

TABLE 246: stix Extensible Accents

$\overline{abc}$	<code>\longdivision{abc}</code>	$\underbracket{abc}$	<code>\underbracket{abc}</code>
$\overbrace{abc}$	<code>\overbrace{abc}</code>	$\underline{abc}$	<code>\underleftarrow{abc}</code>
$\overbracket{abc}$	<code>\overbracket{abc}</code>	$\underline{abc}$	<code>\underleftharpoon{abc}</code>
$\overleftarrow{abc}$	<code>\overleftarrow{abc}</code>	$\underline{abc}$	<code>\underleftrightharpoon{abc}</code>
$\overleftharpoon{abc}$	<code>\overleftharpoon{abc}</code>	$\underbrace{abc}$	<code>\underparen{abc}</code>
$\overleftrightharpoon{abc}$	<code>\overleftrightharpoon{abc}</code>	$\underline{abc}$	<code>\underrightarrow{abc}</code>
$\overparen{abc}$	<code>\overparen{abc}</code>	$\underline{abc}$	<code>\underrightharpoon{abc}</code>
$\overrightarrow{abc}$	<code>\overrightarrow{abc}</code>	$\widetilde{abc}$	<code>\widecheck{abc}</code>
$\overrightarrow{abc}$	<code>\overrightarrow{harpoon}{abc}</code>	$\widehat{abc}$	<code>\widehat{abc}</code>
$\sqrt{abc}$	<code>\sqrt{abc}</code>	$\widetilde{abc}$	<code>\widetilde{abc}</code>
$\underbrace{abc}$	<code>\underbrace{abc}</code>		

TABLE 247: mathtools Extensible Accents

$\overbrace{abc}$	<code>\overbrace{abc}</code>	$\underbrace{abc}$	<code>\underbrace{abc}</code>
$\overbracket{abc}$	<code>\overbracket{abc}</code> *	$\underbracket{abc}$	<code>\underbracket{abc}</code> *

* `\overbracket` and `\underbracket` accept optional arguments that specify the bracket height and thickness. See the `mathtools` documentation for more information.

TABLE 248: mathabx Extensible Accents

$\overbrace{abc}$	<code>\overbrace{abc}</code>	$\overline{abc}$	<code>\widebar{abc}</code>
$\overgroup{abc}$	<code>\overgroup{abc}</code>	$\widetilde{abc}$	<code>\widecheck{abc}</code>
$\underbrace{abc}$	<code>\underbrace{abc}</code>	$\wideparen{abc}$	<code>\wideparen{abc}</code>
$\undergroup{abc}$	<code>\undergroup{abc}</code>	$\overset{\circ}{abc}$	<code>\widering{abc}</code>
$\overrightarrow{abc}$	<code>\widearrow{abc}</code>		

The braces shown for `\overbrace` and `\underbrace` appear in their minimum size. They can expand arbitrarily wide, however.

TABLE 249: fourier Extensible Accents

$\widehat{abc}$	<code>\widearc{abc}</code>	$\widehat{abc}$	<code>\wideparen{abc}</code>
$\widehat{abc}$	<code>\wide0arc{abc}</code>	$\overset{\circ}{abc}$	<code>\widering{abc}</code>

TABLE 250: esvect Extensible Accents

$\overrightarrow{abc}$	<code>\vv{abc}</code> with package option a
$\overrightarrow{abc}$	<code>\vv{abc}</code> with package option b
$\overrightarrow{abc}$	<code>\vv{abc}</code> with package option c
$\overrightarrow{abc}$	<code>\vv{abc}</code> with package option d
$\overrightarrow{abc}$	<code>\vv{abc}</code> with package option e
$\overrightarrow{abc}$	<code>\vv{abc}</code> with package option f
$\overrightarrow{abc}$	<code>\vv{abc}</code> with package option g
$\overrightarrow{abc}$	<code>\vv{abc}</code> with package option h

`esvect` also defines a `\vv*` macro which is used to typeset arrows over vector variables with subscripts. See the `esvect` documentation for more information.

TABLE 251: `abraces` Extensible Accents
$$\overbrace{abc} \quad \backslash\mathrm{aoverbrace}\{abc\} \quad \underbrace{abc} \quad \backslash\mathrm{aunderbrace}\{abc\}$$

`\aoverbrace` and `\aunderbrace` accept optional arguments that provide a great deal of control over the braces' appearance. For example, these commands can produce braces with asymmetric endpoints, braces that span lines, dashed braces, and multicolored braces. See the `abraces` documentation for more information.

TABLE 252: `undertilde` Extensible Accents
$$\underset{\sim}{abc} \quad \backslash\mathrm{utilde}\{abc\}$$

Because `\utilde` is based on `\widetilde` it is also made more extensible by the `yhmath` package (Table 242 on page 104).

TABLE 253: `ushort` Extensible Accents
$$\underline{\underline{abc}} \quad \backslash\mathrm{ushortdw}\{abc\} \quad \underline{\underline{abc}} \quad \backslash\mathrm{ushortw}\{abc\}$$

`\ushortw` and `\ushortdw` are intended to be used with multi-character arguments (“words”) while `\ushortand` and `\ushortd` are intended to be used with single-character arguments.

The underlines produced by the `ushort` commands are shorter than those produced by the `\underline` command. Consider the output from the expression “`\ushort{x}\ushort{y}\underline{x}\underline{y}`”, which looks like “ $\underline{\underline{xyxy}}$ ”.

TABLE 254: `mdwmath` Extensible Accents
$$\sqrt{abc} \quad \backslash\mathrm{sqrt*}\{abc\}$$
TABLE 255: `actuarialangle` Extensible Accents
$$\overline{abc} \quad \backslash\mathrm{actuarialangle}\{abc\}$$

The `actuarialangle` package additionally defines `\angl` as `\actuarialangle` with a small amount of extra space to the right of the accented expression under the $\overline{}$, `\angln` as `\angl{n}`, and `\anglr` as `\angl{r}`.

TABLE 256: $\mathcal{AMS}$ Extensible Arrows
$$\overleftarrow{abc} \quad \backslash\mathrm{xleftarrow}\{abc\} \quad \overrightarrow{abc} \quad \backslash\mathrm{xrightarrow}\{abc\}$$

TABLE 257: mathtools Extensible Arrows

$\xhookleftarrow{abc}$	<code>\xhookleftarrow{abc}</code>	$\xleftrightharpoons{abc}$	<code>\xleftrightharpoons{abc}</code>
$\xhookrightarrow{abc}$	<code>\xhookrightarrow{abc}</code>	$\xmapsto{abc}$	<code>\xmapsto{abc}</code>
$\xLeftarrow{abc}$	<code>\xLeftarrow{abc}</code>	$\xRightarrow{abc}$	<code>\xRightarrow{abc}</code>
$\xleftharpoonup{abc}$	<code>\xleftharpoonup{abc}</code>	$\xrightharpoonup{abc}$	<code>\xrightharpoonup{abc}</code>
$\xleftharpoonupdown{abc}$	<code>\xleftharpoonupdown{abc}</code>	$\xrightharpoonupdown{abc}$	<code>\xrightharpoonupdown{abc}</code>
$\xleftharpoonupup{abc}$	<code>\xleftharpoonupup{abc}</code>	$\xrightharpoonupup{abc}$	<code>\xrightharpoonupup{abc}</code>
$\xleftrightarrow{abc}$	<code>\xleftrightarrow{abc}</code>	$\xrightleftharpoons{abc}$	<code>\xrightleftharpoons{abc}</code>
$\xLeftrightarrow{abc}$	<code>\xLeftrightarrow{abc}</code>		

TABLE 258: chemarr Extensible Arrows

$\xrightleftharpoons{abc}$	<code>\xrightleftharpoons{abc}</code>
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TABLE 259: chemarrow Extensible Arrows

$\xleftarrow[def]{abc}$	<code>\autoleftarrow{abc}{def}</code>	$\xrightarrow[def]{abc}$	<code>\autorightarrow{abc}{def}</code>
$\xleftrightarrow[def]{abc}$	<code>\autoleftrightharpoons{abc}{def}</code>	$\xrightleftharpoons[def]{abc}$	<code>\autorightleftharpoons{abc}{def}</code>

In addition to the symbols shown above, `chemarrow` also provides `\arrowfill`, `\rarrowfill`, `\leftrightharpoonsfill`, and `\rightleftharpoonsfill` macros. Each of these takes a length argument and produces an arrow of the specified length.

TABLE 260: extarrows Extensible Arrows

$\xleftrightarrow{abc}$	<code>\xLeftrightarrow{abc}</code>	$\xLongleftrightarrow{abc}$	<code>\xLongleftrightarrow{abc}</code>
$\xleftrightarrow{abc}$	<code>\xleftrightharpoonup{abc}</code>	$\xlongleftrightharpoonup{abc}$	<code>\xlongleftrightharpoonup{abc}</code>
$\xlongequal{abc}$	<code>\xlongequal{abc}</code>	$\xLongrightarrow{abc}$	<code>\xLongrightarrow{abc}</code>
$\xLongleftarrow{abc}$	<code>\xLongleftarrow{abc}</code>	$\xlongrightarrow{abc}$	<code>\xlongrightarrow{abc}</code>
$\xlongleftarrow{abc}$	<code>\xlongleftarrow{abc}</code>		

TABLE 261: extpfeil Extensible Arrows

$\overline{\overline{abc}}$	<code>\xlongequal{abc}</code>	$\overleftarrow{\overleftarrow{abc}}$	<code>\xtwoheadleftarrow{abc}</code>
$\overrightarrow{\overrightarrow{abc}}$	<code>\xmapsto{abc}</code>	$\overrightarrow{\overrightarrow{abc}}$	<code>\xtwoheadrightarrow{abc}</code>
$\overleftrightarrow{\overleftrightarrow{abc}}$	<code>\xtofrom{abc}</code>		

The `extpfeil` package also provides a `\newextarrow` command to help you define your own extensible arrow symbols. See the `extpfeil` documentation for more information.

TABLE 262: DotArrow Extensible Arrows

$\overset{a}{\dashrightarrow}$	<code>\dotarrow{a}</code>
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The `DotArrow` package provides mechanisms for lengthening the arrow, adjusting the distance between the arrow and its symbol, and altering the arrowhead. See the `DotArrow` documentation for more information.

TABLE 263: halloweenmath Extensible Arrows

$\overleftarrow{abc}$	<code>\overscriptleftarrow{abc}</code>	$\overleftarrow{abc}$	<code>\underscriptleftarrow{abc}</code>
$\overleftrightarrow{abc}$	<code>\overscriptleftrightarrow{abc}</code>	$\overleftrightarrow{abc}$	<code>\underscriptleftrightarrow{abc}</code>
$\overrightarrow{abc}$	<code>\overscriptrightarrow{abc}</code>	$\overrightarrow{abc}$	<code>\underscriptrightarrow{abc}</code>

These commands always typeset the arrow in script (small) style, hence the “script” in their names. Contrast the size of the arrowheads in the following examples:

$\overrightarrow{abc}$	vs.	$\overrightarrow{abc}$
<code>\overrightarrow{abc}</code>		<code>\overscriptrightarrow{abc}</code>

TABLE 264: trfsigns Extensible Transform Symbols

$\overline{abc}$	<code>\dft{abc}</code>	$\overline{abc}$	<code>\DFT{abc}</code>
------------------	------------------------	------------------	------------------------

TABLE 265: esrelation Extensible Relations

$\overleftarrow{abc}$	<code>\relationleftproject{abc}</code>	$\overrightarrow{abc}$	<code>\relationrightproject{abc}</code>
$\underline{abc}$	<code>\relationlifting{abc}</code>		

TABLE 266: halloweenmath Extensible Witches

$\overbrace{abc}^{\text{witch}}$	<code>\overleftwitchonbroom{abc}</code>	$\overbrace{abc}^{\text{witch}}$	<code>\overrightwitchonbroom{abc}</code>
$\overbrace{abc}^{\text{witch}}$	<code>\overleftwitchonbroom*{abc}</code>	$\overbrace{abc}^{\text{witch}}$	<code>\overrightwitchonbroom*{abc}</code>
$\underbrace{abc}_{\text{witch}}$	<code>\underleftwitchonbroom{abc}</code>	$\underbrace{abc}_{\text{witch}}$	<code>\underrightwitchonbroom{abc}</code>
$\underbrace{abc}_{\text{witch}}$	<code>\underleftwitchonbroom*{abc}</code>	$\underbrace{abc}_{\text{witch}}$	<code>\underrightwitchonbroom*{abc}</code>
$\overbrace{abc}^{\text{witch}}$	<code>\xleftwitchonbroom{abc}</code>	$\overbrace{abc}^{\text{witch}}$	<code>\xrightwitchonbroom{abc}</code>
$\overbrace{abc}^{\text{witch}}$	<code>\xleftwitchonbroom*{abc}</code>	$\overbrace{abc}^{\text{witch}}$	<code>\xrightwitchonbroom*{abc}</code>

TABLE 267: halloweenmath Extensible Ghosts

$\overbrace{abc}^{\text{ghost}}$	<code>\overleftswishingghost{abc}</code>	$\overbrace{abc}^{\text{ghost}}$	<code>\overrightswishingghost{abc}</code>
$\underbrace{abc}_{\text{ghost}}$	<code>\underleftswishingghost{abc}</code>	$\underbrace{abc}_{\text{ghost}}$	<code>\underrightswishingghost{abc}</code>
$\overbrace{abc}^{\text{ghost}}$	<code>\xleftswishingghost{abc}</code>	$\overbrace{abc}^{\text{ghost}}$	<code>\xrightswishingghost{abc}</code>

TABLE 268: holtpolt Non-commutative Division Symbols

$\overline{\frac{abc}{def}}$	<code>\holter{abc}{def}</code>	$\overline{\frac{abc}{def}}$	<code>\polter{abc}{def}</code>
------------------------------	--------------------------------	------------------------------	--------------------------------

TABLE 269: Dots

<code>\cdotp</code>	<code>\colon*</code>	<code>\ldotp</code>	<code>\vdots†</code>
<code>\cdots</code>	<code>\ddots†</code>	<code>\ldots</code>	

* While “:” is valid in math mode, `\colon` uses different surrounding spacing. See Section 10.4 and the Short Math Guide for L^AT_EX [Dow00] for more information on math-mode spacing.

† The `mathdots` package redefines `\ddots` and `\vdots` (Table 275) to make them scale properly with font size. (They normally scale horizontally but not vertically.) `\fixedddots` and `\fixedvdots` provide the original, fixed-height functionality of L^AT_EX 2_ε’s `\ddots` and `\vdots` macros.

TABLE 270: $\mathcal{AMS}$ Dots

$\because$	<code>\because*</code>	$\cdots$	<code>\dotsi</code>	$\therefore$	<code>\therefore*</code>
$\dots$	<code>\dotsb</code>	$\cdots$	<code>\dotsm</code>		
$\dots$	<code>\dotsc</code>	$\cdots$	<code>\dotso</code>		

* `\because` and `\therefore` are defined as binary relations and therefore also appear in Table 89 on page 48.

The $\mathcal{AMS}$ `\dots_` symbols are named according to their intended usage: `\dotsb` between pairs of binary operators/relations, `\dotsc` between pairs of commas, `\dotsi` between pairs of integrals, `\dotsm` between pairs of multiplication signs, and `\dotso` between other symbol pairs.

TABLE 271: wasysym Dots

$\therefore$	<code>\wasytherefore</code>
--------------	-----------------------------

TABLE 272: MnSymbol Dots

$\cdot$	<code>\cdot</code>	$\cdots$	<code>\hdotdot</code>	$\because$	<code>\udots</code>
$\ddots$	<code>\ddotdotdot</code>	$\cdots$	<code>\hdots</code>	$\therefore$	<code>\uptherefore</code>
$\ddots$	<code>\ddots</code>	$\because$	<code>\lefttherefore</code>	$\vdots$	<code>\vdotdot</code>
$\diamond$	<code>\diamonddots</code>	$\because$	<code>\righttherefore</code>	$\vdots$	<code>\vdots</code>
$\downarrow$	<code>\downtherefore</code>	$\because$	<code>\squaredots</code>		
$\ddots$	<code>\fivedots</code>	$\because$	<code>\udotdot</code>		

MnSymbol defines `\therefore` as `\uptherefore` and `\because` as `\downtherefore`. Furthermore, `\cdot` and `\colon` produce the same glyphs as `\cdot` and `\vdotdot` respectively but serve as $\mathrm{T}_{\mathrm{E}}\mathrm{X}$ math punctuation (class 6 symbols) instead of $\mathrm{T}_{\mathrm{E}}\mathrm{X}$ binary operators (class 2).

All of the above except `\hdots` and `\vdots` are defined as binary operators and therefore also appear in Table 56 on page 30.

TABLE 273: fdsymbol Dots

$\cdot$	<code>\cdot</code>	$\cdots$	<code>\hdots</code>	$\because$	<code>\udots</code>
$\ddots$	<code>\ddotdotdot</code>	$\because$	<code>\lefttherefore</code>	$\therefore$	<code>\uptherefore</code>
$\ddots$	<code>\ddots</code>	$\because$	<code>\righttherefore</code>	$\vdots$	<code>\vdotdot</code>
$\downarrow$	<code>\downtherefore</code>	$\because$	<code>\squaredots</code>		
$\cdots$	<code>\hdotdot</code>	$\because$	<code>\udotdot</code>		

fdsymbol defines `\adots` as a synonym for `\udots`; `\because` as a synonym for `\downtherefore`; `\cdot` as a synonym for `\cdot`; `\cdots` as a synonym for `\hdots`; `\Colon` as a synonym for `\squaredots`; `\colon`, `\mathcolon`, and `\mathratio` as synonyms for `\vdotdot`; and `\therefore` as a synonym for `\uptherefore`. (Some of these serve different mathematical roles, such as relations versus binary operators.)

TABLE 274: stix Dots

$\therefore$	<code>\adots</code>	$\cdots$	<code>\cdots</code>	$\vdots$	<code>\fourvdots</code>
$\because$	<code>\because</code>	$\colon$	<code>\Colon</code>	$\cdot$	<code>\ldotp</code>
$\cdot$	<code>\cdot</code>	$\ddots$	<code>\ddots</code>	$\dots$	<code>\mathellipsis</code>
$\cdot$	<code>\cdotp</code>	..	<code>\enleadertwodots</code>	$\therefore$	<code>\therefore</code>

stix defines `\centerdot` as a synonym for `\cdotp` and `\dotsb` and `\dotsm` as synonyms for `\cdots`.

TABLE 275: mathdots Dots

$\ddots$	<code>\ddots</code>	$\iddots$	<code>\iddots</code>	$\vdots$	<code>\vdots</code>
----------	---------------------	-----------	----------------------	----------	---------------------

Unlike the default definitions of the above (Table 269), `mathdots`'s commands are designed to scale properly with the surrounding font size.

TABLE 276: yhmath Dots

$\therefore$	<code>\adots</code>
--------------	---------------------

TABLE 277: teubner Dots

$:$	<code>\:</code>	$\dot{}$	<code>\;</code>	$\ddot{}$	<code>\?</code>	$\colon$	<code>\antilabe</code>
-----	-----------------	----------	-----------------	-----------	-----------------	----------	------------------------

TABLE 278: begriff Begriffsschrift Symbols

$\vdash$	<code>\BGassert</code>	$-$	<code>\BGcontent</code>	$\top$	<code>\BGnot</code>
$\overset{b}{\underset{a}{\lceil}}$	<code>\BGconditional{a}{b}</code>	$\smile$	<code>\BGquant{a}</code>		

The `begriff` package contains additional commands for typesetting Frege's Begriffsschrift notation for second-order logic. See the `begriff` documentation for more information.

TABLE 279: frege Begriffsschrift Symbols

$\vdash$	<code>\Facontent</code>	$\vdash$	<code>\Fanncontent</code>	$\vdash$	<code>\Fncontent</code>
$\vdash$	<code>\Fancontent</code>	$\vdash$	<code>\Fcontent</code>	$\vdash$	<code>\Fnncontent</code>
$\vdash^a$	<code>\Fannquant{a}</code>	$\vdash^a$	<code>\Faquant{a}</code>	$\vdash^a$	<code>\Fnquant{a}</code>
$\vdash^a$	<code>\Fannquantn{a}</code>	$\vdash^a$	<code>\Faquantn{a}</code>	$\vdash^a$	<code>\Fnquantn{a}</code>
$\vdash^a$	<code>\Fannquantnn{a}</code>	$\vdash^a$	<code>\Faquantnn{a}</code>	$\vdash^a$	<code>\Fnquantnn{a}</code>
$\vdash^a$	<code>\Fanquant{a}</code>	$\vdash^a$	<code>\Fnnquant{a}</code>	$\vdash^a$	<code>\Fquantn{a}</code>
$\vdash^a$	<code>\Fanquantn{a}</code>	$\vdash^a$	<code>\Fnnquantn{a}</code>	$\vdash^a$	<code>\Fquantnn{a}</code>
$\vdash^a$	<code>\Fanquantnn{a}</code>	$\vdash^a$	<code>\Fnnquantnn{a}</code>		

The `frege` package contains additional commands for typesetting Frege's Begriffsschrift notation for second-order logic. See the `frege` documentation for more information.

TABLE 280: mathcomp Math Symbols

$^{\circ}\text{C}$	<code>\tccentigrade</code>	Ω	<code>\tcohm</code>	‰	<code>\tcperthousand</code>
μ	<code>\tcmu</code>	‰‰	<code>\tcpertenthousand</code>		

TABLE 281: marvosym Math Symbols

$\angle$	<code>\AngleSign</code>	$\geq$	<code>\LargerOrEqual</code>	$\times$	<code>\MVMultiplication</code>
$\Rightarrow$	<code>\Conclusion</code>	$\leq$	<code>\LessOrEqual</code>	$\cdot$	<code>\MVPeriod</code>
$\equiv$	<code>\Congruent</code>	$\cdot$	<code>\MultiplicationDot</code>	$+$	<code>\MVPlus</code>
$\cong$	<code>\Corresponds</code>	$,$	<code>\MVComma</code>	$\rightarrow$	<code>\MVRightArrow</code>
$/$	<code>\Divides</code>	$/$	<code>\MVDivision</code>	$)$	<code>\MVRightBracket</code>
$\nmid$	<code>\DividesNot</code>	$($	<code>\MVLeftBracket</code>	$\neq$	<code>\NotCongruent</code>
$\Leftrightarrow$	<code>\Equivalence</code>	$-$	<code>\MVMinus</code>		

TABLE 282: marvosym Digits

0	<code>\MVZero</code>	2	<code>\MVTwo</code>	4	<code>\MVFour</code>	6	<code>\MVSix</code>	8	<code>\MVEight</code>
1	<code>\MVOne</code>	3	<code>\MVThree</code>	5	<code>\MVFive</code>	7	<code>\MVSeven</code>	9	<code>\MVNine</code>

TABLE 283: fge Digits

0	<code>\fgestruckzero</code>	1	<code>\fgestruckone</code>
---	-----------------------------	---	----------------------------

TABLE 284: dozenal Base-12 Digits

ζ	<code>\x</code>	ξ	<code>\e</code>
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TABLE 285: mathabx Mayan Digits

$\textcircled{0}$	<code>\maya{0}</code>	:	<code>\maya{2}</code>	:	<code>\maya{4}</code>
$\cdot$	<code>\maya{1}</code>	:	<code>\maya{3}</code>	:	<code>\maya{5}</code>

TABLE 286: stix Infinities

∞	<code>\acidfree</code>	∞	<code>\infty</code>	∞	<code>\tieinfty</code>
∞	<code>\iinfin</code>	∞	<code>\nviny</code>		

TABLE 287: stix Primes

$'$	<code>\prime</code>	$'$	<code>\backprime</code>
$''$	<code>\dprime</code>	$''$	<code>\backdprime</code>
$'''$	<code>\trprime</code>	$'''$	<code>\backtrprime</code>
$'''$	<code>\qprime</code>		

TABLE 288: stix Empty Sets

$\emptyset$	<code>\emptyset</code>	$\overline{\emptyset}$	<code>\emptysettoarr</code>	$\emptyset$	<code>\varnothing</code>
$\emptyset$	<code>\emptysettoarr</code>	$\emptyset$	<code>\emptysettocirc</code>		
$\emptyset$	<code>\emptysettoarrl</code>	$\emptyset$	<code>\revemptyset</code>		

TABLE 289: $\mathcal{AMS}$ Angles

$\angle$	<code>\angle</code>	$\measuredangle$	<code>\measuredangle</code>	$\sphericalangle$	<code>\sphericalangle</code>
----------	---------------------	------------------	-----------------------------	-------------------	------------------------------

TABLE 290: MnSymbol Angles

$\angle$	<code>\angle</code>	$\measuredangle$	<code>\measuredangle</code>	$\sphericalangle$	<code>\sphericalangle</code>
----------	---------------------	------------------	-----------------------------	-------------------	------------------------------

TABLE 291: fdsymbol Angles

$\angle$	<code>\angle</code>	$\sphericalangle$	<code>\sphericalangle</code>
$\measuredangle$	<code>\measuredangle</code>	$\sphericalangle$	<code>\sphericalangle</code>
$\measuredrightangle$	<code>\measuredrightangle</code>	$\sphericalangle$	<code>\sphericalangle</code>
$\measuredrightangledot$	<code>\measuredrightangledot</code>	$\sphericalangle$	<code>\sphericalangle</code>

fdsymbol defines `\measuredangleleft` as a synonym for `\revmeasuredangle`;
`\revsphericalangle` and `\gtlpar` as synonyms for `\sphericalangleleft`;
`\rightanglesqr` as a synonym for `\rightanglesquare`; and
`\rightangledmdot` as a synonym for `\measuredrightangledmdot`.

TABLE 292: boisik Angles

$\angle$	<code>\angle</code>	$\rightangle$	<code>\rightangle</code>	$\sphericalangle$	<code>\sphericalangle</code>
$\measuredangle$	<code>\measuredangle</code>	$\rightangledmdot$	<code>\rightangledmdot</code>		
$\measuredrightangle$	<code>\measuredrightangle</code>	$\rightanglesqr$	<code>\rightanglesqr</code>		

TABLE 293: stix Angles

$\angle$	<code>\angdnr</code>	$\measuredangle$	<code>\measanglerutone</code>	$\rightangle$	<code>\rightanglemdot</code>
$\sphericalangle$	<code>\angle</code>	$\measuredangle$	<code>\measangleultonw</code>	$\rightangle$	<code>\rightanglesqr</code>
$\sphericalangle$	<code>\angles</code>	$\measuredangle$	<code>\measangleurtone</code>	$\sphericalangle$	<code>\sphericalangle</code>
$\angle$	<code>\angleubar</code>	$\measuredangle$	<code>\measuredangle</code>	$\sphericalangle$	<code>\sphericalangleup</code>
$\gtlpar$	<code>\gtlpar</code>	$\measuredangle$	<code>\measuredangleleft</code>	$\threedangle$	<code>\threedangle</code>
$\measuredangle$	<code>\measangledltosw</code>	$\measuredangle$	<code>\measuredrightangle</code>	$\turnangle$	<code>\turnangle</code>
$\measuredangle$	<code>\measangledrtose</code>	$\rangledownzigzagarrow$	<code>\rangledownzigzagarrow</code>	$\wideangle$	<code>\wideangledown</code>
$\measuredangle$	<code>\measangleldtosw</code>	$\revangle$	<code>\revangle</code>	$\wideangle$	<code>\wideangleup</code>
$\measuredangle$	<code>\measanglelultonw</code>	$\revangleubar$	<code>\revangleubar</code>		
$\measuredangle$	<code>\measanglerdtose</code>	$\rightangle$	<code>\rightangle</code>		

TABLE 294: Miscellaneous L^AT_EX 2_ε Math Symbols

$\aleph$	<code>\aleph</code>	$\Box^{*,\dagger}$	<code>\Box^{*,\dagger}</code>	∇	<code>\nabla</code>	$\triangle$	<code>\triangle</code>
$\emptyset$	<code>\emptyset</code>	$\Diamond^*$	<code>\Diamond^*</code>	$\neg$	<code>\neg</code>		
$\angle$	<code>\angle</code>	∞	<code>\infty</code>	$\prime$	<code>\prime</code>		
$\backslash$	<code>\backslash</code>	$\mho^*$	<code>\mho^*</code>	$\surd$	<code>\surd</code>		

* Not predefined in L^AT_EX 2_ε. Use one of the packages `latexsym`, `amssymb`, `txfonts`, `pxfonts`, or `wasysym`. Note, however, that `amssymb` and `amssymb` define `\Diamond` to produce the same glyph as `\lozenge` (“ $\Diamond$ ”); the other packages produce a squarer `\Diamond` as depicted above.

[†] To use `\Box`—or any other symbol—as an end-of-proof (Q.E.D.) marker, consider using the `ntheorem` package, which properly juxtaposes a symbol with the end of the proof text.

[‡] Many people prefer the look of $\mathcal{MS}$ ’s `\varnothing` (“ $\emptyset$ ”, Table 295) to that of L^AT_EX’s `\emptyset`.

TABLE 295: Miscellaneous $\mathcal{MS}$ Math Symbols

$\backprime$	<code>\backprime</code>	$\blacktriangledown$	<code>\blacktriangledown</code>	$\mho$	<code>\mho</code>
$\bigstar$	<code>\bigstar</code>	$\diagdown$	<code>\diagdown</code>	$\square$	<code>\square</code>
$\blacklozenge$	<code>\blacklozenge</code>	$\diagup$	<code>\diagup</code>	$\triangledown$	<code>\triangledown</code>
$\blacksquare$	<code>\blacksquare</code>	$\eth$	<code>\eth</code>	$\varnothing$	<code>\varnothing</code>
$\blacktriangle$	<code>\blacktriangle</code>	$\lozenge$	<code>\lozenge</code>	$\vartriangle$	<code>\vartriangle</code>

TABLE 296: Miscellaneous wasysym Math Symbols

$\Box$	<code>\Box</code>	$\Diamond$	<code>\Diamond</code>	$\mho^*$	<code>\mho^*</code>	$\varangle$	<code>\varangle</code>
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* `wasysym` also defines an `\agem0` symbol, which is the same glyph as `\mho` but is intended for use in text mode.

TABLE 297: Miscellaneous txfonts/pxfonts Math Symbols

$\blacklozenge$	<code>\Diamondblack</code>	λ	<code>\lambdabar</code>
$\diamond$	<code>\Diamonddot</code>	λ	<code>\lambdaslash</code>

TABLE 298: Miscellaneous mathabx Math Symbols

◦	<code>\degree</code>	'''	<code>\fourth</code>	∠	<code>\measuredangle</code>	''	<code>\second</code>
\	<code>\diagdown</code>	#	<code>\hash</code>	⌋	<code>\pitchfork</code>	⋈	<code>\sphericalangle</code>
/	<code>\diagup</code>	∞	<code>\infty</code>	∝	<code>\propto</code>	'''	<code>\third</code>
∅	<code>\diameter</code>	λ	<code>\leftthreetimes</code>	λ	<code>\rightthreetimes</code>	#	<code>\varhash</code>

TABLE 299: Miscellaneous MnSymbol Math Symbols

⊖	<code>\backneg</code>	∅	<code>\diameter</code>	⊖	<code>\invneg</code>	¬	<code>\neg</code>
⊖	<code>\backprime</code>	∞	<code>\infty</code>	⌘	<code>\maltese</code>	/	<code>\prime</code>
✓	<code>\checkmark</code>	⊖	<code>\invbackneg</code>	∇	<code>\nabla</code>	f	<code>\smallint</code>

MnSymbol defines `\emptyset` and `\varnothing` as synonyms for `\diameter`; `\lnot` and `\minushookdown` as synonyms for `\neg`; `\minushookup` as a synonym for `\invneg`; `\hookdownminus` as a synonym for `\backneg`; and, `\hookupminus` as a synonym for `\invbackneg`.

TABLE 300: Miscellaneous Internal MnSymbol Math Symbols

⋯	<code>\partialvardint</code>	⋯	<code>\partialvartint</code>
⋈	<code>\partialvardlanddownint</code>	⋈	<code>\partialvartlanddownint</code>
⋈	<code>\partialvardlandupint</code>	⋈	<code>\partialvartlandupint</code>
⊙	<code>\partialvardlcircleleftint</code>	⊙	<code>\partialvartlcircleleftint</code>
⊙	<code>\partialvardlcirclerightint</code>	⊙	<code>\partialvartlcirclerightint</code>
⊙	<code>\partialvardoiint</code>	⊙	<code>\partialvartoiint</code>
⊙	<code>\partialvardoint</code>	⊙	<code>\partialvartoint</code>
⊙	<code>\partialvardrcircleleftint</code>	⊙	<code>\partialvartrcircleleftint</code>
⊙	<code>\partialvardrcirclerightint</code>	⊙	<code>\partialvartrcirclerightint</code>
⊖	<code>\partialvardstrokedint</code>	⊖	<code>\partialvartstrokedint</code>
Σ	<code>\partialvardsumint</code>	Σ	<code>\partialvartsumint</code>

These symbols are intended to be used internally by MnSymbol to construct the integrals appearing in Table 80 on page 43 but can nevertheless be used in isolation.

TABLE 301: Miscellaneous fdsymbol Math Symbols

⊖	<code>\backneg</code>	∞	<code>\infty</code>	/	<code>\prime</code>
⊖	<code>\backprime</code>	⊖	<code>\invneg</code>	∅	<code>\reemptyset</code>
✓	<code>\checkmark</code>	⌘	<code>\maltese</code>	∇	<code>\sector</code>
∅	<code>\emptyset</code>	¬	<code>\neg</code>	f	<code>\smallint</code>

fdsymbol defines `\hookdownminus` as a synonym for `\backneg`; `\invneg` and `\invnot` as synonyms for `\backneg`; `\lnot` and `\minushookdown` as synonyms for `\neg`; `\turnedbackneg` as a synonym for `\intprodr`; `\turnedneg` as a synonym for `\intprod`; and `\diameter` and `\varnothing` as synonyms for `\emptyset`.

TABLE 302: Miscellaneous boisik Math Symbols

$\backslash$	<code>\backepsilon</code>	$\dagger$	<code>\hermitmatrix</code>	$\nless$	<code>\notbot</code>
$\backprime$	<code>\backprime</code>	∞	<code>\iinfin</code>	$\nless$	<code>\nottop</code>
$\checkmark$	<code>\checkmark</code>	$\neg$	<code>\invnot</code>	riota	<code>\riota</code>
$\square$	<code>\dalambert</code>	λ	<code>\lambdabar</code>	$\sim$	<code>\sinewave</code>
$\diagdown$	<code>\diagdown</code>	λ	<code>\lambdaslash</code>	$\emptyset$	<code>\varnothing</code>
$\diagup$	<code>\diagup</code>	maltese	<code>\maltese</code>		

TABLE 303: Miscellaneous stix Math Symbols

$\sim$	<code>\accurrent</code>	$\dagger$	<code>\hermitmatrix</code>	PropertyLine	<code>\PropertyLine</code>
$\backslash$	<code>\backslash</code>	$\bullet$	<code>\hyphenbullet</code>	$\blacksquare$	<code>\QED</code>
$\equiv$	<code>\bbrktbrk</code>	$\sim$	<code>\hzigzag</code>	$??$	<code>\Question</code>
$\perp$	<code>\bigbot</code>	Δ	<code>\increment</code>	$\times$	<code>\rdiagovfdiag</code>
$\equiv$	<code>\biginterleave</code>	$\blacksquare$	<code>\inversebullet</code>	$\bowtie$	<code>\rightouterjoin</code>
$\top$	<code>\bigtop</code>	$\neg$	<code>\invnot</code>	$\lrcorner$	<code>\sansLmirrored</code>
smiley	<code>\blacksmiley</code>	$\Join$	<code>\Join</code>	$\lrcorner$	<code>\sansLturned</code>
$\lvert$	<code>\bracevert</code>	$\square$	<code>\laplac</code>	$\sim$	<code>\sinewave</code>
$\wedge$	<code>\caretinsert</code>	$\bowtie$	<code>\leftouterjoin</code>	strns	<code>\strns</code>
$\checkmark$	<code>\checkmark</code>	$\llarc$	<code>\llarc</code>	thermod	<code>\thermod</code>
$\triangleright$	<code>\conictaper</code>	$\llarc$	<code>\llarc</code>	topcir	<code>\topcir</code>
danger	<code>\danger</code>	maltese	<code>\maltese</code>	turnednot	<code>\turnednot</code>
$\diagdown$	<code>\diagdown</code>	mathsection	<code>\mathsection</code>	ubrbrak	<code>\ubrbrak</code>
$\diagup$	<code>\diagup</code>	mathvisiblespace	<code>\mathvisiblespace</code>	$\ularc$	<code>\ularc</code>
$\emptyset$	<code>\diameter</code>	∇	<code>\nabla</code>	$\urarc$	<code>\urarc</code>
$*$	<code>\dingasterisk</code>	$\neg$	<code>\neg*</code>	viewdata	<code>\viewdata</code>
elinters	<code>\elinters</code>	obrbrak	<code>\obrbrak</code>	vzigzag	<code>\vzigzag</code>
$\eth$	<code>\eth</code>	perps	<code>\perps</code>	$\yen$	<code>\yen</code>
$!!$	<code>\Exclam</code>	postalmark	<code>\postalmark</code>	zcmp	<code>\zcmp</code>
$\times$	<code>\fdiagovrdiag</code>	profline	<code>\profline</code>	zpipe	<code>\zpipe</code>
$\bowtie$	<code>\fullouterjoin</code>	profsurf	<code>\profsurf</code>	zproject	<code>\zproject</code>

* stix defines `\lnot` as a synonym for `\neg`.

TABLE 304: Miscellaneous textcomp Text-mode Math Symbols

$^\circ$	<code>\textdegree*</code>	$\frac{1}{2}$	<code>\textonehalf[†]</code>	$\frac{3}{4}$	<code>\textthreequarters[†]</code>
$\div$	<code>\textdiv</code>	$\frac{1}{4}$	<code>\textonequarter[†]</code>	3	<code>\textthreesuperior</code>
$/$	<code>\textfractionsolidus</code>	1	<code>\textonesuperior</code>	$\times$	<code>\texttimes</code>
$\neg$	<code>\textlnot</code>	$\pm$	<code>\textpm</code>	2	<code>\texttwosuperior</code>
$-$	<code>\textminus</code>	$\sqrt{}$	<code>\textsurd</code>		

* If you prefer a larger degree symbol you might consider defining one as `\ensuremath{\text{\char"00B0}}` (“°”).

[†] nicefrac (part of the units package) or the newer xfrac package can be used to construct vulgar fractions like “ $\frac{1}{2}$ ”, “ $\frac{1}{4}$ ”, “ $\frac{3}{4}$ ”, and even “ $\frac{c}{o}$ ”.

TABLE 305: Miscellaneous fge Math Symbols

$\backslash$	<code>\fgebackslash</code>	$\frown$	<code>\fgecap</code>	$\smile$	<code>\fgecupacute</code>	$\lneq$	<code>\fgeangle</code>
$\perp$	<code>\fgebaracute</code>	$\simeq$	<code>\fgecapbar</code>	$\cong$	<code>\fgecupbar</code>	$\lceil$	<code>\fgeupbracket</code>
$\bar{\smile}$	<code>\fgebarcap</code>	$\cup$	<code>\fgecup</code>	∞	<code>\fgeinfty</code>		

TABLE 306: Miscellaneous mathdesign Math Symbols

$\llcorner$	<code>\rightangle</code>
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TABLE 307: Math Alphabets

Font sample	Generating command	Required package
ABCdef123	<code>\mathrm{ABCdef123}</code>	<i>none</i>
<i>ABCdef123</i>	<code>\mathit{ABCdef123}</code>	<i>none</i>
<i>ABCdef123</i>	<code>\mathnormal{ABCdef123}</code>	<i>none</i>
<i>ABC</i>	<code>\mathcal{ABC}</code>	<i>none</i>
<i>ABC</i>	<code>\mathscr{ABC}</code>	mathrsfs
<i>ABC</i>	<i>or</i> <code>\mathcal{ABC}</code>	calrsfs
<i>ABC</i>	<code>\mathcal{ABC}</code>	euscript with the mathcal option
<i>ABC</i>	<i>or</i> <code>\mathscr{ABC}</code>	euscript with the mathscr option
<i>ABC</i>	<code>\mathcal{ABC}</code>	rsfs
<i>ABC</i>	<i>or</i> <code>\mathscr{ABC}</code>	rsfs with the scr option
<i>ABC</i>	<code>\mathcal{ABC}</code>	urwchancal*
<i>ABC</i>	<i>or</i> <code>\mathscr{ABC}</code>	urwchancal* with the mathscr option
ABC	<code>\mathbb{ABC}</code>	amsfonts, [§] amssymb, txfonts, or pxfonts
ABC	<code>\varmathbb{ABC}</code>	txfonts or pxfonts
ABCdef123	<code>\mathbb{ABCdef123}</code>	bbold or mathbbol [†]
ABCdef123	<code>\mathbb{ABCdef123}</code>	mbboard [†]
ABCdef12	<code>\mathbbm{ABCdef12}</code>	bbm
ABCdef12	<code>\mathbbmss{ABCdef12}</code>	bbm
ABCdef12	<code>\mathbbmtt{ABCdef12}</code>	bbm
ABC1	<code>\mathds{ABC1}</code>	dsfont
ABC1	<code>\mathds{ABC1}</code>	dsfont with the sans option
ABC	<code>\symA\symB\symC</code>	china2e [‡]
$\frac{ABCdef123}{ABCdef123}$	<code>\mathfrak{ABCdef123}</code>	eufrak
$\frac{ABCdef123}{ABCdef123}$	<code>\textfrak{ABCdef123}</code>	yfonts [¶]
$\frac{ABCdef123}{ABCdef123}$	<code>\textswab{ABCdef123}</code>	yfonts [¶]
$\frac{ABCdef123}{ABCdef123}$	<code>\textgoth{ABCdef123}</code>	yfonts [¶]

* `urwchancal` redefines `\mathcal` or `\mathscr` to use Zapf Chancery as the calligraphic or script font. However, like all `\mathcal` and `\mathscr` commands shown in Table 307, these support only uppercase letters. An alternative is to put “`\DeclareMathAlphabet{\mathpzc}{OT1}{pzc}{m}{it}`” in your document’s preamble to make `\mathpzc` typeset a wider set of characters in Zapf Chancery. Unfortunately, with this technique accents, superscripts, and subscripts don’t align as well as they do with `urwchancal`.

As a similar trick, you can typeset the Calligra font’s script “*z*” (or other calligraphic symbols) in math mode by loading the `calligra` package and putting “`\DeclareMathAlphabet{\mathcalligra}{T1}{calligra}{m}{n}`” in your document’s preamble to make `\mathcalligra` typeset its argument in the Calligra font. You may also want to specify “`\DeclareFontShape{T1}{calligra}{m}{n}{<->s*[2.2]callig15}{}`” to set Calligra at 2.2 times its design size for a better blend with typical body fonts.

[†] The `mathbbol` package defines some additional blackboard bold characters: parentheses, square brackets, angle brackets, and—if the `bbgreekl` option is passed to `mathbbol`—Greek letters. For instance, “ $\langle [[(\alpha\beta\gamma)]] \rangle$ ” is produced by “`\mathbb{\langle \Langle \Lbrack \Lparen \bbalpha\bbbeta\bbgamma \Rparen \Rbrack \Rangle \}`”.

`mbboard` extends the blackboard bold symbol set significantly further. It supports not only the Greek alphabet—including “Greek-like” symbols such as `\bbnabla` (“ ∇ ”)—but also *all* punctuation marks, various currency symbols such as `\bbdollar` (“\$”) and `\bbeuro` (“€”), and the Hebrew alphabet (e.g., “`\bbfinalnun\bbyod\bbqof\bbpe`” → “פ״ף״ד״ק״פ”).

[‡] The `\sym...` commands provided by the `GfMA2e` package are actually text-mode commands. They are included in Table 307 because they resemble the blackboard-bold symbols that appear in the rest of the table. In addition to the 26 letters of the English alphabet, `GfMA2e` provides three unlaute blackboard-bold letters: `\symAE` (“ $\text{\AA}$ ”), `\symOE` (“ $\text{\O}$ ”), and `\symUE` (“ $\text{\U}$ ”). Note that `GfMA2e` does provide math-mode commands for the most common number-set symbols. These are presented in Table 183 on page 89.

[¶] As their `\text...` names imply, the fonts provided by the `yfonts` package are actually text fonts. They are included in Table 307 because they are frequently used in a mathematical context.

[§] An older (i.e., prior to 1991) version of the $\mathcal{AMS}$ ’s fonts rendered $\mathbb{C}$, $\mathbb{N}$, $\mathbb{R}$, $\mathbb{S}$, and $\mathbb{Z}$ as $\mathbb{C}$, $\mathbb{N}$, $\mathbb{R}$, $\mathbb{S}$, and $\mathbb{Z}$. As some people prefer the older glyphs—much to the $\mathcal{AMS}$ ’s surprise—and because those glyphs fail to build under modern versions of METAFONT, Berthold Horn uploaded PostScript fonts for the older blackboard-bold glyphs to CTAN, to the `fonts/msym10` directory. As of this writing, however, there are no $\text{\LaTeX} 2_{\epsilon}$ packages for utilizing the now-obsolete glyphs.

4 Science and technology symbols

This section lists symbols that are employed in various branches of science and engineering.

TABLE 308: gensymb Symbols Defined to Work in Both Math and Text Mode

°C	<code>\celsius</code>	μ	<code>\micro</code>	‰	<code>\perthousand</code>
°	<code>\degree</code>	Ω	<code>\ohm</code>		

TABLE 309: wasysym Electrical and Physical Symbols

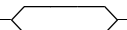
~	<code>\AC</code>	≈	<code>\VHF</code>	~~~~	<code>\photon</code>	≈	<code>\HF</code>	~~~~~	<code>\gluon</code>
---	------------------	---	-------------------	------	----------------------	---	------------------	-------	---------------------

TABLE 310: ifsym Pulse Diagram Symbols

	<code>\FallingEdge</code>		<code>\LongPulseLow</code>		<code>\PulseLow</code>		<code>\ShortPulseHigh</code>
	<code>\LongPulseHigh</code>		<code>\PulseHigh</code>		<code>\RaisingEdge</code>		<code>\ShortPulseLow</code>

In addition, within `\textifsym{...}`, the following codes are valid:

<code>_l</code>	<code>-m</code>	<code>-h</code>	<code>-d</code>	<code><</code>	<code><</code>	<code>></code>	<code>></code>
<code>_L</code>	<code>-M</code>	<code>-H</code>	<code>-D</code>	<code><</code>	<code><<</code>	<code>></code>	<code>>></code>

This enables one to write “`\textifsym{mm<DDD>mm}`” to get “” or “`\textifsym{L|H|L|H|L}`” to get “”. See also the `timing` package, which provides a wide variety of pulse-diagram symbols within an environment designed specifically for typesetting pulse diagrams.

Finally, `\textifsym` supports the display of segmented digits, as would appear on an LCD: “`\textifsym{-123.456}`” produces “- 123.456”. “`\textifsym{b}`” outputs a blank with the same width as an “8”.

TABLE 311: ar Aspect Ratio Symbol

$\mathcal{R}$	<code>\AR</code>
---------------	------------------

TABLE 312: textcomp Text-mode Science and Engineering Symbols

°C	<code>\textcelsius</code>	Ω	<code>\textmho</code>	μ	<code>\textmu</code>	Ω	<code>\textohm</code>
----	---------------------------	---	-----------------------	---	----------------------	---	-----------------------

TABLE 313: `steinmetz` Extensible Phasor Symbol
$$\underline{abc} \quad \backslash\mathrm{phase}\{abc\}$$

The `\phase` command uses the `pict2e` package to draw a horizontally and vertically scalable Steinmetz phasor symbol. Consequently, `\phase` works only with those $\mathrm{T\!E\!X}$ backends supported by `pict2e`. See the `pict2e` documentation for more information.

TABLE 314: `emf` Electromotive Force Symbols

$\mathcal{E}$ `\emf` with package option `boondox` (default)
 $\mathcal{E}$ `\emf` with package option `cal`*
 $\mathcal{E}$ `\emf` with package option `calligra`
 $\mathcal{E}$ `\emf` with package option `chorus`
 $\mathcal{E}$ `\emf` with package option `cmr`
 $\mathcal{E}$ `\emf` with package option `fourier`
 $\mathcal{E}$ `\emf` with package option `frursive`
 $\mathcal{E}$ `\emf` with package option `miama`
 $\mathcal{E}$ `\emf` with package option `rsfs`

* With the `cal` package option, `\emf` uses `\mathcalcal`. Hence, the depiction of “E” depends on the currently loaded math font.

TABLE 315: `wasysym` Astronomical Symbols

$\text{\textcircled{\tiny{♂}}}$	<code>\mercury</code>	$\text{\textcircled{\tiny{♂}}}$	<code>\earth</code>	$\text{\textcircled{\tiny{♂}}}$	<code>\jupiter</code>	$\text{\textcircled{\tiny{♂}}}$	<code>\uranus</code>	$\text{\textcircled{\tiny{♂}}}$	<code>\pluto</code>
$\text{\textcircled{\tiny{♀}}}$	<code>\venus</code>	$\text{\textcircled{\tiny{♂}}}$	<code>\mars</code>	$\text{\textcircled{\tiny{♂}}}$	<code>\saturn</code>	$\text{\textcircled{\tiny{♂}}}$	<code>\neptune</code>		
$\text{\textcircled{\tiny{☉}}}$	<code>\astrosun</code>	$\text{\textcircled{\tiny{☉}}}$	<code>\fullmoon</code>	$\text{\textcircled{\tiny{☾}}}$	<code>\leftmoon</code>	$\text{\textcircled{\tiny{☾}}}$	<code>\newmoon</code>	$\text{\textcircled{\tiny{☾}}}$	<code>\rightmoon</code>
$\text{\textcircled{\tiny{♈}}}$	<code>\aries</code>	$\text{\textcircled{\tiny{♋}}}$	<code>\cancer</code>	$\text{\textcircled{\tiny{♎}}}$	<code>\libra</code>	$\text{\textcircled{\tiny{♊}}}$	<code>\aquarius</code>		
$\text{\textcircled{\tiny{♉}}}$	<code>\taurus</code>	$\text{\textcircled{\tiny{♌}}}$	<code>\leo</code>	$\text{\textcircled{\tiny{♏}}}$	<code>\scorpio</code>	$\text{\textcircled{\tiny{♐}}}$	<code>\capricornus</code>		
$\text{\textcircled{\tiny{♊}}}$	<code>\gemini</code>	$\text{\textcircled{\tiny{♍}}}$	<code>\virgo</code>	$\text{\textcircled{\tiny{♐}}}$	<code>\sagittarius</code>	$\text{\textcircled{\tiny{♓}}}$	<code>\pisces</code>		
$\text{\textcircled{\tiny{♈}}}$	<code>\ascnode</code>	$\text{\textcircled{\tiny{♋}}}$	<code>\descnode</code>	$\text{\textcircled{\tiny{♈}}}$	<code>\conjunction</code>	$\text{\textcircled{\tiny{♋}}}$	<code>\opposition</code>	$\text{\textcircled{\tiny{♈}}}$	<code>\vernal</code>

TABLE 316: `marvosym` Astronomical Symbols

$\text{\textcircled{\tiny{♂}}}$	<code>\Mercury</code>	$\text{\textcircled{\tiny{♂}}}$	<code>\Earth</code>	$\text{\textcircled{\tiny{♂}}}$	<code>\Jupiter</code>	$\text{\textcircled{\tiny{♂}}}$	<code>\Uranus</code>	$\text{\textcircled{\tiny{♂}}}$	<code>\Pluto</code>
$\text{\textcircled{\tiny{♀}}}$	<code>\Venus</code>	$\text{\textcircled{\tiny{♂}}}$	<code>\Mars</code>	$\text{\textcircled{\tiny{♂}}}$	<code>\Saturn</code>	$\text{\textcircled{\tiny{♂}}}$	<code>\Neptune</code>		
$\text{\textcircled{\tiny{☾}}}$	<code>\Moon</code>	$\text{\textcircled{\tiny{☉}}}$	<code>\Sun</code>						
$\text{\textcircled{\tiny{♈}}}$	<code>\Aries</code>	$\text{\textcircled{\tiny{♋}}}$	<code>\Cancer</code>	$\text{\textcircled{\tiny{♎}}}$	<code>\Libra</code>	$\text{\textcircled{\tiny{♊}}}$	<code>\Capricorn</code>		
$\text{\textcircled{\tiny{♉}}}$	<code>\Taurus</code>	$\text{\textcircled{\tiny{♌}}}$	<code>\Leo</code>	$\text{\textcircled{\tiny{♏}}}$	<code>\Scorpio</code>	$\text{\textcircled{\tiny{♐}}}$	<code>\Aquarius</code>		
$\text{\textcircled{\tiny{♊}}}$	<code>\Gemini</code>	$\text{\textcircled{\tiny{♍}}}$	<code>\Virgo</code>	$\text{\textcircled{\tiny{♐}}}$	<code>\Sagittarius</code>	$\text{\textcircled{\tiny{♓}}}$	<code>\Pisces</code>		

Note that `\Aries... \Pisces` can also be specified with `\Zodiac{1}... \Zodiac{12}`.

TABLE 317: fontawesome Astronomical Symbols

♂	<code>\faMars</code>	☾	<code>\faMoon0</code>	♀	<code>\faVenus</code>
☿	<code>\faMercury</code>	☼	<code>\faSun0</code>		

TABLE 318: mathabx Astronomical Symbols

☿	<code>\Mercury</code>	⊕	<code>\Earth</code>	♃	<code>\Jupiter</code>	♅	<code>\Uranus</code>	♇	<code>\Pluto</code>
♀	<code>\Venus</code>	♂	<code>\Mars</code>	♄	<code>\Saturn</code>	♆	<code>\Neptune</code>	♁	<code>\varEarth</code>
◯	<code>\fullmoon</code>	☾	<code>\leftmoon</code>	●	<code>\newmoon</code>	☾	<code>\rightmoon</code>	☼	<code>\Sun</code>
♈	<code>\Aries</code>	♉	<code>\Taurus</code>	♊	<code>\Gemini</code>				

`mathabx` also defines `\girl` as an alias for `\Venus`, `\boy` as an alias for `\Mars`, and `\Moon` as an alias for `\leftmoon`.

TABLE 319: stix Astronomical Symbols

☼	<code>\astrosun</code>	☾	<code>\leftmoon</code>	☾	<code>\rightmoon</code>	☼	<code>\sun</code>
---	------------------------	---	------------------------	---	-------------------------	---	-------------------

TABLE 320: starfont Astronomical Symbols

	\Mercury		\Mars		\Uranus		\varTerra
	\Venus		\Jupiter		\Neptune		\varUranus
	\Terra		\Saturn		\Pluto		\varPluto
	\Sun		\Moon		\varMoon		
	\Cupido		\Zeus		\Apollon		\Vulkanus
	\Hades		\Kronos		\Admetos		\Poseidon
	\Lilith		\NorthNode		\SouthNode		
	\Amor		\Eros		\Juno		\Sappho
	\Ceres		\Hidalgo		\Pallas		\Vesta
	\Chiron		\Hygiea		\Psyche		
	\Fortune						
	\Aries		\Leo		\Sagittarius		\varCapricorn
	\Taurus		\Virgo		\Capricorn		
	\Gemini		\Libra		\Aquarius		
	\Cancer		\Scorpio		\Pisces		
	\Conjunction		\Square		\Semisextile		
	\Opposition		\Sextile		\Semisquare		
	\Trine		\Quincunx		\Sesquiquadrate		
	\ASC		\EastPoint		\MC		
	\DSC		\IC		\Vertex		
	\Direct		\Retrograde		\Station		
	\Air		\Earth		\Fire		\Water
	\Natal		\Pentagram		\Radix		

TABLE 321: wasysym APL Symbols

	\APLbox		\APLinv		\APLstar
	\APLcomment		\APLleftarrowbox		\APLup
	\APLdown		\APLllog		\APLuparrowbox
	\APLdownarrowbox		\APLminus		\notbackslash
	\APLinput		\APLrightarrowbox		\notslash
	\APLcirc{a}		\APLnot{a}		\APLvert{a}

TABLE 322: stix APL Symbols

	\APLboxquestion		\APLnotbackslash
	\APLboxupcaret		\APLnotslash

TABLE 323: apl APL Symbols

	\AB	ˆ	\DD	ψ	\GD	⊢	\LK	⌘	\PD	↑	\UA	<u>G</u>	\ZG	Q	\ZQ
α	\AM	⊥	\DE	≥	\GE	○	\LO	⌈	\QQ	—	\US	<u>H</u>	\ZH	B	\ZR
\	\BL	∇	\DL	→	\GO	⊃	\LU	}	\RB	U	\UU	<u>I</u>	\ZI	S	\ZS
□	\BX	◇	\DM	Δ	\GU	≠	\NE	⊖	\RK	±	\XQ	<u>J</u>	\ZJ	T	\ZT
\	\CB	⊠	\DQ	⊥	\IB	—	\NG	ρ	\RO	<u>A</u>	\ZA	<u>K</u>	\ZK	U	\ZU
⌈	\CE	∩	\DU	~	\IO	⋈	\NN	c	\RU	<u>B</u>	\ZB	<u>L</u>	\ZL	V	\ZV
⊇	\CO	⊃	\EN	{	\LB	⋈	\NR	φ	\RV	<u>C</u>	\ZC	<u>M</u>	\ZM	W	\ZW
○	\CR	∈	\EP	Δ	\LD	~	\NT	◦	\SO	<u>D</u>	\ZD	<u>N</u>	\ZN	X	\ZX
/	\CS	⌊	\FL	≤	\LE	ω	\OM	SS	\SS	<u>E</u>	\ZE	<u>O</u>	\ZO	Y	\ZY
↓	\DA	⌘	\FM	⊕	\LG	v	\OR	⌘	\TR	<u>F</u>	\ZF	<u>P</u>	\ZP	Z	\ZZ

TABLE 324: marvosym Computer Hardware Symbols

	\ComputerMouse		\ParallelPort		\SerialInterface
	\Keyboard		\Printer		\SerialPort

TABLE 325: keystroke Computer Keys

	\Alt		\Enter*		\PrtSc*
	\AltGr		\Esc*		\RArrow
	\Break*		\Home*		\Return
	\BSpace [†]		\Ins*		\Scroll*
	\Ctrl*		\LArrow		\Shift*
	\DArrow		\NumLock		\Spacebar
	\Del*		\PgDown*		\Tab [†]
	\End*		\PgUp*		\UArrow

* Changes based on the language option passed to the `keystroke` package. For example, the `german` option makes `\Del` produce “” instead of “”.

[†] These symbols utilize the `rotating` package and therefore display improperly in most DVI viewers.

The `\keystroke` command draws a key with an arbitrary label. For example, “`\keystroke{F7}`” produces “”.

TABLE 326: ascii Control Characters (CP437)

Ⓢ	\SOH	■	\BS	*	\SI	—	\SYN	↔	\GS
Ⓣ	\STX	○	\HT	►	\DLE	‡	\ETB	▲	\RS
♥	\ETX	▣	\LF	◄	\DCa	↑	\CAN	—	\US
♦	\EOT	♂	\VT	‡	\DCb	↓	\EM		
♣	\ENQ	♀	\FF	!!	\DCc	→	\SUB		
♠	\ACK	⊙	\CR	¶	\DCd	←	\ESC		
•	\BEL	◦	\SO	§	\NAK	L	\FS		
△	\DEL	⋈	\NBSP	⋈	\NUL	‡	\splitvert		

Code Page 437 (CP437), which was first utilized by the original IBM PC, uses the symbols \SOH through \US to depict ASCII characters 1–31 and \DEL to depict ASCII character 127. The \NUL symbol, not part of CP437, represents ASCII character 0. \NBSP, also not part of CP437, represents a nonbreaking space. \splitvert is merely the “|” character drawn as it was on the IBM PC.

TABLE 327: logic Logic Gates

	\ANDd		\BUFu		\NANDl		\ORd
	\ANDl		\BusWidth		\NANDr		\ORl
	\ANDr		\INVd		\NANDu		\ORr
	\ANDu		\INVl		\NORd		\ORu
	\BUFd		\INVR		\NORl		
	\BUF1		\INVu		\NORr		
	\BUFr		\NANDd		\NORu		

The logic package implements the digital logic-gate symbols specified by the U.S. Department of Defense’s MIL-STD-806 standard. Note that on CTAN, the package is *called* logic, but the package is *loaded* using `\usepackage{milstd}`. (There was already a—completely unrelated—milstd package on CTAN at the time of logic’s release.) Consequently, package details are listed under milstd in Table 532 and Table 533 on page 231.

TABLE 328: marvosym Communication Symbols

	\Email		\fax		\Faxmachine		\Lightning		\Pickup
	\EmailCT		\FAX		\Letter		\Mobilefone		\Telefon

TABLE 329: marvosym Engineering Symbols

	<code>\Beam</code>		<code>\Force</code>		<code>\Octosteel</code>		<code>\RoundedTTsteel</code>
	<code>\Bearing</code>		<code>\Hexasteel</code>		<code>\Rectpipe</code>		<code>\Squarepipe</code>
	<code>\Circpipe</code>		<code>\Lefttorque</code>		<code>\Rectsteel</code>		<code>\Squaresteel</code>
	<code>\Circsteel</code>		<code>\Lineload</code>		<code>\Righttorque</code>		<code>\Tsteel</code>
	<code>\Fixedbearing</code>		<code>\Loosebearing</code>		<code>\RoundedLsteel*</code>		<code>\TTsteel</code>
	<code>\Flatsteel</code>		<code>\Lsteel</code>		<code>\RoundedTsteel*</code>		

* `\RoundedLsteel` and `\RoundedTsteel` seem to be swapped, at least in the 2000/05/01 version of `marvosym`.

TABLE 330: wasysym Biological Symbols

 `\female`  `\male`

TABLE 331: stix Biological Symbols

 `\female`  `\male`
 `\Hermaphrodite`  `\neuter`

TABLE 332: marvosym Biological Symbols

	<code>\FEMALE</code>		<code>\FemaleMale</code>		<code>\Male</code>		<code>\Neutral</code>
	<code>\Female</code>		<code>\Hermaphrodite</code>		<code>\MALE</code>		
	<code>\FemaleFemale</code>		<code>\HERMAPHRODITE</code>		<code>\MaleMale</code>		

TABLE 333: fontawesome Biological Symbols

	<code>\faGenderless</code>		<code>\faMarsStrokeH</code>		<code>\faTransgenderAlt</code>
	<code>\faMars</code>		<code>\faMarsStrokeV</code>		<code>\faVenus</code>
	<code>\faMarsDouble</code>		<code>\faNeuter</code>		<code>\faVenusDouble</code>
	<code>\faMarsStroke</code>		<code>\faTransgender</code>		<code>\faVenusMars</code>

fontawesome defines `\faIntersex` as a synonym for `\faTransgender`

TABLE 334: marvosym Safety-related Symbols

	<code>\Biohazard</code>		<code>\CEsign</code>		<code>\Explosionsafe</code>		<code>\Radioactivity</code>
	<code>\BSEfree</code>		<code>\Estatically</code>		<code>\Laserbeam</code>		<code>\Stopsign</code>

TABLE 335: feyn Feynman Diagram Symbols

	<code>\bigbosonloop</code>		<code>\hfermion</code>		<code>\smallbosonloopV</code>		
	<code>\bigbosonloopA</code>		<code>\shfermion</code>		<code>\wfermion</code>		
	<code>\bigbosonloopV</code>		<code>\smallbosonloop</code>		<code>\whfermion</code>		
	<code>\gvcropped</code>		<code>\smallbosonloopA</code>				
	<code>\feyn{a}</code>		<code>\feyn{fu}</code>		<code>\feyn{glS}</code>		<code>\feyn{hs}</code>
	<code>\feyn{c}</code>		<code>\feyn{fv}</code>		<code>\feyn{glu}</code>		<code>\feyn{hu}</code>
	<code>\feyn{f}</code>		<code>\feyn{g}</code>		<code>\feyn{gu}</code>		<code>\feyn{m}</code>
	<code>\feyn{fd}</code>		<code>\feyn{g1}</code>		<code>\feyn{gv}</code>		<code>\feyn{ms}</code>
	<code>\feyn{fl}</code>		<code>\feyn{gd}</code>		<code>\feyn{gvs}</code>		<code>\feyn{p}</code>
	<code>\feyn{flS}</code>		<code>\feyn{gl}</code>		<code>\feyn{h}</code>		<code>\feyn{P}</code>
	<code>\feyn{fs}</code>		<code>\feyn{glB}</code>		<code>\feyn{hd}</code>		<code>\feyn{x}</code>

All other arguments to the `\feyn` command produce a “?” symbol.

The `feyn` package provides various commands for composing the preceding symbols into complete Feynman diagrams. See the `feyn` documentation for examples and additional information.

TABLE 336: svrsymbols Physics Ideograms

	<code>\adsorbate</code>		<code>\experimentalsym</code>		<code>\protein</code>
	<code>\adsorbent</code>		<code>\externalsym</code>		<code>\proton</code>
	<code>\antimuon</code>		<code>\fermiDistrib</code>		<code>\quadrupole</code>
	<code>\antineutrino</code>		<code>\fermion</code>		<code>\quark</code>
	<code>\antineutron</code>		<code>\Gluon</code>		<code>\quarkb</code>
	<code>\antiproton</code>		<code>\graphene</code>		<code>\quarkc</code>
	<code>\antiquark</code>		<code>\graviton</code>		<code>\quarkd</code>
	<code>\antiquarkb</code>		<code>\hbond</code>		<code>\quarks</code>
	<code>\antiquarkc</code>		<code>\Higgsboson</code>		<code>\quarkt</code>
	<code>\antiquarkd</code>		<code>\hole</code>		<code>\quarku</code>
	<code>\antiquarks</code>		<code>\interaction</code>		<code>\reference</code>
	<code>\antiquarkt</code>		<code>\internalsym</code>		<code>\resistivity</code>
	<code>\antiquarku</code>		<code>\ion</code>		<code>\rhomesonminus</code>
	<code>\anyon</code>		<code>\ionicbond</code>		<code>\rhomesonnull</code>
	<code>\assumption</code>		<code>\Jpsimeson</code>		<code>\rhomesonplus</code>
	<code>\atom</code>		<code>\Kaonminus</code>		<code>\solid</code>
	<code>\bigassumption</code>		<code>\Kaonnull</code>		<code>\spin</code>
	<code>\Bigassumption</code>		<code>\Kaonplus</code>		<code>\spindown</code>
	<code>\biggassumption</code>		<code>\magnon</code>		<code>\spinup</code>

(continued on next page)

(continued from previous page)

B^-	\Bmesonminus	$\mathcal{M}$	\maxwellDistrib	Φ	\surface
B^0	\Bmesonnull	$\mathbb{M}$	\metalbond	$\mathbb{W}$	\svrexample
B^+	\Bmesonplus	$\mathfrak{M}$	\method	f	\svrphoton
---	\bond	μ^-	\muon	t	\tachyon
$\mathcal{B}$	\boseDistrib	ν	\neutrino	τ^-	\tauleptonminus
$\mathcal{B}$	\boson	n^0	\neutron	τ^+	\tauleptonplus
$\otimes$	\conductivity	---	\nucleus	T^-	\Tmesonminus
$\oplus$	\covbond	---	\orbit	T^0	\Tmesonnull
d	\dipole	ϕ	\phimeson	T^+	\Tmesonplus
D^-	\Dmesonminus	ϕ^0	\phimesonnull	---	\triplecovbond
D^0	\Dmesonnull	---	\phonon	Υ	\Upsilonmeson
D^+	\Dmesonplus	π^-	\pionminus	---	\varphoton
---	\doublecovbond	π^0	\pionnull	---	\water
e^-	\electron	π^+	\pionplus	W	\Wboson
$\mathbb{E}$	\errorsym	---	\plasmon	W^-	\Wbosonminus
η	\etameson	---	\polariton	W^+	\Wbosonplus
η'	\etamesonprime	---	\polaron	Z	\Zboson
$\text{---}h^+$	\exciton	e^+	\positron		

5 Dingbats

Dingbats are symbols such as stars, arrows, and geometric shapes. They are commonly used as bullets in itemized lists or, more generally, as a means to draw attention to the text that follows.

The `pifont` dingbat package warrants special mention. Among other capabilities, `pifont` provides a $\text{\LaTeX}$ interface to the Zapf Dingbats font (one of the standard 35 PostScript fonts). However, rather than name each of the dingbats individually, `pifont` merely provides a single `\ding` command, which outputs the character that lies at a given position in the font. The consequence is that the `pifont` symbols can't be listed by name in this document's index, so be mindful of that fact when searching for a particular symbol.

TABLE 337: `bbding` Arrows

	<code>\ArrowBoldDownRight</code>		<code>\ArrowBoldRightShort</code>		<code>\ArrowBoldUpRight</code>
	<code>\ArrowBoldRightCircled</code>		<code>\ArrowBoldRightStrobe</code>		

TABLE 338: `pifont` Arrows

	<code>\ding{212}</code>		<code>\ding{221}</code>		<code>\ding{230}</code>		<code>\ding{239}</code>		<code>\ding{249}</code>
	<code>\ding{213}</code>		<code>\ding{222}</code>		<code>\ding{231}</code>		<code>\ding{241}</code>		<code>\ding{250}</code>
	<code>\ding{214}</code>		<code>\ding{223}</code>		<code>\ding{232}</code>		<code>\ding{242}</code>		<code>\ding{251}</code>
	<code>\ding{215}</code>		<code>\ding{224}</code>		<code>\ding{233}</code>		<code>\ding{243}</code>		<code>\ding{252}</code>
	<code>\ding{216}</code>		<code>\ding{225}</code>		<code>\ding{234}</code>		<code>\ding{244}</code>		<code>\ding{253}</code>
	<code>\ding{217}</code>		<code>\ding{226}</code>		<code>\ding{235}</code>		<code>\ding{245}</code>		<code>\ding{254}</code>
	<code>\ding{218}</code>		<code>\ding{227}</code>		<code>\ding{236}</code>		<code>\ding{246}</code>		
	<code>\ding{219}</code>		<code>\ding{228}</code>		<code>\ding{237}</code>		<code>\ding{247}</code>		
	<code>\ding{220}</code>		<code>\ding{229}</code>		<code>\ding{238}</code>		<code>\ding{248}</code>		

TABLE 339: `adfsymbols` Arrows

	<code>\adfarrowsw1</code>		<code>\adfarrowsw1</code>		<code>\adfarrowsw1</code>		<code>\adfarrowsw1</code>		<code>\adfarrowsw1</code>
	<code>\adfarrowsw2</code>		<code>\adfarrowsw2</code>		<code>\adfarrowsw2</code>		<code>\adfarrowsw2</code>		<code>\adfarrowsw2</code>
	<code>\adfarrowsw3</code>		<code>\adfarrowsw3</code>		<code>\adfarrowsw3</code>		<code>\adfarrowsw3</code>		<code>\adfarrowsw3</code>
	<code>\adfarrowsw4</code>		<code>\adfarrowsw4</code>		<code>\adfarrowsw4</code>		<code>\adfarrowsw4</code>		<code>\adfarrowsw4</code>
	<code>\adfarrowsw5</code>		<code>\adfarrowsw5</code>		<code>\adfarrowsw5</code>		<code>\adfarrowsw5</code>		<code>\adfarrowsw5</code>
	<code>\adfarrowsw6</code>		<code>\adfarrowsw6</code>		<code>\adfarrowsw6</code>		<code>\adfarrowsw6</code>		<code>\adfarrowsw6</code>
	<code>\adfarrowsw1</code>		<code>\adfarrowsw1</code>		<code>\adfarrowsw1</code>		<code>\adfarrowsw1</code>		<code>\adfarrowsw1</code>
	<code>\adfarrowsw2</code>		<code>\adfarrowsw2</code>		<code>\adfarrowsw2</code>		<code>\adfarrowsw2</code>		<code>\adfarrowsw2</code>
	<code>\adfarrowsw3</code>		<code>\adfarrowsw3</code>		<code>\adfarrowsw3</code>		<code>\adfarrowsw3</code>		<code>\adfarrowsw3</code>
	<code>\adfarrowsw4</code>		<code>\adfarrowsw4</code>		<code>\adfarrowsw4</code>		<code>\adfarrowsw4</code>		<code>\adfarrowsw4</code>
	<code>\adfarrowsw5</code>		<code>\adfarrowsw5</code>		<code>\adfarrowsw5</code>		<code>\adfarrowsw5</code>		<code>\adfarrowsw5</code>
	<code>\adfarrowsw6</code>		<code>\adfarrowsw6</code>		<code>\adfarrowsw6</code>		<code>\adfarrowsw6</code>		<code>\adfarrowsw6</code>
	<code>\adfarrowsw1</code>		<code>\adfarrowsw1</code>		<code>\adfarrowsw1</code>		<code>\adfarrowsw1</code>		<code>\adfarrowsw1</code>
	<code>\adfarrowsw2</code>		<code>\adfarrowsw2</code>		<code>\adfarrowsw2</code>		<code>\adfarrowsw2</code>		<code>\adfarrowsw2</code>
	<code>\adfarrowsw3</code>		<code>\adfarrowsw3</code>		<code>\adfarrowsw3</code>		<code>\adfarrowsw3</code>		<code>\adfarrowsw3</code>
	<code>\adfarrowsw4</code>		<code>\adfarrowsw4</code>		<code>\adfarrowsw4</code>		<code>\adfarrowsw4</code>		<code>\adfarrowsw4</code>
	<code>\adfarrowsw5</code>		<code>\adfarrowsw5</code>		<code>\adfarrowsw5</code>		<code>\adfarrowsw5</code>		<code>\adfarrowsw5</code>
	<code>\adfarrowsw6</code>		<code>\adfarrowsw6</code>		<code>\adfarrowsw6</code>		<code>\adfarrowsw6</code>		<code>\adfarrowsw6</code>
	<code>\adhalfarrowleft</code>		<code>\adhalfarrowright</code>						
	<code>\adhalfarrowleftsolid</code>		<code>\adhalfarrowrightsolid</code>						

Technically, the digit at the end of each `\adfarrow{dir}{digit}` command is a macro argument, not part of the command name.

The preceding symbols can also be produced by passing a number or a style/direction pair to the `\adfarrow` command. For example, both `\adfarrow{19}` and `\adfarrow[comic]{east}` produce “”. See the `adfsymbols` documentation for more information.

TABLE 340: adorn Arrows

↵	<code>\adfhalfleftarrow</code>	➤	<code>\adfhalfrightarrowhead</code>
↵	<code>\adfhalfleftarrowhead</code>	↵	<code>\adleftarrowhead</code>
➤	<code>\adhalfrightarrow</code>	➤	<code>\adrightarrowhead</code>

TABLE 341: arev Arrows

➤	<code>\arrowbullet</code>
---	---------------------------

TABLE 342: fontawesome Arrows

⬇	<code>\faArrowCircleDown</code>	⬇	<code>\faArrowDown</code>	⬇	<code>\faLongArrowDown</code>
⬅	<code>\faArrowCircleLeft</code>	⬅	<code>\faArrowLeft</code>	⬅	<code>\faLongArrowLeft</code>
⬇	<code>\faArrowCircleODown</code>	➡	<code>\faArrowRight</code>	➡	<code>\faLongArrowRight</code>
⬅	<code>\faArrowCircleOLeft</code>	↔	<code>\faArrows</code>	⬆	<code>\faLongArrowUp</code>
⬆	<code>\faArrowCircleORight</code>	⌘	<code>\faArrowsAlt</code>	↺	<code>\faRepeat</code>
⬆	<code>\faArrowCircleOUp</code>	↔	<code>\faArrowsH</code>	↺	<code>\faUndo</code>
➡	<code>\faArrowCircleRight</code>	⬆	<code>\faArrowsV</code>		
⬆	<code>\faArrowCircleUp</code>	⬆	<code>\faArrowUp</code>		

fontawesome defines `\faRotateLeft` as a synonym for `\faUndo` and `\faRotateRight` as a synonym for `\faRepeat`.

TABLE 343: fontawesome Chevrons

⬇	<code>\faChevronCircleDown</code>	⬆	<code>\faChevronCircleUp</code>	➤	<code>\faChevronRight</code>
⬅	<code>\faChevronCircleLeft</code>	⬇	<code>\faChevronDown</code>	⬆	<code>\faChevronUp</code>
➡	<code>\faChevronCircleRight</code>	⬅	<code>\faChevronLeft</code>		

TABLE 344: marvosym Scissors

✂	<code>\CutLeft</code>	---	<code>\CuttingLine</code>	✂	<code>\RightScissors</code>
✂	<code>\CutRight</code>	✂	<code>\LeftScissors</code>		

TABLE 345: bbding Scissors

✂	<code>\ScissorHollowLeft</code>	✂	<code>\ScissorLeftBrokenTop</code>
✂	<code>\ScissorHollowRight</code>	✂	<code>\ScissorRight</code>
✂	<code>\ScissorLeft</code>	✂	<code>\ScissorRightBrokenBottom</code>
✂	<code>\ScissorLeftBrokenBottom</code>	✂	<code>\ScissorRightBrokenTop</code>

TABLE 346: pifont Scissors

✂	<code>\ding{33}</code>	✂	<code>\ding{34}</code>	✂	<code>\ding{35}</code>	✂	<code>\ding{36}</code>
---	------------------------	---	------------------------	---	------------------------	---	------------------------

TABLE 347: dingbat Pencils

	<code>\largepencil</code>		<code>\smallpencil</code>
---	---------------------------	---	---------------------------

TABLE 348: arev Pencils

	<code>\pencil</code>
---	----------------------

TABLE 349: fontawesome Pencils

	<code>\faPencil</code>		<code>\faPencilSquare</code>		<code>\faPencilSquareO</code>
---	------------------------	---	------------------------------	---	-------------------------------

TABLE 350: bbding Pencils and Nibs

	<code>\NibLeft</code>		<code>\PencilLeft</code>		<code>\PencilRightDown</code>
	<code>\NibRight</code>		<code>\PencilLeftDown</code>		<code>\PencilRightUp</code>
	<code>\NibSolidLeft</code>		<code>\PencilLeftUp</code>		
	<code>\NibSolidRight</code>		<code>\PencilRight</code>		

TABLE 351: pifont Pencils and Nibs

	<code>\ding{46}</code>		<code>\ding{47}</code>		<code>\ding{48}</code>		<code>\ding{49}</code>		<code>\ding{50}</code>
---	------------------------	---	------------------------	---	------------------------	---	------------------------	---	------------------------

TABLE 352: dingbat Fists

	<code>\leftpointright</code>		<code>\rightpointleft</code>		<code>\rightpointright</code>
	<code>\leftthumbsdown</code>		<code>\rightthumbsdown</code>		
	<code>\leftthumbsup</code>		<code>\rightthumbsup</code>		

TABLE 353: bbding Fists

	<code>\HandCuffLeft</code>		<code>\HandCuffRightUp</code>		<code>\HandPencilLeft</code>
	<code>\HandCuffLeftUp</code>		<code>\HandLeft</code>		<code>\HandRight</code>
	<code>\HandCuffRight</code>		<code>\HandLeftUp</code>		<code>\HandRightUp</code>

TABLE 354: pifont Fists

	<code>\ding{42}</code>		<code>\ding{43}</code>		<code>\ding{44}</code>		<code>\ding{45}</code>
---	------------------------	---	------------------------	---	------------------------	---	------------------------

TABLE 355: fourier Fists

 `\lefthand`  `\righthand`

TABLE 356: arev Fists

 `\pointright`

TABLE 357: fontawesome Fists

 <code>\faHandLizard0</code>	 <code>\faHandPaper0</code>	 <code>\faHandSpock0</code>
 <code>\faHand0Down</code>	 <code>\faHandPeace0</code>	 <code>\faThumbsDown</code>
 <code>\faHand0Left</code>	 <code>\faHandPointer0</code>	 <code>\faThumbs0Down</code>
 <code>\faHand0Right</code>	 <code>\faHandRock0</code>	 <code>\faThumbs0Up</code>
 <code>\faHand0Up</code>	 <code>\faHandScissors0</code>	 <code>\faThumbsUp</code>

fontawesome defines `\faHandGrab0` as a synonym for `\faHandRock0` and `\faHandStop0` as a synonym for `\faHandPaper0`.

TABLE 358: bbding Crosses and Plusses

 <code>\Cross</code>	 <code>\CrossOpenShadow</code>	 <code>\PlusOutline</code>
 <code>\CrossBoldOutline</code>	 <code>\CrossOutline</code>	 <code>\PlusThinCenterOpen</code>
 <code>\CrossCloverTips</code>	 <code>\Plus</code>	
 <code>\CrossMaltese</code>	 <code>\PlusCenterOpen</code>	

TABLE 359: pifont Crosses and Plusses

 <code>\ding{57}</code>	 <code>\ding{59}</code>	 <code>\ding{61}</code>	 <code>\ding{63}</code>
 <code>\ding{58}</code>	 <code>\ding{60}</code>	 <code>\ding{62}</code>	 <code>\ding{64}</code>

TABLE 360: adfsymbols Crosses and Plusses

 <code>\adfbullet{4}</code>	 <code>\adfbullet{6}</code>	 <code>\adfbullet{8}</code>	 <code>\adfbullet{10}</code>
 <code>\adfbullet{5}</code>	 <code>\adfbullet{7}</code>	 <code>\adfbullet{9}</code>	

TABLE 361: arev Crosses

 `\eastcross`  `\westcross`

TABLE 362: bbding Xs and Check Marks

 <code>\Checkmark</code>	 <code>\XSolid</code>	 <code>\XSolidBrush</code>
 <code>\CheckmarkBold</code>	 <code>\XSolidBold</code>	

TABLE 363: pifont Xs and Check Marks

✓	<code>\ding{51}</code>	✕	<code>\ding{53}</code>	✕	<code>\ding{55}</code>
✓	<code>\ding{52}</code>	✕	<code>\ding{54}</code>	✕	<code>\ding{56}</code>

TABLE 364: wasysym Xs and Check Marks

☑	<code>\CheckedBox</code>	□	<code>\Square</code>	☒	<code>\XBox</code>
---	--------------------------	---	----------------------	---	--------------------

TABLE 365: marvosym Xs and Check Marks

☑	<code>\Checkedbox</code>	☒	<code>\CrossedBox*</code>	□	<code>\HollowBox</code>
---	--------------------------	---	---------------------------	---	-------------------------

* marvosym defines `\Crossedbox` as a synonym for `\CrossedBox`.

TABLE 366: arev Xs and Check Marks

✓	<code>\ballotcheck</code>	✕	<code>\ballotx</code>
---	---------------------------	---	-----------------------

TABLE 367: fontawesome Xs and Check Marks

✓	<code>\faCheck</code>	☑	<code>\faCheckSquare</code>	✕	<code>\faTimesCircle</code>
☑	<code>\faCheckCircle</code>	☑	<code>\faCheckSquareO</code>	☒	<code>\faTimesCircleO</code>
☑	<code>\faCheckCircleO</code>	✕	<code>\faTimes*</code>		

* fontawesome defines both `\faClose` and `\faRemove` as synonyms for `\faTimes`.

TABLE 368: pifont Circled Numerals

①	<code>\ding{172}</code>	❶	<code>\ding{182}</code>	①	<code>\ding{192}</code>	❶	<code>\ding{202}</code>
②	<code>\ding{173}</code>	❷	<code>\ding{183}</code>	②	<code>\ding{193}</code>	❷	<code>\ding{203}</code>
③	<code>\ding{174}</code>	❸	<code>\ding{184}</code>	③	<code>\ding{194}</code>	❸	<code>\ding{204}</code>
④	<code>\ding{175}</code>	❹	<code>\ding{185}</code>	④	<code>\ding{195}</code>	❹	<code>\ding{205}</code>
⑤	<code>\ding{176}</code>	❺	<code>\ding{186}</code>	⑤	<code>\ding{196}</code>	❺	<code>\ding{206}</code>
⑥	<code>\ding{177}</code>	❻	<code>\ding{187}</code>	⑥	<code>\ding{197}</code>	❻	<code>\ding{207}</code>
⑦	<code>\ding{178}</code>	❼	<code>\ding{188}</code>	⑦	<code>\ding{198}</code>	❼	<code>\ding{208}</code>
⑧	<code>\ding{179}</code>	❽	<code>\ding{189}</code>	⑧	<code>\ding{199}</code>	❽	<code>\ding{209}</code>
⑨	<code>\ding{180}</code>	❾	<code>\ding{190}</code>	⑨	<code>\ding{200}</code>	❾	<code>\ding{210}</code>
⑩	<code>\ding{181}</code>	❿	<code>\ding{191}</code>	⑩	<code>\ding{201}</code>	❿	<code>\ding{211}</code>

pifont (part of the `psnfss` package) provides a `dingautolist` environment which resembles `enumerate` but uses circled numbers as bullets.⁴ See the `psnfss` documentation for more information.

⁴In fact, `dingautolist` can use any set of consecutive Zapf Dingbats symbols.

TABLE 369: wasysym Stars

☆ \davidstar ✱ \hexstar ✱ \varhexstar

TABLE 370: bbding Stars, Flowers, and Similar Shapes

✱	\Asterisk	✿	\FiveFlowerPetal	✱	\JackStar
✱	\AsteriskBold	★	\FiveStar	✱	\JackStarBold
✱	\AsteriskCenterOpen	☆	\FiveStarCenterOpen	✱	\SixFlowerAlternate
✿	\AsteriskRoundedEnds	★	\FiveStarConvex	✱	\SixFlowerAltPetal
✱	\AsteriskThin	☆	\FiveStarLines	✱	\SixFlowerOpenCenter
✱	\AsteriskThinCenterOpen	☆	\FiveStarOpen	✱	\SixFlowerPetalDotted
☆	\DavidStar	⬤	\FiveStarOpenCircled	✱	\SixFlowerPetalRemoved
★	\DavidStarSolid	★	\FiveStarOpenDotted	✱	\SixFlowerRemovedOpenPetal
✱	\EightAsterisk	★	\FiveStarOutline	★	\SixStar
✿	\EightFlowerPetal	★	\FiveStarOutlineHeavy	✱	\SixteenStarLight
✱	\EightFlowerPetalRemoved	☆	\FiveStarShadow	✱	\Snowflake
✱	\EightStar	✱	\FourAsterisk	✱	\SnowflakeChevron
★	\EightStarBold	✱	\FourClowerOpen	✱	\SnowflakeChevronBold
✱	\EightStarConvex	✱	\FourClowerSolid	✱	\Sparkle
✱	\EightStarTaper	◆	\FourStar	✱	\SparkleBold
✱	\FiveFlowerOpen	◇	\FourStarOpen	✱	\TwelveStar

TABLE 371: pifont Stars, Flowers, and Similar Shapes

☆	\ding{65}	⬤	\ding{74}	✱	\ding{83}	✱	\ding{92}	✱	\ding{101}
✱	\ding{66}	☆	\ding{75}	✱	\ding{84}	✱	\ding{93}	✱	\ding{102}
✱	\ding{67}	★	\ding{76}	✱	\ding{85}	✱	\ding{94}	✱	\ding{103}
✱	\ding{68}	★	\ding{77}	★	\ding{86}	✱	\ding{95}	✱	\ding{104}
✱	\ding{69}	☆	\ding{78}	✱	\ding{87}	✱	\ding{96}	✱	\ding{105}
◆	\ding{70}	★	\ding{79}	✱	\ding{88}	✱	\ding{97}	✱	\ding{106}
◇	\ding{71}	☆	\ding{80}	✱	\ding{89}	✱	\ding{98}	✱	\ding{107}
★	\ding{72}	✱	\ding{81}	✱	\ding{90}	✱	\ding{99}		
☆	\ding{73}	✱	\ding{82}	✱	\ding{91}	✱	\ding{100}		

TABLE 372: adfsymbols Stars, Flowers, and Similar Shapes

◇	\adfbullet{1}	✱	\adfbullet{13}	✱	\adfbullet{18}	◇	\adfbullet{23}
✱	\adfbullet{2}	✱	\adfbullet{14}	✱	\adfbullet{19}	✱	\adfbullet{24}
✱	\adfbullet{3}	✱	\adfbullet{15}	✱	\adfbullet{20}	✱	\adfbullet{25}
✱	\adfbullet{11}	✱	\adfbullet{16}	✱	\adfbullet{21}	✱	\adfbullet{26}
✱	\adfbullet{12}	✱	\adfbullet{17}	✱	\adfbullet{22}		

TABLE 373: adorn Stars

✱	\adfast{1}	✱	\adfast{3}	✱	\adfast{5}	✱	\adfast{7}	✱	\adfast{9}
✱	\adfast{2}	✱	\adfast{4}	✱	\adfast{6}	✱	\adfast{8}	✱	\adfast{10}

TABLE 374: fontawesome Stars

★ `\faStar` ★ `\faStarHalf` ★ `\faStarHalf0` ☆ `\faStar0`

fontawesome defines both `\faStarHalfEmpty` and `\faStarHalfFull` as synonyms for `\faStarHalf0`.

TABLE 375: fourier Fleurons and Flowers

§ <code>\aldine</code>	✖ <code>\decoone</code>	🌸 <code>\floweroneright</code>
§◊ <code>\aldineleft</code>	✧ <code>\decosix</code>	☞ <code>\leafleft</code>
◊§ <code>\aldineright</code>	☞ <code>\decothreeleft</code>	☞ <code>\leafNE</code>
§◊ <code>\aldinesmall</code>	☞ <code>\decothreeeright</code>	☞ <code>\leafright</code>
☞ <code>\decofourleft</code>	☞ <code>\decotwo</code>	✦ <code>\starredbullet</code>
☞ <code>\decofourright</code>	🌸 <code>\floweroneleft</code>	

TABLE 376: adorn Fleurons and Flowers

☞ <code>\adfdownhalfleafleft</code>	☞ <code>\adfdownhalfleafright</code>
☞ <code>\adfdownleafleft</code>	☞ <code>\adfdownleafright</code>
☞ <code>\adfflatdownhalfleafleft</code>	☞ <code>\adfflatdownhalfleafright</code>
☞ <code>\adfflatdownoutlineleafleft</code>	☞ <code>\adfflatdownoutlineleafright</code>
☞ <code>\adfflatleafleft</code>	☞ <code>\adfflatleafright</code>
☞ <code>\adfflatleafoutlineleft</code>	☞ <code>\adfflatleafoutlineright</code>
☞ <code>\adfflatleafsolidleft</code>	☞ <code>\adfflatleafsolidright</code>
☞ <code>\adfflowerleft</code>	☞ <code>\adfflowerright</code>
☞ <code>\adfhalfleafleft</code>	☞ <code>\adfhalfleafright</code>
☞ <code>\adfhangingleafleft</code>	☞ <code>\adfhangingleafright</code>
☞ <code>\adfleafleft</code>	☞ <code>\adfleafright</code>
☞ <code>\adfoutlineleafleft</code>	☞ <code>\adfoutlineleafright</code>
☞ <code>\adfsmallhangingleafleft</code>	☞ <code>\adfsmallhangingleafright</code>
☞ <code>\adfsmallleafleft</code>	☞ <code>\adfsmallleafright</code>
☞ <code>\adfsolidleafleft</code>	☞ <code>\adfsolidleafright</code>

TABLE 377: wasysym Geometric Shapes

○ <code>\Circle</code>	◐ <code>\LEFTcircle</code>	◑ <code>\octagon</code>	◑ <code>\RIGHTcircle</code>
● <code>\CIRCLE</code>	◓ <code>\LEFTCIRCLE</code>	◓ <code>\pentagon</code>	◓ <code>\RIGHTCIRCLE</code>
◑ <code>\hexagon</code>	◑ <code>\Leftcircle</code>	◑ <code>\Rightcircle</code>	◑ <code>\varhexagon</code>

TABLE 378: MnSymbol Geometric Shapes

★ <code>\filledlargestar</code>	◊ <code>\largelozenge</code>	◊ <code>\medlozenge</code>
◆ <code>\filledlozenge</code>	☆ <code>\largepentagram</code>	☆ <code>\medstarofdavid</code>
◆ <code>\filledmedlozenge</code>	◻ <code>\largesquare</code>	◊ <code>\smalllozenge</code>
○ <code>\largecircle</code>	☆ <code>\largestar</code>	
◊ <code>\largediamond</code>	☆ <code>\largestarofdavid</code>	

MnSymbol defines `\bigcirc` as a synonym for `\largecircle`; `\bigstar` as a synonym for `\filledlargestar`; `\lozenge` as a synonym for `\medlozenge`; and, `\blacklozenge` as a synonym for `\filledmedlozenge`.

TABLE 379: fdsymbol Geometric Shapes

●	\largeblackcircle	▽	\largetriangleddown	◇	\medlozenge
■	\largeblacksquare	△	\largetriangleup	◆	\smallblacklozenge
★	\largeblackstar	☆	\largewhitestar	◇	\smalllozenge
○	\largecircle	◇	\lozengeminus	☆	\starofdavid
□	\largsquare	◆	\medblacklozenge		

fdsymbol defines synonyms for almost all of the preceding symbols:

○	\bigcirc	■	\lgblksquare	◇	\mdlgwhtlozenge
★	\bigstar	○	\lgwhtcircle	◇	\mdwhtlozenge
▽	\bigtriangledown	□	\lgwhtsquare	◆	\smbklozenge
△	\bigtriangleup	◇	\lozenge	◇	\smwhtlozenge
◆	\blacklozenge	◆	\mdblklozenge		
●	\lgblkcicle	◆	\mdlgblklozenge		

TABLE 380: boisik Geometric Shapes

★	\bigstar	◇	\diamond	▽	\triangledown
◆	\blacklozenge	◇	\lozenge	◁	\triangleleft
■	\blacksquare	◇	\lozengedot	▷	\triangleright
▲	\blacktriangle	□	\square	◁	\varltrtriangle
▼	\blacktriangledown	*	\star		

TABLE 381: stix Geometric Shapes

↺	\acwopencirclearrow	▽	\downtriangleleftblack	◁	\smalltriangleleft
↻	\barovernorthwestarrow	▽	\downtrianglerightblack	▷	\smalltriangleright
⦿	\benzenr	○	\enclosecircle	◆	\smbkldiamond
▼	\bigblacktriangledown	◇	\enclosediamond	◆	\smbklozenge
▲	\bigblacktriangleup	□	\enclosesquare	■	\smbklsquare
★	\bigstar	△	\enclosetriangle	☆	\smwhitestar
▽	\bigtriangledown	●	\errbarblackcircle	○	\smwhtcircle
◁	\bigtriangleleft	◆	\errbarblackdiamond	◇	\smwhtdiamond
△	\bigtriangleup	■	\errbarblacksquare	◇	\smwhtlozenge
☆	\bigwhitestar	○	\errbarcircle	□	\smwhtsquare
●	\blackcircledownarrow	◇	\errbardiamond	◻	\sqlozenge
●	\blackcircledrightrightdot	◻	\errbarsquare	◼	\squarebotblack
⊙	\blackcircledtwodots	●	\fisheye	▨	\squarecrossfill
◐	\blackcircleulquadwhite	▱	\fltns	▨	\squarehfill
◆	\blackdiamonddownarrow	◻	\hexagon	▨	\squarehvfill
◊	\blackinwhitediamond	●	\hexagonblack	◼	\squareleftblack
◻	\blackinwhitesquare	◻	\house	◼	\squarellblack
◐	\blacklefthalfcircle	◻	\hrectangle	◻	\squarellquad
◆	\blacklozenge	■	\hrectangleblack	◼	\squarelrblack
◀	\blackpointerleft	◉	\inversewhitecircle	◻	\squarelrquad
▶	\blackpointerright	◐	\invwhitelowerhalfcircle	▨	\squareneswfill
◐	\blackrighthalfcircle	◑	\invwhiteupperhalfcircle	▨	\squarenwsefill

(continued on next page)

(continued from previous page)

	<code>\blacktriangle</code>		<code>\lgblkcicle</code>		<code>\squaresrightblack</code>
	<code>\blacktriangledown</code>		<code>\lgblksquare</code>		<code>\squaretopblack</code>
	<code>\blacktriangleleft</code>		<code>\lgwhtcircle</code>		<code>\squareulblack</code>
	<code>\blacktriangleright</code>		<code>\lgwhtsquare</code>		<code>\squareulquad</code>
	<code>\blkhorzoval</code>		<code>\llblacktriangle</code>		<code>\squareurblack</code>
	<code>\blkvertoval</code>		<code>\lltriangle</code>		<code>\squareurquad</code>
	<code>\botsemicircle</code>		<code>\lrblacktriangle</code>		<code>\squarevfill</code>
	<code>\boxonbox</code>		<code>\lrtriangle</code>		<code>\squoval</code>
	<code>\bullseye</code>		<code>\mdblkcicle</code>		<code>\topsemicircle</code>
	<code>\circ</code>		<code>\mdblkdiamond</code>		<code>\trapezium</code>
	<code>\circlebottomhalfblack</code>		<code>\mdblklozenge</code>		<code>\trianglecdot</code>
	<code>\circledbullet</code>		<code>\mdblksquare</code>		<code>\triangledown</code>
	<code>\circledownarrow</code>		<code>\mdlgbkcicle</code>		<code>\triangleleftblack</code>
	<code>\circledrightdot</code>		<code>\mdlgbldiamond</code>		<code>\triangleup</code>
	<code>\circledstar</code>		<code>\mdlgbksquare</code>		<code>\trianglerightblack</code>
	<code>\circledtwodots</code>		<code>\mdlgwhtdiamond</code>		<code>\triangles</code>
	<code>\circledwhitebullet</code>		<code>\mdlgwhtlozenge</code>		<code>\triangleubar</code>
	<code>\circlelefthalfblack</code>		<code>\mdlgwhtsquare</code>		<code>\ulblacktriangle</code>
	<code>\circlellquad</code>		<code>\mdsmbkcicle</code>		<code>\ultriangle</code>
	<code>\circlelrquad</code>		<code>\mdsmbksquare</code>		<code>\uparrowoncircle</code>
	<code>\cirlerrighthalfblack</code>		<code>\mdsmwhtcircle</code>		<code>\urblacktriangle</code>
	<code>\cirlertophalfblack</code>		<code>\mdsmwhtsquare</code>		<code>\urtriangle</code>
	<code>\circleulquad</code>		<code>\mdwhtcircle</code>		<code>\varhexagon</code>
	<code>\circleurquad</code>		<code>\mdwhtdiamond</code>		<code>\varhexagonblack</code>
	<code>\circleurquadblack</code>		<code>\mdwhtlozenge</code>		<code>\varhexagononlronds</code>
	<code>\circlevertfill</code>		<code>\mdwhtsquare</code>		<code>\varlrtriangle</code>
	<code>\cirE</code>		<code>\medblackstar</code>		<code>\varstar</code>
	<code>\cirscir</code>		<code>\medwhitestar</code>		<code>\vrectangle</code>
	<code>\cwopencirclearrow</code>		<code>\parallelogram</code>		<code>\vrectangleblack</code>
	<code>\diamondbotblack</code>		<code>\parallelogramblack</code>		<code>\vysmbksquare</code>
	<code>\diamondcdot</code>		<code>\pentagon</code>		<code>\vysmwhtsquare</code>
	<code>\diamondleftblack</code>		<code>\pentagonblack</code>		<code>\whiteinwhitetriangle</code>
	<code>\diamondrightblack</code>		<code>\rightpentagon</code>		<code>\whitepointerleft</code>
	<code>\diamondtopblack</code>		<code>\rightpentagonblack</code>		<code>\whitepointerright</code>
	<code>\dottedcircle</code>		<code>\smallblacktriangleleft</code>		<code>\whthorzoval</code>
	<code>\dottedsquare</code>		<code>\smallblacktriangleright</code>		<code>\whtvertoval</code>

stix defines `\diamond` as a synonym for `\smwhtdiamond`, `\blacksquare` as a synonym for `\mdlgbksquare`, `\square` and `\Box` as synonyms for `\mdlgwhtsquare`, `\triangle` and `\varbigtriangleup` as synonyms for `\bigtriangleup`, `\rhd` as a synonym for `\vartriangleright`, `\varbigtriangledown` as a synonym for `\bigtriangledown`, `\lhd` as a synonym for `\vartriangleleft`, `\Diamond` and `\lozenge` as synonyms for `\mglgwhtlozenge`, `\bigcirc` as a synonym for `\mglgwhtcircle`, `\circ` as a synonym for `\smwhtcircle`. and `\mdlgblklozenge` as a synonym for `\blacklozenge`.

TABLE 382: ifsym Geometric Shapes

	<code>\BigCircle</code>		<code>\FilledBigTriangleRight</code>		<code>\SmallCircle</code>
	<code>\BigCross</code>		<code>\FilledBigTriangleUp</code>		<code>\SmallCross</code>
	<code>\BigDiamondshape</code>		<code>\FilledCircle</code>		<code>\SmallDiamondshape</code>
	<code>\BigHBar</code>		<code>\FilledDiamondShadowA</code>		<code>\SmallHBar</code>
	<code>\BigLowerDiamond</code>		<code>\FilledDiamondShadowC</code>		<code>\SmallLowerDiamond</code>
	<code>\BigRightDiamond</code>		<code>\FilledDiamondshape</code>		<code>\SmallRightDiamond</code>
	<code>\BigSquare</code>		<code>\FilledSmallCircle</code>		<code>\SmallSquare</code>
	<code>\BigTriangleDown</code>		<code>\FilledSmallDiamondshape</code>		<code>\SmallTriangleDown</code>
	<code>\BigTriangleLeft</code>		<code>\FilledSmallSquare</code>		<code>\SmallTriangleLeft</code>
	<code>\BigTriangleRight</code>		<code>\FilledSmallTriangleDown</code>		<code>\SmallTriangleRight</code>
	<code>\BigTriangleUp</code>		<code>\FilledSmallTriangleLeft</code>		<code>\SmallTriangleUp</code>
	<code>\BigVBar</code>		<code>\FilledSmallTriangleRight</code>		<code>\SmallVBar</code>
	<code>\Circle</code>		<code>\FilledSmallTriangleUp</code>		<code>\SpinDown</code>
	<code>\Cross</code>		<code>\FilledSquare</code>		<code>\SpinUp</code>
	<code>\DiamondShadowA</code>		<code>\FilledSquareShadowA</code>		<code>\Square</code>
	<code>\DiamondShadowB</code>		<code>\FilledSquareShadowC</code>		<code>\SquareShadowA</code>
	<code>\DiamondShadowC</code>		<code>\FilledTriangleDown</code>		<code>\SquareShadowB</code>
	<code>\Diamondshape</code>		<code>\FilledTriangleLeft</code>		<code>\SquareShadowC</code>
	<code>\FilledBigCircle</code>		<code>\FilledTriangleRight</code>		<code>\TriangleDown</code>
	<code>\FilledBigDiamondshape</code>		<code>\FilledTriangleUp</code>		<code>\TriangleLeft</code>
	<code>\FilledBigSquare</code>		<code>\HBar</code>		<code>\TriangleRight</code>
	<code>\FilledBigTriangleDown</code>		<code>\LowerDiamond</code>		<code>\TriangleUp</code>
	<code>\FilledBigTriangleLeft</code>		<code>\RightDiamond</code>		<code>\VBar</code>

The ifsym documentation points out that one can use `\rlap` to combine some of the above into useful, new symbols. For example, `\BigCircle` and `\FilledSmallCircle` combine to give “”. Likewise, `\Square` and `\Cross` combine to give “”. See Section 10.3 for more information about constructing new symbols out of existing symbols.

TABLE 383: bbding Geometric Shapes

	<code>\CircleShadow</code>		<code>\Rectangle</code>		<code>\SquareShadowTopLeft</code>
	<code>\CircleSolid</code>		<code>\RectangleBold</code>		<code>\SquareShadowTopRight</code>
	<code>\DiamondSolid</code>		<code>\RectangleThin</code>		<code>\SquareSolid</code>
	<code>\Ellipse</code>		<code>\Square</code>		<code>\TriangleDown</code>
	<code>\EllipseShadow</code>		<code>\SquareCastShadowBottomRight</code>		<code>\TriangleUp</code>
	<code>\EllipseSolid</code>		<code>\SquareCastShadowTopLeft</code>		
	<code>\HalfCircleLeft</code>		<code>\SquareCastShadowTopRight</code>		
	<code>\HalfCircleRight</code>		<code>\SquareShadowBottomRight</code>		

TABLE 384: pifont Geometric Shapes

● <code>\ding{108}</code>	□ <code>\ding{111}</code>	□ <code>\ding{114}</code>	◆ <code>\ding{117}</code>	! <code>\ding{121}</code>
○ <code>\ding{109}</code>	□ <code>\ding{112}</code>	▲ <code>\ding{115}</code>	◐ <code>\ding{119}</code>	■ <code>\ding{122}</code>
■ <code>\ding{110}</code>	□ <code>\ding{113}</code>	▼ <code>\ding{116}</code>	<code>\ding{120}</code>	

TABLE 385: universa Geometric Shapes

● <code>\baucircle</code>	■ <code>\bausquare</code>	▲ <code>\bautriangle</code>
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TABLE 386: adfsymbols Geometric Shapes

• <code>\adfbullet{27}</code>	► <code>\adfbullet{32}</code>	• <code>\adfbullet{43}</code>	✦ <code>\adfbullet{48}</code>
• <code>\adfbullet{28}</code>	▲ <code>\adfbullet{33}</code>	• <code>\adfbullet{44}</code>	✦ <code>\adfbullet{49}</code>
■ <code>\adfbullet{29}</code>	▼ <code>\adfbullet{34}</code>	◦ <code>\adfbullet{45}</code>	✦ <code>\adfbullet{50}</code>
◆ <code>\adfbullet{30}</code>	• <code>\adfbullet{41}</code>	■ <code>\adfbullet{46}</code>	◊ <code>\adfbullet{51}</code>
◄ <code>\adfbullet{31}</code>	• <code>\adfbullet{42}</code>	■ <code>\adfbullet{47}</code>	◦ <code>\adfbullet{52}</code>

TABLE 387: fontawesome Geometric Shapes

● <code>\faCircle</code>	◯ <code>\faCircleONotch</code>	⦿ <code>\faDotCircle0</code>	□ <code>\faSquare0</code>
◯ <code>\faCircle0</code>	◯ <code>\faCircleThin</code>	■ <code>\faSquare</code>	

TABLE 388: L^AT_EX 2_ε Playing-Card Suits

♣ <code>\clubsuit</code>	♦ <code>\diamondsuit</code>	♥ <code>\heartsuit</code>	♠ <code>\spadesuit</code>
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TABLE 389: txfonts/pxfonts Playing-Card Suits

♣ <code>\varclubsuit</code>	♦ <code>\vardiamondsuit</code>	♥ <code>\varheartsuit</code>	♠ <code>\varspadesuit</code>
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TABLE 390: MnSymbol Playing-Card Suits

♣ <code>\clubsuit</code>	♦ <code>\diamondsuit</code>	♥ <code>\heartsuit</code>	♠ <code>\spadesuit</code>
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TABLE 391: fdsymbol Playing-Card Suits

♣ <code>\clubsuit</code>	♥ <code>\heartsuit</code>	◆ <code>\vardiamondsuit</code>
◇ <code>\diamondsuit</code>	♠ <code>\spadesuit</code>	♥ <code>\varheartsuit</code>

TABLE 392: boisik Playing-Card Suits

♣ <code>\clubsuit</code>	◇ <code>\diamondsuit</code>	♥ <code>\heartsuit</code>	♠ <code>\spadesuit</code>
--------------------------	-----------------------------	---------------------------	---------------------------

TABLE 393: stix Playing-Card Suits

♣	<code>\clubsuit</code>	♥	<code>\heartsuit</code>	♠	<code>\varclubsuit</code>	♥	<code>\varheartsuit</code>
♦	<code>\diamondsuit</code>	♠	<code>\spadesuit</code>	♦	<code>\vardiamondsuit</code>	♠	<code>\varspadesuit</code>

TABLE 394: arev Playing-Card Suits

♣	<code>\varclub</code>	♦	<code>\vardiamond</code>	♥	<code>\varheart</code>	♠	<code>\varspade</code>
---	-----------------------	---	--------------------------	---	------------------------	---	------------------------

TABLE 395: adorn Flourishes

~	<code>\adfclosedflourishleft</code>	~	<code>\adfclosedflourishright</code>
~	<code>\adfdoubleflourishleft</code>	~	<code>\adfdoubleflourishright</code>
~	<code>\adfdoublesharpflourishleft</code>	~	<code>\adfdoublesharpflourishright</code>
~	<code>\adfflourishleft</code>	~	<code>\adfflourishright</code>
~	<code>\adfflourishlefthdouble</code>	~	<code>\adfflourishrightdouble</code>
~	<code>\adfopenflourishleft</code>	~	<code>\adfopenflourishright</code>
~	<code>\adfsharpflourishleft</code>	~	<code>\adfsharpflourishright</code>
~	<code>\adfsickleflourishleft</code>	~	<code>\adfsickleflourishright</code>
~	<code>\adfsingleflourishleft</code>	~	<code>\adfsingleflourishright</code>
~	<code>\adftripleflourishleft</code>	~	<code>\adftripleflourishright</code>
~	<code>\adfwavesleft</code>	~	<code>\adfwavesright</code>

TABLE 396: Miscellaneous dingbat Dingbats

⚓	<code>\anchor</code>	👁	<code>\eye</code>	⌚	<code>\Sborder</code>
↩	<code>\carriagereturn</code>	◼	<code>\filledsquarewithdots</code>	◻	<code>\squarewithdots</code>
✓	<code>\checkmark</code>	📡	<code>\satellitedish</code>	⌚	<code>\Zborder</code>

TABLE 397: Miscellaneous bbding Dingbats

✉	<code>\Envelope</code>	✌	<code>\Peace</code>	📞	<code>\PhoneHandset</code>	☀	<code>\SunshineOpenCircled</code>
❖	<code>\OrnamentDiamondSolid</code>	☎	<code>\Phone</code>	✈	<code>\Plane</code>	📼	<code>\Tape</code>

TABLE 398: Miscellaneous pifont Dingbats

☎	<code>\ding{37}</code>	✈	<code>\ding{40}</code>	♥	<code>\ding{164}</code>	♠	<code>\ding{167}</code>	♠	<code>\ding{171}</code>
🕒	<code>\ding{38}</code>	✉	<code>\ding{41}</code>	♠	<code>\ding{165}</code>	♣	<code>\ding{168}</code>	♦	<code>\ding{169}</code>
🕒	<code>\ding{39}</code>	❖	<code>\ding{118}</code>	🕒	<code>\ding{166}</code>	♥	<code>\ding{170}</code>		

TABLE 399: Miscellaneous adorn Dingbats

•	<code>\adfbullet</code>	◊	<code>\adfdiamond</code>	ſ	<code>\adfgee</code>	§	<code>\adfS</code>	◻	<code>\adfsquare</code>
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6 Ancient languages

This section presents letters and ideograms from various ancient scripts. Some of these symbols may also be useful in other typesetting contexts because of their pictorial nature.

TABLE 400: phaistos Symbols from the Phaistos Disk

	<code>\PHarrow</code>		<code>\PHeagle</code>		<code>\PHplumedHead</code>
	<code>\PHbee</code>		<code>\PHflute</code>		<code>\PHram</code>
	<code>\PHbeehive</code>		<code>\PHgauntlet</code>		<code>\PHrosette</code>
	<code>\PHboomerang</code>		<code>\PHgrater</code>		<code>\PHsaw</code>
	<code>\PHbow</code>		<code>\PHhelmet</code>		<code>\PHshield</code>
	<code>\PHbullLeg</code>		<code>\PHhide</code>		<code>\PHship</code>
	<code>\PHcaptive</code>		<code>\PHhorn</code>		<code>\PHsling</code>
	<code>\PHcarpentryPlane</code>		<code>\PHlid</code>		<code>\PHsmallAxe</code>
	<code>\PHcat</code>		<code>\PHlily</code>		<code>\PHstrainer</code>
	<code>\PHchild</code>		<code>\PHmanacles</code>		<code>\PHTattooedHead</code>
	<code>\PHclub</code>		<code>\PHmattock</code>		<code>\PHTiara</code>
	<code>\PHcolumn</code>		<code>\PHoxBack</code>		<code>\PHTunny</code>
	<code>\PHcomb</code>		<code>\PHpapyrus</code>		<code>\PHvine</code>
	<code>\PHdolium</code>		<code>\PHpedestrian</code>		<code>\PHwavyBand</code>
	<code>\PHdove</code>		<code>\PHplaneTree</code>		<code>\PHwoman</code>

TABLE 401: protosem Proto-Semitic Characters

	<code>\Aaleph</code>		<code>\AAhe</code>		<code>\Akaph</code>		<code>\Asamekh</code>		<code>\AAresh</code>
	<code>\AAaleph</code>		<code>\Azayin</code>		<code>\AAkaph</code>		<code>\Ape</code>		<code>\Ashin</code>
	<code>\Abeth</code>		<code>\Avav</code>		<code>\Alamed</code>		<code>\AApe</code>		<code>\Ahelmeht</code>
	<code>\AAbeth</code>		<code>\Aheth</code>		<code>\AAlamed</code>		<code>\Asade</code>		<code>\AAhelmet</code>
	<code>\Agimel</code>		<code>\AAheth</code>		<code>\Amem</code>		<code>\AAsade</code>		<code>\Atav</code>
	<code>\Adaleth</code>		<code>\Ateth</code>		<code>\Anun</code>		<code>\Aqoph</code>		
	<code>\AAdaleth</code>		<code>\Ayod</code>		<code>\Aayin</code>		<code>\AAqoph</code>		
	<code>\Ahe</code>		<code>\AAyod</code>		<code>\AAayin</code>		<code>\Aresh</code>		

The `protosem` package defines abbreviated control sequences for each of the above. In addition, single-letter shortcuts can be used within the argument to the `\textproto` command (e.g., “`\textproto{Pakyn}`” produces “𐤀𐤁𐤂𐤃𐤄”). See the `protosem` documentation for more information.

TABLE 402: hieroglf Hieroglyphics

	\HA		\HI		\Hn		\HT
	\Ha		\Hi		\HO		\Ht
	\HB		\Hibl		\Ho		\Htongue
	\Hb		\Hibp		\Hp		\HU
	\Hc		\Hibs		\HP		\Hu
	\HC		\Hibw		\Hplural		\HV
	\HD		\HJ		\Hplus		\Hv
	\Hd		\Hj		\HQ		\Hvbar
	\Hdual		\Hk		\Hq		\Hw
	\He		\HK		\Hquery		\HW
	\HE		\HL		\HR		\HX
	\Hf		\HL		\Hr		\Hx
	\HF		\Hm		\Hs		\HY
	\HG		\HM		\HS		\Hy
	\Hg		\Hman		\Hscribe		\Hz
	\Hh		\Hms		\Hslash		\HZ
	\HH		\HN		\Hsv		
	\Hone		\Hhundred		\HXthousand		\Hmillion
	\Hten		\Hthousand		\HCthousand		

The hieroglf package defines alternate control sequences and single-letter short-cuts for each of the above which can be used within the argument to the \textpmhg command (e.g., “\textpmhg{Pakin}” produces “”). See the hieroglf documentation for more information.

TABLE 403: linearA Linear A Script

	\LinearAI		\LinearAXCIX		\LinearACXCVII		\LinearACCXCV
	\LinearAII		\LinearAC		\LinearACXCVIII		\LinearACCXCVI
	\LinearAIII		\LinearACI		\LinearACXCIX		\LinearACCXCVII
	\LinearAIV		\LinearACII		\LinearACC		\LinearACCXCVIII
	\LinearAV		\LinearACIII		\LinearACCI		\LinearACCXCIX
	\LinearAVI		\LinearACIV		\LinearACCI		\LinearACCC
	\LinearAVII		\LinearACV		\LinearACCI		\LinearACCCI
	\LinearAVIII		\LinearACVI		\LinearACCI		\LinearACCCII
	\LinearAIX		\LinearACVII		\LinearACCV		\LinearACCCIII
	\LinearAX		\LinearACVIII		\LinearACCVI		\LinearACCCIV
	\LinearAXI		\LinearACIX		\LinearACCVII		\LinearACCCV
	\LinearAXII		\LinearACX		\LinearACCVIII		\LinearACCCVI
	\LinearAXIII		\LinearACXI		\LinearACCIX		\LinearACCCVII

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𐍈	\LinearAXIV	𐍉	\LinearACXII	𐍊	\LinearACCX	𐍋	\LinearACCCVIII
𐍌	\LinearAXV	𐍍	\LinearACXIII	𐍎	\LinearACCXI	𐍏	\LinearACCCIX
𐍐	\LinearAXVI	𐍑	\LinearACXIV	𐍒	\LinearACCXII	𐍓	\LinearACCCX
𐍕	\LinearAXVII	𐍖	\LinearACXV	𐍗	\LinearACCXIII	𐍘	\LinearACCCXI
𐍛	\LinearAXVIII	𐍜	\LinearACXVI	𐍝	\LinearACCXIV	𐍞	\LinearACCCXII
𐍟	\LinearAXIX	𐍠	\LinearACXVII	𐍡	\LinearACCXV	𐍢	\LinearACCCXIII
𐍤	\LinearAXX	𐍥	\LinearACXVIII	𐍦	\LinearACCXVI	𐍧	\LinearACCCXIV
𐍩	\LinearAXXI	𐍪	\LinearACXIX	𐍫	\LinearACCXVII	𐍬	\LinearACCCXV
𐍯	\LinearAXXII	𐍰	\LinearACXX	𐍱	\LinearACCXVIII	𐍲	\LinearACCCXVI
𐍴	\LinearAXXIII	𐍵	\LinearACXXI	𐍶	\LinearACCXIX	𐍷	\LinearACCCXVII
𐍹	\LinearAXXIV	𐍺	\LinearACXXII	𐍻	\LinearACCCX	𐍼	\LinearACCCXVIII
𐍽	\LinearAXXV	𐍿	\LinearACXXIII	𐎀	\LinearACCCXI	𐎁	\LinearACCCXIX
𐎁	\LinearAXXVI	𐎂	\LinearACXXIV	𐎃	\LinearACCCXII	𐎄	\LinearACCCX
𐎅	\LinearAXXVII	𐎆	\LinearACXXV	𐎇	\LinearACCCXIII	𐎈	\LinearACCCXXI
𐎉	\LinearAXXVIII	𐎊	\LinearACXXVI	𐎋	\LinearACCCXIV	𐎌	\LinearACCCXXII
𐎍	\LinearAXXIX	𐎎	\LinearACXXVII	𐎏	\LinearACCCXV	𐎐	\LinearACCCXXIII
𐎑	\LinearAXXX	𐎒	\LinearACXXVIII	𐎓	\LinearACCCXVI	𐎔	\LinearACCCXXIV
𐎕	\LinearAXXXI	𐎖	\LinearACXXIX	𐎗	\LinearACCCXVII	𐎘	\LinearACCCXXV
𐎙	\LinearAXXXII	𐎚	\LinearACXXX	𐎛	\LinearACCCXVIII	𐎜	\LinearACCCXXVI
𐎞	\LinearAXXXIII	𐎟	\LinearACXXXI	𐎠	\LinearACCCXIX	𐎡	\LinearACCCXXVII
𐎢	\LinearAXXXIV	𐎣	\LinearACXXXII	𐎤	\LinearACCCXX	𐎥	\LinearACCCXXVIII
𐎧	\LinearAXXXV	𐎨	\LinearACXXXIII	𐎩	\LinearACCCXXI	𐎪	\LinearACCCXXIX
𐎬	\LinearAXXXVI	𐎭	\LinearACXXXIV	𐎮	\LinearACCCXXII	𐎰	\LinearACCCXXX
𐎴	\LinearAXXXVII	𐎶	\LinearACXXXV	𐎸	\LinearACCCXXIII	𐎺	\LinearACCCXXXI
𐎼	\LinearAXXXVIII	𐎿	\LinearACXXXVI	𐏀	\LinearACCCXXIV	𐏁	\LinearACCCXXXII
𐏁	\LinearAXXXIX	𐏂	\LinearACXXXVII	𐏃	\LinearACCCXXV	𐏄	\LinearACCCXXXIII
𐏅	\LinearAXL	𐏆	\LinearACXXXVIII	𐏇	\LinearACCCXXVI	𐏈	\LinearACCCXXXIV
𐏉	\LinearAXLI	𐏊	\LinearACXXXIX	𐏋	\LinearACCCXXVII	𐏌	\LinearACCCXXXV
𐏍	\LinearAXLII	𐏎	\LinearACXL	𐏏	\LinearACCCXXVIII	𐏐	\LinearACCCXXXVI
𐏑	\LinearAXLIII	𐏒	\LinearACXLI	𐏓	\LinearACCCXXIX	𐏔	\LinearACCCXXXVII
𐏕	\LinearAXLIV	𐏖	\LinearACXLII	𐏗	\LinearACCCXL	𐏘	\LinearACCCXXXVIII
𐏙	\LinearAXLV	𐏚	\LinearACXLIII	𐏛	\LinearACCCXLI	𐏜	\LinearACCCXXXIX
𐏞	\LinearAXLVI	𐏟	\LinearACXLIV	𐏠	\LinearACCCXLII	𐏡	\LinearACCCXL
𐏣	\LinearAXLVII	𐏤	\LinearACXLV	𐏥	\LinearACCCXLIII	𐏦	\LinearACCCXLI
𐏨	\LinearAXLVIII	𐏩	\LinearACXLVI	𐏪	\LinearACCCXLIV	𐏫	\LinearACCCXLII
𐏭	\LinearAXLIX	𐏮	\LinearACXLVII	𐏯	\LinearACCCXLV	𐏰	\LinearACCCXLIII
𐏴	\LinearAL	𐏶	\LinearACXLVIII	𐏷	\LinearACCCXLVI	𐏸	\LinearACCCXLIV
𐏼	\LinearALI	𐏿	\LinearACXLIX	𐐀	\LinearACCCXLVII	𐐁	\LinearACCCXLV
𐐁	\LinearALII	𐐂	\LinearACL	𐐃	\LinearACCCXLVIII	𐐄	\LinearACCCXLVI
𐐅	\LinearALIII	𐐆	\LinearACLI	𐐇	\LinearACCCXLIX	𐐈	\LinearACCCXLVII
𐐉	\LinearALIV	𐐊	\LinearACLII	𐐋	\LinearACCL	𐐌	\LinearACCCXLVIII
𐐍	\LinearALV	𐐎	\LinearACLIII	𐐏	\LinearACCLI	𐐐	\LinearACCCXLIX
𐐑	\LinearALVI	𐐒	\LinearACLIV	𐐓	\LinearACCLII	𐐔	\LinearACCCCL
𐐕	\LinearALVII	𐐖	\LinearACLV	𐐗	\LinearACCLIII	𐐘	\LinearACCCCLI
𐐙	\LinearALVIII	𐐚	\LinearACLVI	𐐛	\LinearACCLIV	𐐜	\LinearACCCCLII
𐐞	\LinearALIX	𐐟	\LinearACLVII	𐐠	\LinearACCLV	𐐡	\LinearACCCCLIII
𐐤	\LinearALX	𐐥	\LinearACLVIII	𐐦	\LinearACCLVI	𐐧	\LinearACCCCLIV
𐐩	\LinearALXI	𐐪	\LinearACLIX	𐐫	\LinearACCLVII	𐐬	\LinearACCCCLV
𐐯	\LinearALXII	𐐰	\LinearACLX	𐐱	\LinearACCLVIII	𐐲	\LinearACCCCLVI
𐐴	\LinearALXIII	𐐵	\LinearACLXI	𐐶	\LinearACCLIX	𐐷	\LinearACCCCLVII
𐐹	\LinearALXIV	𐐺	\LinearACLXII	𐐻	\LinearACCLX	𐐼	\LinearACCCCLVIII
𐐽	\LinearALXV	𐐿	\LinearACLXIII	𐑀	\LinearACCLXI	𐑁	\LinearACCCCLIX
𐑁	\LinearALXVI	𐑂	\LinearACLXIV	𐑃	\LinearACCLXII	𐑄	\LinearACCCCLX

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𐎶	\LinearALXVII	𐎶	\LinearACLXV	𐎶	\LinearACCLXIII	𐎶	\LinearACCCLXI
𐎷	\LinearALXVIII	𐎷	\LinearACLXVI	𐎷	\LinearACCLXIV	𐎷	\LinearACCCLXII
𐎸	\LinearALXIX	𐎸	\LinearACLXVII	𐎸	\LinearACCLXV	𐎸	\LinearACCCLXIII
𐎹	\LinearALXX	𐎹	\LinearACLXVIII	𐎹	\LinearACCLXVI	𐎹	\LinearACCCLXIV
𐎺	\LinearALXXI	𐎺	\LinearACLXIX	𐎺	\LinearACCLXVII	𐎺	\LinearACCCLXV
𐎻	\LinearALXXII	𐎻	\LinearACLXX	𐎻	\LinearACCLXVIII	𐎻	\LinearACCCLXVI
𐎼	\LinearALXXIII	𐎼	\LinearACLXXI	𐎼	\LinearACCLXIX	𐎼	\LinearACCCLXVII
𐎽	\LinearALXXIV	𐎽	\LinearACLXXII	𐎽	\LinearACCLXX	𐎽	\LinearACCCLXVIII
𐎾	\LinearALXXV	𐎾	\LinearACLXXIII	𐎾	\LinearACCLXXI	𐎾	\LinearACCCLXIX
𐎿	\LinearALXXVI	𐎿	\LinearACLXXIV	𐎿	\LinearACCLXXII	𐎿	\LinearACCCLXX
𐏀	\LinearALXXVII	𐏀	\LinearACLXXV	𐏀	\LinearACCLXXIII	𐏀	\LinearACCCLXXI
𐏁	\LinearALXXVIII	𐏁	\LinearACLXXVI	𐏁	\LinearACCLXXIV	𐏁	\LinearACCCLXXII
𐏂	\LinearALXXIX	𐏂	\LinearACLXXVII	𐏂	\LinearACCLXXV	𐏂	\LinearACCCLXXIII
𐏃	\LinearALXXX	𐏃	\LinearACLXXVIII	𐏃	\LinearACCLXXVI	𐏃	\LinearACCCLXXIV
𐏄	\LinearALXXXI	𐏄	\LinearACLXXIX	𐏄	\LinearACCLXXVII	𐏄	\LinearACCCLXXV
𐏅	\LinearALXXXII	𐏅	\LinearACLXXX	𐏅	\LinearACCLXXVIII	𐏅	\LinearACCCLXXVI
𐏆	\LinearALXXXIII	𐏆	\LinearACLXXXI	𐏆	\LinearACCLXXIX	𐏆	\LinearACCCLXXVII
𐏇	\LinearALXXXIV	𐏇	\LinearACLXXXII	𐏇	\LinearACCLXXX	𐏇	\LinearACCCLXXVIII
𐏈	\LinearALXXXV	𐏈	\LinearACLXXXIII	𐏈	\LinearACCLXXXI	𐏈	\LinearACCCLXXIX
𐏉	\LinearALXXXVI	𐏉	\LinearACLXXXIV	𐏉	\LinearACCLXXXII	𐏉	\LinearACCCLXXX
𐏊	\LinearALXXXVII	𐏊	\LinearACLXXXV	𐏊	\LinearACCLXXXIII	𐏊	\LinearACCCLXXXI
𐏋	\LinearALXXXVIII	𐏋	\LinearACLXXXVI	𐏋	\LinearACCLXXXIV	𐏋	\LinearACCCLXXXII
𐏌	\LinearALXXXIX	𐏌	\LinearACLXXXVII	𐏌	\LinearACCLXXXV	𐏌	\LinearACCCLXXXIII
𐏍	\LinearALXXXX	𐏍	\LinearACLXXXVIII	𐏍	\LinearACCLXXXVI	𐏍	\LinearACCCLXXXIV
𐏎	\LinearAXCI	𐏎	\LinearACLXXXIX	𐏎	\LinearACCLXXXVII	𐏎	\LinearACCCLXXXV
𐏏	\LinearAXCII	𐏏	\LinearACLXXXX	𐏏	\LinearACCLXXXVIII	𐏏	\LinearACCCLXXXVI
𐏐	\LinearAXCIII	𐏐	\LinearACXCI	𐏐	\LinearACCLXXXIX	𐏐	\LinearACCCLXXXVII
𐏑	\LinearAXCIV	𐏑	\LinearACXCII	𐏑	\LinearACCLXXXX	𐏑	\LinearACCCLXXXVIII
𐏒	\LinearAXCV	𐏒	\LinearACXCIII	𐏒	\LinearACCXCI	𐏒	\LinearACCCLXXXIX
𐏓	\LinearAXCVI	𐏓	\LinearACXCIV	𐏓	\LinearACCXCII		
𐏔	\LinearAXCVII	𐏔	\LinearACXCV	𐏔	\LinearACCXCIII		
𐏕	\LinearAXCVIII	𐏕	\LinearACXCVI	𐏕	\LinearACCXCIV		

TABLE 404: linearb Linear B Basic and Optional Letters

	<code>\Ba</code>		<code>\Bja</code>		<code>\Bmu</code>		<code>\Bpte</code>		<code>\Broii</code>		<code>\Bto</code>
	<code>\Baii</code>		<code>\Bje</code>		<code>\Bna</code>		<code>\Bpu</code>		<code>\Bru</code>		<code>\Btu</code>
	<code>\Baiii</code>		<code>\Bjo</code>		<code>\Bne</code>		<code>\Bpuui</code>		<code>\Bsa</code>		<code>\Btwo</code>
	<code>\Bau</code>		<code>\Bju</code>		<code>\Bni</code>		<code>\Bqa</code>		<code>\Bse</code>		<code>\Bu</code>
	<code>\Bda</code>		<code>\Bka</code>		<code>\Bno</code>		<code>\Bqe</code>		<code>\Bsi</code>		<code>\Bwa</code>
	<code>\Bde</code>		<code>\Bke</code>		<code>\Bnu</code>		<code>\Bqi</code>		<code>\Bso</code>		<code>\Bwe</code>
	<code>\Bdi</code>		<code>\Bki</code>		<code>\Bnwa</code>		<code>\Bqo</code>		<code>\Bsu</code>		<code>\Bwi</code>
	<code>\Bdo</code>		<code>\Bko</code>		<code>\Bo</code>		<code>\Bra</code>		<code>\Bswa</code>		<code>\Bwo</code>
	<code>\Bdu</code>		<code>\Bku</code>		<code>\Bpa</code>		<code>\Braii</code>		<code>\Bswi</code>		<code>\Bza</code>
	<code>\Bdwe</code>		<code>\Bma</code>		<code>\Bpaiii</code>		<code>\Braiii</code>		<code>\Bta</code>		<code>\Bze</code>
	<code>\Bdwo</code>		<code>\Bme</code>		<code>\Bpe</code>		<code>\Bre</code>		<code>\Btaii</code>		<code>\Bzo</code>
	<code>\Be</code>		<code>\Bmi</code>		<code>\Bpi</code>		<code>\Bri</code>		<code>\Bte</code>		
	<code>\Bi</code>		<code>\Bmo</code>		<code>\Bpo</code>		<code>\Bro</code>		<code>\Bti</code>		

These symbols must appear either within the argument to `\textlinb` or following the `\linbfamily` font-selection command within a scope. Single-character shortcuts are also supported: Both “`\textlinb{\Bpa\Bki\Bna}`” and “`\textlinb{pcn}`” produce “ $\neq \nabla \bar{\gamma}$ ”, for example. See the linearb documentation for more information.

TABLE 405: linearb Linear B Numerals

	<code>\BNi</code>		<code>\BNvii</code>		<code>\BNxl</code>		<code>\BNc</code>		<code>\BNdcc</code>
	<code>\BNii</code>		<code>\BNviii</code>		<code>\BNl</code>		<code>\BNcc</code>		<code>\BNdccc</code>
	<code>\BNiii</code>		<code>\BNix</code>		<code>\BNlx</code>		<code>\BNccc</code>		<code>\BNcm</code>
	<code>\BNiv</code>		<code>\BNx</code>		<code>\BNlxx</code>		<code>\BNcd</code>		<code>\BNm</code>
	<code>\BNv</code>		<code>\BNxx</code>		<code>\BNlxxx</code>		<code>\BNd</code>		
	<code>\BNvi</code>		<code>\BNxxx</code>		<code>\BNxc</code>		<code>\BNdc</code>		

These symbols must appear either within the argument to `\textlinb` or following the `\linbfamily` font-selection command within a scope.

TABLE 406: linearb Linear B Weights and Measures

	<code>\BPtalent</code>		<code>\BPvolb</code>		<code>\BPvolcf</code>		<code>\BPwtb</code>		<code>\BPwtd</code>
	<code>\BPvola</code>		<code>\BPvolcd</code>		<code>\BPwta</code>		<code>\BPwtc</code>		

These symbols must appear either within the argument to `\textlinb` or following the `\linbfamily` font-selection command within a scope.

TABLE 407: linearb Linear B Ideograms

	<code>\BPamphora</code>		<code>\BPchassis</code>		<code>\BPman</code>		<code>\BPwheat</code>
	<code>\BParrow</code>		<code>\BPcloth</code>		<code>\BPnanny</code>		<code>\BPwheel</code>
	<code>\BPbarley</code>		<code>\BPcow</code>		<code>\BPolive</code>		<code>\BPwine</code>
	<code>\BPbilly</code>		<code>\BPcup</code>		<code>\BPox</code>		<code>\BPwineiih</code>
	<code>\BPboar</code>		<code>\BPewe</code>		<code>\BPpig</code>		<code>\BPwineiiih</code>
	<code>\BPbronze</code>		<code>\BPfoal</code>		<code>\BPram</code>		<code>\BPwineivh</code>
	<code>\BPbull</code>		<code>\BPgoat</code>		<code>\BPsheep</code>		<code>\BPwoman</code>
	<code>\BPcauldroni</code>		<code>\BPgoblet</code>		<code>\BPsow</code>		<code>\BPwool</code>
	<code>\BPcauldronii</code>		<code>\BPgold</code>		<code>\BPspear</code>		
	<code>\BPchariot</code>		<code>\BPhorse</code>		<code>\BPsword</code>		

These symbols must appear either within the argument to `\textlinb` or following the `\linbfamily` font-selection command within a scope.

TABLE 408: linearb Unidentified Linear B Symbols

	<code>\BUi</code>		<code>\BUiv</code>		<code>\BUvii</code>		<code>\BUx</code>		<code>\Btwe</code>
	<code>\BUii</code>		<code>\BUv</code>		<code>\BUviii</code>		<code>\BUxi</code>		
	<code>\BUiii</code>		<code>\BUvi</code>		<code>\BUix</code>		<code>\BUxii</code>		

These symbols must appear either within the argument to `\textlinb` or following the `\linbfamily` font-selection command within a scope.

TABLE 409: cypriot Cypriot Letters

	<code>\Ca</code>		<code>\Cku</code>		<code>\Cmu</code>		<code>\Cpo</code>		<code>\Cso</code>		<code>\Cwi</code>
	<code>\Ce</code>		<code>\Cla</code>		<code>\Cna</code>		<code>\Cpu</code>		<code>\Csu</code>		<code>\Cwo</code>
	<code>\Cga</code>		<code>\Cle</code>		<code>\Cne</code>		<code>\Cra</code>		<code>\Cta</code>		<code>\Cxa</code>
	<code>\Ci</code>		<code>\Cli</code>		<code>\Cni</code>		<code>\Cre</code>		<code>\Cte</code>		<code>\Cxe</code>
	<code>\Cja</code>		<code>\Clo</code>		<code>\Cno</code>		<code>\Cri</code>		<code>\Cti</code>		<code>\Cya</code>
	<code>\Cjo</code>		<code>\Clu</code>		<code>\Cnu</code>		<code>\Cro</code>		<code>\Cto</code>		<code>\Cyo</code>
	<code>\Cka</code>		<code>\Cma</code>		<code>\Cco</code>		<code>\Cru</code>		<code>\Ctu</code>		<code>\Cza</code>
	<code>\Cke</code>		<code>\Cme</code>		<code>\Cpa</code>		<code>\Csa</code>		<code>\Cu</code>		<code>\Czo</code>
	<code>\Cki</code>		<code>\Cmi</code>		<code>\Cpe</code>		<code>\Cse</code>		<code>\Cwa</code>		
	<code>\Cko</code>		<code>\Cmo</code>		<code>\Cpi</code>		<code>\Csi</code>		<code>\Cwe</code>		

These symbols must appear either within the argument to `\textcypr` or following the `\cyprfamily` font-selection command within a scope. Single-character shortcuts are also supported: Both “`\textcypr{\Cpa\Cki\Cna}`” and “`\textcypr{pcn}`” produce “”, for example. See the cypriot documentation for more information.

TABLE 410: sarabian South Arabian Letters

◦	<code>\SAa</code>	𐩦	<code>\SAz</code>	𐩧	<code>\SAm</code>	𐩨	<code>\SAsd</code>	𐩩	<code>\SAdb</code>
𐩪	<code>\SAb</code>	𐩫	<code>\SAhd</code>	𐩬	<code>\SAn</code>	𐩭	<code>\SAq</code>	𐩮	<code>\SAtb</code>
𐩯	<code>\SAg</code>	𐩰	<code>\SAtd</code>	𐩱	<code>\SAs</code>	𐩲	<code>\SAr</code>	𐩳	<code>\SAga</code>
𐩴	<code>\SAd</code>	𐩵	<code>\SAy</code>	𐩶	<code>\SAf</code>	𐩷	<code>\SAsv</code>	𐩸	<code>\SAzd</code>
𐩹	<code>\SAh</code>	𐩺	<code>\SAk</code>	𐩻	<code>\SAIq</code>	𐩼	<code>\SAt</code>	𐩽	<code>\SAsa</code>
◊	<code>\SAw</code>	𐩾	<code>\SAI</code>	𐩿	<code>\SAo</code>	𐊀	<code>\SAhu</code>	𐊁	<code>\SAdd</code>

These symbols must appear either within the argument to `\textsarab` or following the `\sarabfamily` font-selection command within a scope. Single-character shortcuts are also supported: Both “`\textsarab{\SAb\SAb\SAn}`” and “`\textsarab{bkn}`” produce “𐩪𐩬𐩮”, for example. See the `sarabian` documentation for more information.

TABLE 411: teubner Archaic Greek Letters and Greek Numerals

Ϟ	<code>\Coppa[†]</code>	Ϟ	<code>\Digamma[*]</code>	ϟ	<code>\sampi[*]</code>	Ϡ	<code>\varstigma</code>
ϙ	<code>\coppa[†]</code>	ϙ	<code>\koppa[*]</code>	ϡ	<code>\Stigma</code>		
Ϣ	<code>\digamma^{*,‡}</code>	Ϣ	<code>\Sampi</code>	ϣ	<code>\stigma[*]</code>		

* Technically, these symbols do not require `teubner`; it is sufficient to load the `babel` package with the `greek` option (upon which `teubner` depends)—but use `\qoppa` for `\koppa` and `\ddigamma` for `\digamma`.

† For compatibility with other naming conventions `teubner` defines `\Koppa` as a synonym for `\Coppa` and `\varcoppa` as a synonym for `\coppa`.

‡ If both `teubner` and `amssymb` are loaded, `teubner`’s `\digamma` replaces `amssymb`’s `\digamma`, regardless of package-loading order.

TABLE 412: boisik Archaic Greek Letters and Greek Numerals

Ϟ	<code>\Digamma</code>	ϙ	<code>\qoppa</code>	ϟ	<code>\stigma</code>	Ϡ	<code>\varsampi</code>
ϙ	<code>\digamma</code>	ϙ	<code>\Qoppa</code>	ϡ	<code>\Stigma</code>		
Ϣ	<code>\heta</code>	Ϣ	<code>\Sampi</code>	ϣ	<code>\vardigamma</code>		
ϣ	<code>\Heta</code>	ϣ	<code>\sampi</code>	Ϥ	<code>\Varsampi</code>		

TABLE 413: epiolmec Epi-Olmec Script

	<code>\EOafter</code>		<code>\EOMiddle</code>		<code>\EOStarWarrior</code>
	<code>\EOandThen</code>		<code>\EOmonster</code>		<code>\EOstep</code>
	<code>\EOAppear</code>		<code>\EOMountain</code>		<code>\EOSu</code>
	<code>\EOBeardMask</code>		<code>\EOMuu</code>		<code>\EOsu</code>
	<code>\EOBedeck</code>		<code>\EOna</code>		<code>\EOsun</code>

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	\EOBlood		\EOne		\EOSuu
	\EObrace		\EOni		\EOSuu
	\EObuilding		\EOnow		\EOta
	\EOBundle		\EOnu		\EOte
	\EOChop		\EOnuu		\EOthrone
	\EOChronI		\EOofficerI		\EOti
	\EOCloth		\EOofficerII		\EOtime
	\EODealWith		\EOofficerIII		\EOTime
	\EODeer		\EOofficerIV		\EOTitle
	\EOeat		\EOpa		\EOTitleII
	\EOflint		\EOpak		\EOTitleIV
	\EOflower		\EOPatron		\EOto
	\EOFold		\EOPatronII		\EOtu
	\EOGod		\EOpe		\EOtuki
	\EOGoUp		\EOpenis		\EOtukpa
	\EOgovernor		\EOpi		\EOturtle
	\EOGuise		\EOPierce		\EOtuu
	\EOHallow		\EOPlant		\EOtza
	\EOja		\EOPlay		\EOtze
	\EOjaguar		\EOpo		\EOtzetze
	\EOje		\EOpriest		\EOtzi
	\EOji		\EOPrince		\EOtzu
	\EOJI		\EOpu		\EOtzuu
	\EOjo		\EOpuu		\EOundef
	\EOju		\EOpuuk		\EOvarBeardMask
	\EOkak		\EORain		\EOvarja
	\EOke		\EOSa		\EOvarji
	\EOki		\EOSa		\EOvarki
	\EOkij		\EOSacrifice		\EOvarkuu
	\EOKing		\EOSaw		\EOvarni
	\EOknottedCloth		\EOScorpius		\EOvarpa

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	\EOknottedClothStraps		\EOset		\EOvarSi
	\EOko		\EOsi		\EOvarsi
	\EOku		\EOSi		\EOvartza
	\EOkuu		\EOSing		\EOvarwuu
	\EOLetBlood		\EOSini		\EOvarYear
	\EOloinCloth		\EOSkin		\EOwa
	\EOlongLipII		\EOSky		\EOwe
	\EOLord		\EOSkyAnimal		\EOwi
	\EOLose		\EOSkyPillar		\EOwo
	\EOma		\EOSnake		\EOwuu
	\EOmacaw		\EOSo		\EOya
	\EOmacawI		\EOSpan		\EOyaj
	\EOme		\EOSprinkle		\EOye
	\EOmexNew		\EOstar		\EOYear
	\EOmi		\EOstarWarrior		\EOyuu

TABLE 414: epiolmec Epi-Olmec Numerals

	\EOzero		\EOvi		\EOxii		\EOxviii
	\EOi		\EOvii		\EOxiii		\EOxix
	\EOii		\EOviii		\EOxiv		\EOxx
	\EOiii		\EOix		\EOxv		
	\EOiv		\EOx		\EOxvi		
	\EOv		\EOxi		\EOxvii		

TABLE 415: allrunes Runes

þ	\a	ƿ	E	ᚠ	\ING	ᚱ	m	ʀ	R	ſ	\sthree
*	\A	ƿ	F	ᚡ	\ing	ᚢ	n	ʀ	\RR	†	T
ƿ	a	ƿ	f	ᚢ	\Ing	ᚣ	\NG	ᚤ	\s	↑	t
ᚤ	A	X	g	ᚥ	\j	ᚦ	\ng	ᚧ	s	ᚨ	\textsection
ᚨ	b	ᚩ	\h	ᚪ	j	ᚫ	o	ᚬ	S	ᚭ	\th
ᚭ	B	N	H	ᚮ	J	ᚯ	\p	ᚰ	\seight	Λ	U
ᚰ	\d	H	h	ᚱ	\k	ᚲ	p	ᚳ	\sfive	ᚴ	u
ᚴ	D	ᚵ	\i	ᚶ	\K	ᚷ	P	ᚸ	\sfour	ᚹ	w
ᚹ	d	ᚺ	i	ᚻ	k	ᚼ	\R	ᚽ	\sseven		
ᚽ	e	ᚾ	I	ᚿ	l	ᚰ	r	ᚱ	\ssix		

The symbols in this table should appear within the argument to `\textarc` (for common Germanic runes), `\textara` (for Anglo-Frisian runes), `\textarn` (for normal runes), `\textart` (for short-twig runes), `\textarl` (for staveless runes), `\textarm` (for medieval runes), or within a scope that sets, respectively, `\arcfamily`, `\arafamily`, `\arnfamily`, `\artfamily`, `\arlfamily`, or `\armfamily`. Each family presents slightly different glyphs and/or slightly different subsets of the available runes. (The table presents the common Germanic runes.) See the `allrunes` documentation for more information.

TABLE 416: allrunes Rune Separators

⋮	\bar	:	\doubleeye	+	\plus	:	\tripldot
*	\cross	‡	\doubleplus	:	\quaddot	⋈	\tripleeye
.	\dot	⋈	\doublestar	⋈	\quadeye	‡	\tripleplus
!	\doublebar	·	\eye	*	\star		
⋈	\doublecross	:	\pentdot	!	\triplebar		
:	\doubledot	⋈	\penteye	⋈	\triplecross		

See the usage comment under Table 415.

7 Musical symbols

The following symbols are used to typeset musical notation. The *lily[🎵]ly[🎵]ps* package provides a large subset of the symbols in this section. Note, however, that *lily[🎵]ly[🎵]ps* depends upon the *fontspec* package, OpenType (*.otf*) fonts, and some PDF graphics and therefore works only with Lua[🎵]TEX or Xe[🎵]TEX.

TABLE 417: L[🎵]A[🎵]T[🎵]E[🎵]X_{2_ε} Musical Symbols

$\flat$ `\flat` $\natural$ `\natural` $\sharp$ `\sharp`

TABLE 418: textcomp Musical Symbols

♪ `\textmusicalnote`

TABLE 419: wasysym Musical Symbols

♪ `\eighthnote` ♩ `\halfnote` ♪♪ `\twonotes` ♩ `\fullnote` ♩ `\quarternote`

TABLE 420: MnSymbol Musical Symbols

$\flat$ `\flat` $\natural$ `\natural` $\sharp$ `\sharp`

TABLE 421: fdsymbol Musical Symbols

$\flat$ `\flat` $\natural$ `\natural` $\sharp$ `\sharp`

TABLE 422: boisik Musical Symbols

$\flat$ `\flat` $\natural$ `\natural` $\sharp$ `\sharp`

TABLE 423: stix Musical Symbols

♪ `\eighthnote` $\natural$ `\natural` $\sharp$ `\sharp`
 $\flat$ `\flat` ♩ `\quarternote` ♪♪ `\twonotes`

TABLE 424: arev Musical Symbols

♩ `\quarternote` ♪ `\eighthnote` ♪♪ `\sixteenthnote`

TABLE 425: MusiX_{TEX} Musical Symbols

	<code>\allabreve</code>		<code>\lsf</code>		<code>\shake</code>
	<code>\altoclef</code>		<code>\lsfz</code>		<code>\Shake</code>
	<code>\backturn</code>		<code>\maxima</code>		<code>\Shakel</code>
	<code>\bassclef</code>		<code>\meterplus</code>		<code>\Shakene</code>
	<code>\caesura</code>		<code>\mordent</code>		<code>\Shakenw</code>
	<code>\coda</code>		<code>\Mordent</code>		<code>\Shakesw</code>
	<code>\Coda</code>		<code>\PAUSE</code>		<code>\smallaltoclef</code>
	<code>\Dep</code>		<code>\PAuse</code>		<code>\smallbassclef</code>
	<code>\doublethumb</code>		<code>\pause</code>		<code>\smalltrebleclef</code>
	<code>\downbow</code>		<code>\Ped</code>		<code>\sPed</code>
	<code>\ds</code>		<code>\qp</code>		<code>\trebleclef</code>
	<code>\duevolte</code>		<code>\qqq</code>		<code>\trill</code>
	<code>\fermatadown</code>		<code>\qs</code>		<code>\turn</code>
	<code>\fermataup</code>		<code>\reverseallabreve</code>		<code>\upbow</code>
	<code>\flageolett</code>		<code>\reverseC</code>		<code>\usf</code>
	<code>\hpause</code>		<code>\sDep</code>		<code>\usfz</code>
	<code>\hs</code>		<code>\Segno</code>		<code>\wq</code>
	<code>\longa</code>		<code>\segno</code>		<code>\wqq</code>

All of these symbols are intended to be used in the context of typesetting musical scores. See the MusiX_{TEX} documentation for more information.

TABLE 426: MusiX_{TEX} Alternative Clefs

	<code>\drumclef</code>		<code>\gregorianFclef</code>
	<code>\gregorianCclef</code>		<code>\oldGclef</code>

In addition to MusiX_{TEX}, `\drumclef` requires the `musixper` package; `\oldGclef` requires the `musixlit` package; and both `\gregorianCclef` and `\gregorianFclef` require the `musixgre` package. Together with MusiX_{TEX}, these packages provide a complete system for typesetting percussion notation (`musixper`), liturgical music (`musixlit`), and Gregorian chants (`musixgre`, including the staves and all of the necessary neumes. See the MusiX_{TEX} documentation for more information.

TABLE 427: harmony Musical Symbols

	<code>\AAcht</code>		<code>\DDohne</code>		<code>\Halb</code>		<code>\SechBR</code>		<code>\VM</code>
	<code>\Acht</code>		<code>\Dohne</code>		<code>\HaPa</code>		<code>\SechBr</code>		<code>\Zwdr</code>
	<code>\AchtBL</code>		<code>\Ds</code>		<code>\Pu</code>		<code>\SePa</code>		<code>\ZwPa</code>
	<code>\AchtBR</code>		<code>\DS</code>		<code>\Sech</code>		<code>\UB</code>		
	<code>\AcPa</code>		<code>\Ganz</code>		<code>\SechBL</code>		<code>\Vier</code>		
	<code>\DD</code>		<code>\GaPa</code>		<code>\SechBl</code>		<code>\ViPa</code>		

The MusiX_{TEX} package must be installed to use harmony.

TABLE 428: harmony Musical Accents

	<code>\Ferli{A}\Ferli{a}*</code>		<code>\Ohne{A}\Ohne{a}*</code>
	<code>\Fermi{A}\Fermi{a}</code>		<code>\Umd{A}\Umd{a}*</code>
	<code>\Kr{A}\Kr{a}</code>		

* These symbols take an optional argument which shifts the accent either horizontally or vertically (depending on the command) by the given distance.

In addition to the accents shown above, `\HH` is a special accent command that accepts five period-separated characters and typesets them such that “`\HH.X.a.b.c.d.`” produces “ $\overset{X}{\underset{a}{\underset{b}{\underset{c}{\underset{d}{\text{H}}}}}}$ ”. All arguments except the first can be omitted: “`\HH.X....`” produces “ $\overset{X}{\text{H}}$ ”. `\Takt` takes two arguments and composes them into a musical time signature. For example, “`\Takt{12}{8}`” produces “ $\frac{12}{8}$ ”. As two special cases, “`\Takt{c}{0}`” produces “**C**” and “`\Takt{c}{1}`” produces “**C**”.

The MusiX_{TEX} package must be installed to use harmony.

TABLE 429: *lily₆lyp_{bs}* Single Notes

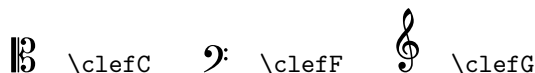
	<code>\eighthNote</code>		<code>\quarterNoteDottedDown</code>
	<code>\eighthNoteDotted</code>		<code>\quarterNoteDown</code>
	<code>\eighthNoteDottedDouble</code>		<code>\sixteenthNote</code>
	<code>\eighthNoteDottedDoubleDown</code>		<code>\sixteenthNoteDotted</code>
	<code>\eighthNoteDottedDown</code>		<code>\sixteenthNoteDottedDouble</code>
	<code>\eighthNoteDown</code>		<code>\sixteenthNoteDottedDoubleDown</code>
	<code>\halfNote</code>		<code>\sixteenthNoteDottedDown</code>
	<code>\halfNoteDotted</code>		<code>\sixteenthNoteDown</code>
	<code>\halfNoteDottedDouble</code>		<code>\thirtysecondNote</code>
	<code>\halfNoteDottedDoubleDown</code>		<code>\thirtysecondNoteDotted</code>
	<code>\halfNoteDottedDown</code>		<code>\thirtysecondNoteDottedDouble</code>
	<code>\halfNoteDown</code>		<code>\thirtysecondNoteDottedDoubleDown</code>
	<code>\quarterNote</code>		<code>\thirtysecondNoteDottedDown</code>
	<code>\quarterNoteDotted</code>		<code>\thirtysecondNoteDown</code>
	<code>\quarterNoteDottedDouble</code>		<code>\wholeNote</code>
	<code>\quarterNoteDottedDoubleDown</code>		<code>\wholeNoteDotted</code>

lily₆lyp_{bs} defines synonyms for all of the preceding symbols:

	<code>\crotchet</code>		<code>\minimDottedDown</code>
	<code>\crotchetDotted</code>		<code>\minimDown</code>
	<code>\crotchetDottedDouble</code>		<code>\quaver</code>
	<code>\crotchetDottedDoubleDown</code>		<code>\quaverDotted</code>
	<code>\crotchetDottedDown</code>		<code>\quaverDottedDouble</code>
	<code>\crotchetDown</code>		<code>\quaverDottedDoubleDown</code>
	<code>\demisemiquaver</code>		<code>\quaverDottedDown</code>
	<code>\demisemiquaverDotted</code>		<code>\quaverDown</code>
	<code>\demisemiquaverDottedDouble</code>		<code>\semibreve</code>
	<code>\demisemiquaverDottedDoubleDown</code>		<code>\semibreveDotted</code>
	<code>\demisemiquaverDottedDown</code>		<code>\semiquaver</code>
	<code>\demisemiquaverDown</code>		<code>\semiquaverDotted</code>
	<code>\minim</code>		<code>\semiquaverDottedDouble</code>
	<code>\minimDotted</code>		<code>\semiquaverDottedDoubleDown</code>
	<code>\minimDottedDouble</code>		<code>\semiquaverDottedDown</code>
	<code>\minimDottedDoubleDown</code>		<code>\semiquaverDown</code>

TABLE 430: *lily₆lyp_{bs}* Beamed Notes

	<code>\twoBeamedQuavers</code>		<code>\threeBeamedQuaversII</code>
	<code>\threeBeamedQuavers</code>		<code>\threeBeamedQuaversIII</code>
	<code>\threeBeamedQuaversI</code>		

TABLE 431: *lily $\p$ bs* Clefs

Each of these symbols provides a smaller, “inline” form (`\clefCInline`, `\clefFInline`, and `\clefGInline`, respectively) intended for use within a paragraph. See the *lily $\p$ bs* documentation for more information.

TABLE 432: *lily $\p$ bs* Time Signatures

lily $\p$ bs also provides a `\lilyTimeSignature` command that lets a user typeset single and compound time signatures by specifying a numerator and a denominator. See the *lily $\p$ bs* documentation for more information.

TABLE 433: *lily $\p$ bs* Accidentals

$\times$	<code>\doublesharp</code>	$\sharp\downarrow$	<code>\sharpArrowdown</code>
$\flat$	<code>\flat</code>	$\sharp\uparrow$	<code>\sharpArrowup</code>
$\flat\flat$	<code>\flatflat</code>	$\sharp\diagup\diagdown\diagup\diagdown$	<code>\sharpSlashslashslashStem</code>
$\natural$	<code>\natural</code>	$\sharp\diagup\diagdown\diagup\diagdown\diagup\diagdown$	<code>\sharpSlashslashslashStemstem</code>
$\sharp$	<code>\sharp</code>	$\sharp\diagup\diagdown$	<code>\sharpSlashslashStem</code>
$\sharp\uparrow\downarrow$	<code>\sharpArrowboth</code>	$\sharp\diagup\diagdown\diagup\diagdown\diagup\diagdown$	<code>\sharpSlashslashStemstemstem</code>

TABLE 434: *lily $\p$ bs* Rests

crotchet rest	<code>\crotchetRest</code>	$\text{quaver rest dotted}$	<code>\quaverRestDotted</code>
$\text{crotchet rest dotted}$	<code>\crotchetRestDotted</code>	semiquaver rest	<code>\semiquaverRest</code>
half note rest	<code>\halfNoteRest</code>	$\text{semiquaver rest dotted}$	<code>\semiquaverRestDotted</code>
$\text{half note rest dotted}$	<code>\halfNoteRestDotted</code>	whole note rest	<code>\wholeNoteRest</code>
quaver rest	<code>\quaverRest</code>	$\text{whole note rest dotted}$	<code>\wholeNoteRestDotted</code>

Multiply dotted rests can be produced with the `\lilyPrintMoreDots` command. See the *lily $\p$ bs* documentation for more information.

TABLE 435: *lily₆ly₆ps* Dynamics Letters

<i>f</i>	<code>\lilyDynamics{f}</code>	<i>r</i>	<code>\lilyDynamics{r}</code>
<i>p</i>	<code>\lilyDynamics{p}</code>	<i>s</i>	<code>\lilyDynamics{s}</code>
<i>m</i>	<code>\lilyDynamics{m}</code>	<i>z</i>	<code>\lilyDynamics{z}</code>
<i>rf</i>	<code>\lilyRF</code>	<i>rfz</i>	<code>\lilyRFZ</code>

These letters and the digits 0–9 are the only alphanumerics defined by *lily₆ly₆ps*’s underlying Emmentaler fonts.

TABLE 436: *lily₆ly₆ps* Dynamics Symbols

<	<code>\crescHairpin</code>	>	<code>\decrecHairpin</code>
------------	----------------------------	------------	-----------------------------

TABLE 437: *lily₆ly₆ps* Articulations

>	<code>\lilyAccent</code>	^	<code>\marcato</code>	,	<code>\staccatissimo</code>
<>	<code>\lilyEspressivo</code>	v	<code>\marcatoDown</code>	-	<code>\tenuto</code>
.	<code>\lilyStaccato</code>	.	<code>\portato</code>		
v	<code>\lilyThumb</code>	v	<code>\portatoDown</code>		

TABLE 438: *lily₆ly₆ps* Scripts

f	<code>\fermata</code>
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TABLE 439: *lily₆ly₆ps* Accordion Notation

B	<code>\accordionBayanBass</code>	E	<code>\accordionOldEE</code>	S	<code>\accordionStdBass</code>
D	<code>\accordionDiscant</code>	P	<code>\accordionPull</code>		
F	<code>\accordionFreeBass</code>	P	<code>\accordionPush</code>		

TABLE 440: *lilyglyphs* Named Time Signatures

♂	<code>\lilyGlyph{timesig.C22}</code>	♂	<code>\lilyGlyph{timesig.mensural98}</code>
♂	<code>\lilyGlyph{timesig.C44}</code>	♂	<code>\lilyGlyph{timesig.neomensural22}</code>
♂	<code>\lilyGlyph{timesig.mensural22}</code>	♂	<code>\lilyGlyph{timesig.neomensural24}</code>
♂	<code>\lilyGlyph{timesig.mensural24}</code>	♂	<code>\lilyGlyph{timesig.neomensural32}</code>
♂	<code>\lilyGlyph{timesig.mensural32}</code>	♂	<code>\lilyGlyph{timesig.neomensural34}</code>
♂	<code>\lilyGlyph{timesig.mensural34}</code>	♂	<code>\lilyGlyph{timesig.neomensural44}</code>
♂	<code>\lilyGlyph{timesig.mensural44}</code>	♂	<code>\lilyGlyph{timesig.neomensural48}</code>
♂	<code>\lilyGlyph{timesig.mensural48}</code>	♂	<code>\lilyGlyph{timesig.neomensural64}</code>
♂	<code>\lilyGlyph{timesig.mensural64}</code>	♂	<code>\lilyGlyph{timesig.neomensural68}</code>
♂	<code>\lilyGlyph{timesig.mensural68}</code>	♂	<code>\lilyGlyph{timesig.neomensural68alt}</code>
♂	<code>\lilyGlyph{timesig.mensural68alt}</code>	♂	<code>\lilyGlyph{timesig.neomensural94}</code>
♂	<code>\lilyGlyph{timesig.mensural94}</code>	♂	<code>\lilyGlyph{timesig.neomensural98}</code>

lilyglyphs defines shorter names for a few of these symbols. See Table 432.

TABLE 441: *lilyglyphs* Named Scripts

⤴	<code>\lilyGlyph{scripts.arpeggio}</code>	⤴	<code>\lilyGlyph{scripts.prallmordent}</code>
⤴	<code>\lilyGlyph{scripts.arpeggio.arrow.1}</code>	⤴	<code>\lilyGlyph{scripts.prallprall}</code>
⤴	<code>\lilyGlyph{scripts.arpeggio.arrow.M1}</code>	⤴	<code>\lilyGlyph{scripts.prallup}</code>
⤴	<code>\lilyGlyph{scripts.augmentum}</code>	⤴	<code>\lilyGlyph{scripts.rcomma}</code>
⤴	<code>\lilyGlyph{scripts.barline.kievan}</code>	⤴	<code>\lilyGlyph{scripts.reverseturn}</code>
⤴	<code>\lilyGlyph{scripts.caesura.curved}</code>	⤴	<code>\lilyGlyph{scripts.rvarcomma}</code>
⤴	<code>\lilyGlyph{scripts.caesura.straight}</code>	⤴	<code>\lilyGlyph{scripts.segno}</code>
⤴	<code>\lilyGlyph{scripts.circulus}</code>	⤴	<code>\lilyGlyph{scripts.sforzato}</code>
⤴	<code>\lilyGlyph{scripts.coda}</code>	⤴	<code>\lilyGlyph{scripts.snappizzicato}</code>
⤴	<code>\lilyGlyph{scripts.daccentus}</code>	⤴	<code>\lilyGlyph{scripts.staccato}</code>
⤴	<code>\lilyGlyph{scripts.dfermata}</code>	⤴	<code>\lilyGlyph{scripts.stopped}</code>
⤴	<code>\lilyGlyph{scripts.dlongfermata}</code>	⤴	<code>\lilyGlyph{scripts.tenuto}</code>
⤴	<code>\lilyGlyph{scripts.dmarcato}</code>	⤴	<code>\lilyGlyph{scripts.thumb}</code>
⤴	<code>\lilyGlyph{scripts.downbow}</code>	⤴	<code>\lilyGlyph{scripts.tickmark}</code>
⤴	<code>\lilyGlyph{scripts.downmordent}</code>	⤴	<code>\lilyGlyph{scripts.trilelement}</code>
⤴	<code>\lilyGlyph{scripts.downprall}</code>	⤴	<code>\lilyGlyph{scripts.trill}</code>
⤴	<code>\lilyGlyph{scripts.dpedalheel}</code>	⤴	<code>\lilyGlyph{scripts.trill_element}</code>
⤴	<code>\lilyGlyph{scripts.dpedaltoe}</code>	⤴	<code>\lilyGlyph{scripts.turn}</code>
⤴	<code>\lilyGlyph{scripts.dportato}</code>	⤴	<code>\lilyGlyph{scripts.uaccentus}</code>
⤴	<code>\lilyGlyph{scripts.dsemicirculus}</code>	⤴	<code>\lilyGlyph{scripts.ufermata}</code>
⤴	<code>\lilyGlyph{scripts.dshortfermata}</code>	⤴	<code>\lilyGlyph{scripts.ulongfermata}</code>
⤴	<code>\lilyGlyph{scripts.dsignumcongruentiae}</code>	⤴	<code>\lilyGlyph{scripts.umarcato}</code>
⤴	<code>\lilyGlyph{scripts.dstaccatissimo}</code>	⤴	<code>\lilyGlyph{scripts.upbow}</code>
⤴	<code>\lilyGlyph{scripts.dverylongfermata}</code>	⤴	<code>\lilyGlyph{scripts.upedalheel}</code>
⤴	<code>\lilyGlyph{scripts.espr}</code>	⤴	<code>\lilyGlyph{scripts.upedaltoe}</code>
⤴	<code>\lilyGlyph{scripts.flageolet}</code>	⤴	<code>\lilyGlyph{scripts.upmordent}</code>
⤴	<code>\lilyGlyph{scripts.halfopen}</code>	⤴	<code>\lilyGlyph{scripts.uportato}</code>
⤴	<code>\lilyGlyph{scripts.halfopenvertical}</code>	⤴	<code>\lilyGlyph{scripts.upprall}</code>
⤴	<code>\lilyGlyph{scripts.ictus}</code>	⤴	<code>\lilyGlyph{scripts.usemicirculus}</code>
⤴	<code>\lilyGlyph{scripts.lcomma}</code>	⤴	<code>\lilyGlyph{scripts.ushortfermata}</code>

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	<code>\lilyGlyph{scripts.lineprall}</code>		<code>\lilyGlyph{scripts.usignumcongruentiae}</code>
	<code>\lilyGlyph{scripts.lvarcomma}</code>		<code>\lilyGlyph{scripts.ustaccatissimo}</code>
	<code>\lilyGlyph{scripts.mordent}</code>		<code>\lilyGlyph{scripts.uverylongfermata}</code>
	<code>\lilyGlyph{scripts.open}</code>		<code>\lilyGlyph{scripts.varcoda}</code>
			
	<code>\lilyGlyph{scripts.prall}</code>		
	<code>\lilyGlyph{scripts.pralldown}</code>		

lily^glyp^{bs} defines `\fermata` as a shorter name for “” than `\lilyGlyph{scripts.ufermata}`. See Table 438.

TABLE 442: *lily^glyp^{bs}* Named Rests

	<code>\lilyGlyph{rests.0}</code>		<code>\lilyGlyph{rests.4mensural}</code>
	<code>\lilyGlyph{rests.0mensural}</code>		<code>\lilyGlyph{rests.4neomensural}</code>
	<code>\lilyGlyph{rests.0neomensural}</code>		<code>\lilyGlyph{rests.5}</code>
	<code>\lilyGlyph{rests.0o}</code>		<code>\lilyGlyph{rests.6}</code>
	<code>\lilyGlyph{rests.1}</code>		<code>\lilyGlyph{rests.7}</code>
	<code>\lilyGlyph{rests.1mensural}</code>		<code>\lilyGlyph{rests.M1}</code>
	<code>\lilyGlyph{rests.1neomensural}</code>		<code>\lilyGlyph{rests.M1mensural}</code>
	<code>\lilyGlyph{rests.1o}</code>		<code>\lilyGlyph{rests.M1neomensural}</code>
	<code>\lilyGlyph{rests.2}</code>		<code>\lilyGlyph{rests.M1o}</code>
	<code>\lilyGlyph{rests.2classical}</code>		<code>\lilyGlyph{rests.M2}</code>
	<code>\lilyGlyph{rests.2mensural}</code>		<code>\lilyGlyph{rests.M2mensural}</code>
	<code>\lilyGlyph{rests.2neomensural}</code>		<code>\lilyGlyph{rests.M2neomensural}</code>
	<code>\lilyGlyph{rests.3}</code>		<code>\lilyGlyph{rests.M3}</code>
	<code>\lilyGlyph{rests.3mensural}</code>		<code>\lilyGlyph{rests.M3mensural}</code>
	<code>\lilyGlyph{rests.3neomensural}</code>		<code>\lilyGlyph{rests.M3neomensural}</code>
	<code>\lilyGlyph{rests.4}</code>		

lily^glyp^{bs} defines shorter names for a few of these symbols. See Table 434.

TABLE 443: *lily^glyp^{bs}* Named Pedals

	<code>\lilyGlyph{pedal.*}</code>		<code>\lilyGlyph{pedal.M}</code>
	<code>\lilyGlyph{pedal..}</code>		<code>\lilyGlyph{pedal.P}</code>
	<code>\lilyGlyph{pedal.d}</code>		<code>\lilyGlyph{pedal.Ped}</code>
	<code>\lilyGlyph{pedal.e}</code>		

TABLE 444: *lilyglyphs* Named Flags

	<code>\lilyGlyph{flags.d3}</code>		<code>\lilyGlyph{flags.mensuralu03}</code>
	<code>\lilyGlyph{flags.d4}</code>		<code>\lilyGlyph{flags.mensuralu04}</code>
	<code>\lilyGlyph{flags.d5}</code>		<code>\lilyGlyph{flags.mensuralu05}</code>
	<code>\lilyGlyph{flags.d6}</code>		<code>\lilyGlyph{flags.mensuralu06}</code>
	<code>\lilyGlyph{flags.d7}</code>		<code>\lilyGlyph{flags.mensuralu13}</code>
	<code>\lilyGlyph{flags.dgrace}</code>		<code>\lilyGlyph{flags.mensuralu14}</code>
	<code>\lilyGlyph{flags.mensurald03}</code>		<code>\lilyGlyph{flags.mensuralu15}</code>
	<code>\lilyGlyph{flags.mensurald04}</code>		<code>\lilyGlyph{flags.mensuralu16}</code>
	<code>\lilyGlyph{flags.mensurald05}</code>		<code>\lilyGlyph{flags.mensuralu23}</code>
	<code>\lilyGlyph{flags.mensurald06}</code>		<code>\lilyGlyph{flags.mensuralu24}</code>
	<code>\lilyGlyph{flags.mensurald13}</code>		<code>\lilyGlyph{flags.mensuralu25}</code>
	<code>\lilyGlyph{flags.mensurald14}</code>		<code>\lilyGlyph{flags.mensuralu26}</code>
	<code>\lilyGlyph{flags.mensurald15}</code>		<code>\lilyGlyph{flags.u3}</code>
	<code>\lilyGlyph{flags.mensurald16}</code>		<code>\lilyGlyph{flags.u4}</code>
	<code>\lilyGlyph{flags.mensurald23}</code>		<code>\lilyGlyph{flags.u5}</code>
	<code>\lilyGlyph{flags.mensurald24}</code>		<code>\lilyGlyph{flags.u6}</code>
	<code>\lilyGlyph{flags.mensurald25}</code>		<code>\lilyGlyph{flags.u7}</code>
	<code>\lilyGlyph{flags.mensurald26}</code>		<code>\lilyGlyph{flags.ugrace}</code>

TABLE 445: *lilyglyphs* Named Custodes

	<code>\lilyGlyph{custodes.hufnagel.d0}</code>		<code>\lilyGlyph{custodes.mensural.d0}</code>
	<code>\lilyGlyph{custodes.hufnagel.d1}</code>		<code>\lilyGlyph{custodes.mensural.d1}</code>
	<code>\lilyGlyph{custodes.hufnagel.d2}</code>		<code>\lilyGlyph{custodes.mensural.d2}</code>
	<code>\lilyGlyph{custodes.hufnagel.u0}</code>		<code>\lilyGlyph{custodes.mensural.u0}</code>
	<code>\lilyGlyph{custodes.hufnagel.u1}</code>		<code>\lilyGlyph{custodes.mensural.u1}</code>
	<code>\lilyGlyph{custodes.hufnagel.u2}</code>		<code>\lilyGlyph{custodes.mensural.u2}</code>
	<code>\lilyGlyph{custodes.medicaea.d0}</code>		<code>\lilyGlyph{custodes.vaticana.d0}</code>
	<code>\lilyGlyph{custodes.medicaea.d1}</code>		<code>\lilyGlyph{custodes.vaticana.d1}</code>
	<code>\lilyGlyph{custodes.medicaea.d2}</code>		<code>\lilyGlyph{custodes.vaticana.d2}</code>
	<code>\lilyGlyph{custodes.medicaea.u0}</code>		<code>\lilyGlyph{custodes.vaticana.u0}</code>
	<code>\lilyGlyph{custodes.medicaea.u1}</code>		<code>\lilyGlyph{custodes.vaticana.u1}</code>
	<code>\lilyGlyph{custodes.medicaea.u2}</code>		<code>\lilyGlyph{custodes.vaticana.u2}</code>

TABLE 446: *lilyglyphs* Named Clefs

	<code>\lilyGlyph{clefs.blackmensural.c}</code>		<code>\lilyGlyph{clefs.mensural.g_change}</code>
	<code>\lilyGlyph{clefs.blackmensural.c_change}</code>		<code>\lilyGlyph{clefs.neomensural.c}</code>
	<code>\lilyGlyph{clefs.C}</code>		<code>\lilyGlyph{clefs.neomensural.c_change}</code>
	<code>\lilyGlyph{clefs.C_change}</code>		<code>\lilyGlyph{clefs.percussion}</code>
	<code>\lilyGlyph{clefs.F}</code>		<code>\lilyGlyph{clefs.percussion_change}</code>
	<code>\lilyGlyph{clefs.F_change}</code>		<code>\lilyGlyph{clefs.petrucci.c1}</code>
	<code>\lilyGlyph{clefs.G}</code>		<code>\lilyGlyph{clefs.petrucci.c1_change}</code>
	<code>\lilyGlyph{clefs.G_change}</code>		<code>\lilyGlyph{clefs.petrucci.c2}</code>
	<code>\lilyGlyph{clefs.hufnagel.do}</code>		<code>\lilyGlyph{clefs.petrucci.c2_change}</code>
	<code>\lilyGlyph{clefs.hufnagel.do.fa}</code>		<code>\lilyGlyph{clefs.petrucci.c3}</code>
	<code>\lilyGlyph{clefs.hufnagel.do.fa_change}</code>		<code>\lilyGlyph{clefs.petrucci.c3_change}</code>
	<code>\lilyGlyph{clefs.hufnagel.do_change}</code>		<code>\lilyGlyph{clefs.petrucci.c4}</code>
	<code>\lilyGlyph{clefs.hufnagel.fa}</code>		<code>\lilyGlyph{clefs.petrucci.c4_change}</code>
	<code>\lilyGlyph{clefs.hufnagel.fa_change}</code>		<code>\lilyGlyph{clefs.petrucci.c5}</code>
	<code>\lilyGlyph{clefs.kievan.do}</code>		<code>\lilyGlyph{clefs.petrucci.c5_change}</code>
	<code>\lilyGlyph{clefs.kievan.do_change}</code>		<code>\lilyGlyph{clefs.petrucci.f}</code>
	<code>\lilyGlyph{clefs.medicaea.do}</code>		<code>\lilyGlyph{clefs.petrucci.f_change}</code>
	<code>\lilyGlyph{clefs.medicaea.do_change}</code>		<code>\lilyGlyph{clefs.petrucci.g}</code>
	<code>\lilyGlyph{clefs.medicaea.fa}</code>		<code>\lilyGlyph{clefs.petrucci.g_change}</code>
	<code>\lilyGlyph{clefs.medicaea.fa_change}</code>		<code>\lilyGlyph{clefs.tab}</code>
	<code>\lilyGlyph{clefs.mensural.c}</code>		<code>\lilyGlyph{clefs.tab_change}</code>
	<code>\lilyGlyph{clefs.mensural.c_change}</code>		<code>\lilyGlyph{clefs.vaticana.do}</code>
	<code>\lilyGlyph{clefs.mensural.f}</code>		<code>\lilyGlyph{clefs.vaticana.do_change}</code>
	<code>\lilyGlyph{clefs.mensural.f_change}</code>		<code>\lilyGlyph{clefs.vaticana.fa}</code>
	<code>\lilyGlyph{clefs.mensural.g}</code>		<code>\lilyGlyph{clefs.vaticana.fa_change}</code>

lilyglyphs defines shorter names for a few of these symbols. See Table 431.

TABLE 447: *lilyglyphs* Named Noteheads

◡	<code>\lilyGlyph{noteheads.d0doFunk}</code>
◡	<code>\lilyGlyph{noteheads.d0fa}</code>
◡	<code>\lilyGlyph{noteheads.d0faFunk}</code>
◡	<code>\lilyGlyph{noteheads.d0faThin}</code>
◡	<code>\lilyGlyph{noteheads.d0miFunk}</code>
◡	<code>\lilyGlyph{noteheads.d0reFunk}</code>
◡	<code>\lilyGlyph{noteheads.d0tiFunk}</code>
◡	<code>\lilyGlyph{noteheads.d1do}</code>
◡	<code>\lilyGlyph{noteheads.d1doFunk}</code>
◡	<code>\lilyGlyph{noteheads.d1doThin}</code>
◡	<code>\lilyGlyph{noteheads.d1doWalker}</code>
◡	<code>\lilyGlyph{noteheads.d1fa}</code>
◡	<code>\lilyGlyph{noteheads.d1faFunk}</code>
◡	<code>\lilyGlyph{noteheads.d1faThin}</code>
◡	<code>\lilyGlyph{noteheads.d1faWalker}</code>
◡	<code>\lilyGlyph{noteheads.d1miFunk}</code>
◡	<code>\lilyGlyph{noteheads.d1re}</code>
◡	<code>\lilyGlyph{noteheads.d1reFunk}</code>
◡	<code>\lilyGlyph{noteheads.d1reThin}</code>
◡	<code>\lilyGlyph{noteheads.d1reWalker}</code>
◡	<code>\lilyGlyph{noteheads.d1ti}</code>
◡	<code>\lilyGlyph{noteheads.d1tiFunk}</code>
◡	<code>\lilyGlyph{noteheads.d1tiThin}</code>
◡	<code>\lilyGlyph{noteheads.d1tiWalker}</code>
◡	<code>\lilyGlyph{noteheads.d1triangle}</code>
◡	<code>\lilyGlyph{noteheads.d2do}</code>
◡	<code>\lilyGlyph{noteheads.d2doFunk}</code>
◡	<code>\lilyGlyph{noteheads.d2doThin}</code>
◡	<code>\lilyGlyph{noteheads.d2doWalker}</code>
◡	<code>\lilyGlyph{noteheads.d2fa}</code>
◡	<code>\lilyGlyph{noteheads.d2faFunk}</code>
◡	<code>\lilyGlyph{noteheads.d2faThin}</code>
◡	<code>\lilyGlyph{noteheads.d2faWalker}</code>
◡	<code>\lilyGlyph{noteheads.d2kievan}</code>
◡	<code>\lilyGlyph{noteheads.d2re}</code>
◡	<code>\lilyGlyph{noteheads.d2reFunk}</code>
◡	<code>\lilyGlyph{noteheads.d2reThin}</code>
◡	<code>\lilyGlyph{noteheads.d2reWalker}</code>
◡	<code>\lilyGlyph{noteheads.d2ti}</code>
◡	<code>\lilyGlyph{noteheads.d2tiFunk}</code>
◡	<code>\lilyGlyph{noteheads.d2tiThin}</code>
◡	<code>\lilyGlyph{noteheads.d2tiWalker}</code>
◡	<code>\lilyGlyph{noteheads.d2triangle}</code>
◡	<code>\lilyGlyph{noteheads.d3kievan}</code>
◡	<code>\lilyGlyph{noteheads.dM2}</code>
◡	<code>\lilyGlyph{noteheads.dM2blackmensural}</code>
◡	<code>\lilyGlyph{noteheads.dM2mensural}</code>
◡	<code>\lilyGlyph{noteheads.dM2neomensural}</code>
◡	<code>\lilyGlyph{noteheads.dM2semimensural}</code>
◡	<code>\lilyGlyph{noteheads.dM3blackmensural}</code>

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	<code>\lilyGlyph{noteheads.dM3mensural}</code>
	<code>\lilyGlyph{noteheads.dM3neomensural}</code>
	<code>\lilyGlyph{noteheads.dM3semimensural}</code>
	<code>\lilyGlyph{noteheads.drM2mensural}</code>
	<code>\lilyGlyph{noteheads.drM2neomensural}</code>
	<code>\lilyGlyph{noteheads.drM2semimensural}</code>
	<code>\lilyGlyph{noteheads.drM3mensural}</code>
	<code>\lilyGlyph{noteheads.drM3neomensural}</code>
	<code>\lilyGlyph{noteheads.drM3semimensural}</code>
	<code>\lilyGlyph{noteheads.s0}</code>
	<code>\lilyGlyph{noteheads.s0blackmensural}</code>
	<code>\lilyGlyph{noteheads.s0blackpetrucci}</code>
	<code>\lilyGlyph{noteheads.s0cross}</code>
	<code>\lilyGlyph{noteheads.s0diamond}</code>
	<code>\lilyGlyph{noteheads.s0do}</code>
	<code>\lilyGlyph{noteheads.s0doThin}</code>
	<code>\lilyGlyph{noteheads.s0doWalker}</code>
	<code>\lilyGlyph{noteheads.s0faWalker}</code>
	<code>\lilyGlyph{noteheads.s0harmonic}</code>
	<code>\lilyGlyph{noteheads.s0kievan}</code>
	<code>\lilyGlyph{noteheads.s0la}</code>
	<code>\lilyGlyph{noteheads.s0laFunk}</code>
	<code>\lilyGlyph{noteheads.s0laThin}</code>
	<code>\lilyGlyph{noteheads.s0laWalker}</code>
	<code>\lilyGlyph{noteheads.s0mensural}</code>
	<code>\lilyGlyph{noteheads.s0mi}</code>
	<code>\lilyGlyph{noteheads.s0miMirror}</code>
	<code>\lilyGlyph{noteheads.s0miThin}</code>
	<code>\lilyGlyph{noteheads.s0miWalker}</code>
	<code>\lilyGlyph{noteheads.s0neomensural}</code>
	<code>\lilyGlyph{noteheads.s0petrucci}</code>
	<code>\lilyGlyph{noteheads.s0re}</code>
	<code>\lilyGlyph{noteheads.s0reThin}</code>
	<code>\lilyGlyph{noteheads.s0reWalker}</code>
	<code>\lilyGlyph{noteheads.s0slash}</code>
	<code>\lilyGlyph{noteheads.s0sol}</code>
	<code>\lilyGlyph{noteheads.s0solFunk}</code>
	<code>\lilyGlyph{noteheads.s0ti}</code>
	<code>\lilyGlyph{noteheads.s0tiThin}</code>
	<code>\lilyGlyph{noteheads.s0tiWalker}</code>
	<code>\lilyGlyph{noteheads.s0triangle}</code>
	<code>\lilyGlyph{noteheads.s1}</code>
	<code>\lilyGlyph{noteheads.s1blackpetrucci}</code>
	<code>\lilyGlyph{noteheads.s1cross}</code>
	<code>\lilyGlyph{noteheads.s1diamond}</code>
	<code>\lilyGlyph{noteheads.s1kievan}</code>
	<code>\lilyGlyph{noteheads.s1la}</code>
	<code>\lilyGlyph{noteheads.s1laFunk}</code>
	<code>\lilyGlyph{noteheads.s1laThin}</code>
	<code>\lilyGlyph{noteheads.s1laWalker}</code>
	<code>\lilyGlyph{noteheads.s1mensural}</code>
	<code>\lilyGlyph{noteheads.s1mi}</code>
	<code>\lilyGlyph{noteheads.s1miMirror}</code>

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$\diamond$ \lilyGlyph{noteheads.s1miThin}
 $\diamond$ \lilyGlyph{noteheads.s1miWalker}
 $\diamond$ \lilyGlyph{noteheads.s1neomensural}
 $\diamond$ \lilyGlyph{noteheads.s1petrucci}
 $\diagup$ \lilyGlyph{noteheads.s1slash}
 $\circ$ \lilyGlyph{noteheads.s1sol}
 $\circ$ \lilyGlyph{noteheads.s1solFunk}
 $\bullet$ \lilyGlyph{noteheads.s2}
 $\blacklozenge$ \lilyGlyph{noteheads.s2blackpetrucci}
 $\times$ \lilyGlyph{noteheads.s2cross}
 $\blacklozenge$ \lilyGlyph{noteheads.s2diamond}
 $\blacklozenge$ \lilyGlyph{noteheads.s2harmonic}
 $\blacksquare$ \lilyGlyph{noteheads.s2la}
 $\blacksquare$ \lilyGlyph{noteheads.s2laFunk}
 $\blacksquare$ \lilyGlyph{noteheads.s2laThin}
 $\blacksquare$ \lilyGlyph{noteheads.s2laWalker}
 $\cdot$ \lilyGlyph{noteheads.s2mensural}
 $\blacklozenge$ \lilyGlyph{noteheads.s2mi}
 $\blacklozenge$ \lilyGlyph{noteheads.s2miFunk}
 $\blacklozenge$ \lilyGlyph{noteheads.s2miMirror}
 $\blacklozenge$ \lilyGlyph{noteheads.s2miThin}
 $\blacklozenge$ \lilyGlyph{noteheads.s2miWalker}
 $\blacklozenge$ \lilyGlyph{noteheads.s2neomensural}
 $\blacklozenge$ \lilyGlyph{noteheads.s2petrucci}
 $/$ \lilyGlyph{noteheads.s2slash}
 $\bullet$ \lilyGlyph{noteheads.s2sol}
 $\bullet$ \lilyGlyph{noteheads.s2solFunk}
 $\otimes$ \lilyGlyph{noteheads.s2xcircle}
 $\negthickspace$ \lilyGlyph{noteheads.shufnagel.lpes}
 $\blacklozenge$ \lilyGlyph{noteheads.shufnagel.punctum}
 $\uparrow$ \lilyGlyph{noteheads.shufnagel.virga}
 M \lilyGlyph{noteheads.sM1}
 M \lilyGlyph{noteheads.sM1blackmensural}
 M \lilyGlyph{noteheads.sM1double}
 M \lilyGlyph{noteheads.sM1kievan}
 M \lilyGlyph{noteheads.sM1mensural}
 M \lilyGlyph{noteheads.sM1neomensural}
 M \lilyGlyph{noteheads.sM1semimensural}
 M \lilyGlyph{noteheads.sM2blackligmensural}
 M \lilyGlyph{noteheads.sM2kievan}
 M \lilyGlyph{noteheads.sM2ligmensural}
 M \lilyGlyph{noteheads.sM2semiligmensural}
 M \lilyGlyph{noteheads.sM3blackligmensural}
 M \lilyGlyph{noteheads.sM3ligmensural}
 M \lilyGlyph{noteheads.sM3semiligmensural}
 $\blacklozenge$ \lilyGlyph{noteheads.smedicaea.inclinatum}
 $\blacksquare$ \lilyGlyph{noteheads.smedicaea.punctum}
 M \lilyGlyph{noteheads.smedicaea.rvirga}
 M \lilyGlyph{noteheads.smedicaea.virga}
 M \lilyGlyph{noteheads.sr1kievan}
 M \lilyGlyph{noteheads.srM1mensural}
 M \lilyGlyph{noteheads.srM1neomensural}
 M \lilyGlyph{noteheads.srM1semimensural}

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⌠	\lilyGlyph{noteheads.srM2ligmensural}
⌡	\lilyGlyph{noteheads.srM2semiligmensural}
⌢	\lilyGlyph{noteheads.srM3ligmensural}
⌣	\lilyGlyph{noteheads.srM3semiligmensural}
⌤	\lilyGlyph{noteheads.ssolesmes.auct.asc}
⌥	\lilyGlyph{noteheads.ssolesmes.auct.desc}
⌦	\lilyGlyph{noteheads.ssolesmes.incl.auctum}
⌧	\lilyGlyph{noteheads.ssolesmes.incl.parvum}
⌨	\lilyGlyph{noteheads.ssolesmes.oriscus}
〈	\lilyGlyph{noteheads.ssolesmes.stropha}
〉	\lilyGlyph{noteheads.ssolesmes.stropha.aucta}
⌫	\lilyGlyph{noteheads.svaticana.cephalicus}
⌬	\lilyGlyph{noteheads.svaticana.epiphonus}
⌭	\lilyGlyph{noteheads.svaticana.inclinatum}
⌮	\lilyGlyph{noteheads.svaticana.inner.cephalicus}
⌯	\lilyGlyph{noteheads.svaticana.linea.punctum}
⌰	\lilyGlyph{noteheads.svaticana.linea.punctum.cavum}
⌱	\lilyGlyph{noteheads.svaticana.lpes}
⌲	\lilyGlyph{noteheads.svaticana.plica}
⌳	\lilyGlyph{noteheads.svaticana.punctum}
⌴	\lilyGlyph{noteheads.svaticana.punctum.cavum}
⌵	\lilyGlyph{noteheads.svaticana.quilisma}
⌶	\lilyGlyph{noteheads.svaticana.reverse.plica}
⌷	\lilyGlyph{noteheads.svaticana.reverse.vplica}
⌸	\lilyGlyph{noteheads.svaticana.upes}
⌹	\lilyGlyph{noteheads.svaticana.vepiphonus}
⌺	\lilyGlyph{noteheads.svaticana.vlpes}
⌻	\lilyGlyph{noteheads.svaticana.vplica}
⌼	\lilyGlyph{noteheads.svaticana.vupes}
⌽	\lilyGlyph{noteheads.u0doFunk}
⌾	\lilyGlyph{noteheads.u0fa}
⌿	\lilyGlyph{noteheads.u0faFunk}
Ⓚ	\lilyGlyph{noteheads.u0faThin}
Ⓛ	\lilyGlyph{noteheads.u0miFunk}
Ⓜ	\lilyGlyph{noteheads.u0reFunk}
Ⓨ	\lilyGlyph{noteheads.u0tiFunk}
ⓐ	\lilyGlyph{noteheads.u1do}
ⓑ	\lilyGlyph{noteheads.u1doFunk}
ⓒ	\lilyGlyph{noteheads.u1doThin}
ⓓ	\lilyGlyph{noteheads.u1doWalker}
ⓔ	\lilyGlyph{noteheads.u1fa}
ⓕ	\lilyGlyph{noteheads.u1faFunk}
ⓖ	\lilyGlyph{noteheads.u1faThin}
ⓗ	\lilyGlyph{noteheads.u1faWalker}
Ⓢ	\lilyGlyph{noteheads.u1miFunk}
Ⓣ	\lilyGlyph{noteheads.u1re}
Ⓤ	\lilyGlyph{noteheads.u1reFunk}
Ⓥ	\lilyGlyph{noteheads.u1reThin}
Ⓦ	\lilyGlyph{noteheads.u1reWalker}
Ⓩ	\lilyGlyph{noteheads.u1ti}
ⓐ	\lilyGlyph{noteheads.u1tiFunk}
ⓑ	\lilyGlyph{noteheads.u1tiThin}
ⓓ	\lilyGlyph{noteheads.u1tiWalker}

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➤	<code>\lilyGlyph{noteheads.u1triangle}</code>
▲	<code>\lilyGlyph{noteheads.u2do}</code>
•	<code>\lilyGlyph{noteheads.u2doFunk}</code>
▲	<code>\lilyGlyph{noteheads.u2doThin}</code>
▪	<code>\lilyGlyph{noteheads.u2doWalker}</code>
◄	<code>\lilyGlyph{noteheads.u2fa}</code>
◄	<code>\lilyGlyph{noteheads.u2faFunk}</code>
◄	<code>\lilyGlyph{noteheads.u2faThin}</code>
◄◄	<code>\lilyGlyph{noteheads.u2faWalker}</code>
└	<code>\lilyGlyph{noteheads.u2kievan}</code>
•	<code>\lilyGlyph{noteheads.u2re}</code>
➤	<code>\lilyGlyph{noteheads.u2reFunk}</code>
•	<code>\lilyGlyph{noteheads.u2reThin}</code>
•	<code>\lilyGlyph{noteheads.u2reWalker}</code>
◆	<code>\lilyGlyph{noteheads.u2ti}</code>
•	<code>\lilyGlyph{noteheads.u2tiFunk}</code>
◆	<code>\lilyGlyph{noteheads.u2tiThin}</code>
•	<code>\lilyGlyph{noteheads.u2tiWalker}</code>
◄	<code>\lilyGlyph{noteheads.u2triangle}</code>
└	<code>\lilyGlyph{noteheads.u3kievan}</code>
└	<code>\lilyGlyph{noteheads.uM2}</code>
└	<code>\lilyGlyph{noteheads.uM2blackmensural}</code>
└	<code>\lilyGlyph{noteheads.uM2mensural}</code>
└	<code>\lilyGlyph{noteheads.uM2neomensural}</code>
└	<code>\lilyGlyph{noteheads.uM2semimensural}</code>
└	<code>\lilyGlyph{noteheads.uM3blackmensural}</code>
└	<code>\lilyGlyph{noteheads.uM3mensural}</code>
└	<code>\lilyGlyph{noteheads.uM3neomensural}</code>
└	<code>\lilyGlyph{noteheads.uM3semimensural}</code>
└	<code>\lilyGlyph{noteheads.urM2mensural}</code>
└	<code>\lilyGlyph{noteheads.urM2neomensural}</code>
└	<code>\lilyGlyph{noteheads.urM2semimensural}</code>
└	<code>\lilyGlyph{noteheads.urM3mensural}</code>
└	<code>\lilyGlyph{noteheads.urM3neomensural}</code>
└	<code>\lilyGlyph{noteheads.urM3semimensural}</code>

TABLE 448: *lily_{ly}pbs* Named Accordion Symbols

	<code>\lilyGlyph{accordion.bayanbass}</code>		<code>\lilyGlyph{accordion.oldEE}</code>
	<code>\lilyGlyph{accordion.discant}</code>		<code>\lilyGlyph{accordion.pull}</code>
	<code>\lilyGlyph{accordion.dot}</code>		<code>\lilyGlyph{accordion.push}</code>
	<code>\lilyGlyph{accordion.freebass}</code>		<code>\lilyGlyph{accordion.stdbass}</code>

lily_{ly}pbs defines shorter names for all of these symbols except `\lilyGlyph{accordion.dot}`. See Table 439.

TABLE 449: *lily²lyp^{bs}* Named Accidentals

⌘	<code>\lilyGlyph{accidentals.doublesharp}</code>
♭	<code>\lilyGlyph{accidentals.flat}</code>
↕	<code>\lilyGlyph{accidentals.flat.arrowboth}</code>
↴	<code>\lilyGlyph{accidentals.flat.arrowdown}</code>
↵	<code>\lilyGlyph{accidentals.flat.arrowup}</code>
/	<code>\lilyGlyph{accidentals.flat.slash}</code>
//	<code>\lilyGlyph{accidentals.flat.slashslash}</code>
≡	<code>\lilyGlyph{accidentals.flatflat}</code>
≡/	<code>\lilyGlyph{accidentals.flatflat.slash}</code>
ℳ	<code>\lilyGlyph{accidentals.hufnagelM1}</code>
ℵ	<code>\lilyGlyph{accidentals.kievan1}</code>
ℵ	<code>\lilyGlyph{accidentals.kievanM1}</code>
(	<code>\lilyGlyph{accidentals.leftparen}</code>
⋈	<code>\lilyGlyph{accidentals.medicaeaM1}</code>
×	<code>\lilyGlyph{accidentals.mensural1}</code>
ℳ	<code>\lilyGlyph{accidentals.mensuralM1}</code>
↵	<code>\lilyGlyph{accidentals.mirroredflat}</code>
↵\	<code>\lilyGlyph{accidentals.mirroredflat.backslash}</code>
↵♭	<code>\lilyGlyph{accidentals.mirroredflat.flat}</code>
♮	<code>\lilyGlyph{accidentals.natural}</code>
↕	<code>\lilyGlyph{accidentals.natural.arrowboth}</code>
↴	<code>\lilyGlyph{accidentals.natural.arrowdown}</code>
↵	<code>\lilyGlyph{accidentals.natural.arrowup}</code>
)	<code>\lilyGlyph{accidentals.rightparen}</code>
#	<code>\lilyGlyph{accidentals.sharp}</code>
↕	<code>\lilyGlyph{accidentals.sharp.arrowboth}</code>
↴	<code>\lilyGlyph{accidentals.sharp.arrowdown}</code>
↵	<code>\lilyGlyph{accidentals.sharp.arrowup}</code>
/	<code>\lilyGlyph{accidentals.sharp.slashslash.stem}</code>
##	<code>\lilyGlyph{accidentals.sharp.slashslash.stemstemstem}</code>
≡	<code>\lilyGlyph{accidentals.sharp.slashslashslash.stem}</code>
≡	<code>\lilyGlyph{accidentals.sharp.slashslashslash.stemstem}</code>
♮	<code>\lilyGlyph{accidentals.vaticana0}</code>
♮	<code>\lilyGlyph{accidentals.vaticanaM1}</code>

lily²lyp^{bs} defines shorter names for a few of these symbols. See Table 433.

TABLE 450: *lily²lyp^{bs}* Named Arrowheads

➤	<code>\lilyGlyph{arrowheads.close.01}</code>	>	<code>\lilyGlyph{arrowheads.open.01}</code>
➤	<code>\lilyGlyph{arrowheads.close.0M1}</code>	<	<code>\lilyGlyph{arrowheads.open.0M1}</code>
➤	<code>\lilyGlyph{arrowheads.close.11}</code>	^	<code>\lilyGlyph{arrowheads.open.11}</code>
➤	<code>\lilyGlyph{arrowheads.close.1M1}</code>	∨	<code>\lilyGlyph{arrowheads.open.1M1}</code>

TABLE 451: *lilyglyphs* Named Alphanumerics and Punctuation

0	<code>\lilyGlyph{zero}</code>	4	<code>\lilyGlyph{four}</code>	8	<code>\lilyGlyph{eight}</code>
1	<code>\lilyGlyph{one}</code>	5	<code>\lilyGlyph{five}</code>	9	<code>\lilyGlyph{nine}</code>
2	<code>\lilyGlyph{two}</code>	6	<code>\lilyGlyph{six}</code>		
3	<code>\lilyGlyph{three}</code>	7	<code>\lilyGlyph{seven}</code>		
<i>f</i>	<code>\lilyGlyph{f}</code>	<i>p</i>	<code>\lilyGlyph{p}</code>	<i>s</i>	<code>\lilyGlyph{s}</code>
<i>m</i>	<code>\lilyGlyph{m}</code>	<i>r</i>	<code>\lilyGlyph{r}</code>	<i>z</i>	<code>\lilyGlyph{z}</code>
,	<code>\lilyGlyph{comma}</code>	.	<code>\lilyGlyph{period}</code>		
-	<code>\lilyGlyph{hyphen}</code>	+	<code>\lilyGlyph{plus}</code>		

See Table 435 for an alternative way to typeset dynamics letters. *lilyglyphs* additionally provides a `\lilyText` command that can be useful for typesetting groups of the preceding symbols. See the *lilyglyphs* documentation for more information.

TABLE 452: Miscellaneous *lilyglyphs* Named Musical Symbols

⧿	<code>\lilyGlyph{brackettips.down}</code>	.	<code>\lilyGlyph{dots.dotvaticana}</code>
⧻	<code>\lilyGlyph{brackettips.up}</code>	⌵	<code>\lilyGlyph{ties.lyric.default}</code>
.	<code>\lilyGlyph{dots.dot}</code>	⌵	<code>\lilyGlyph{ties.lyric.short}</code>
•	<code>\lilyGlyph{dots.dotkievan}</code>		

8 Other symbols

The following are all the symbols that didn't fit neatly or unambiguously into any of the previous sections. (Do weather symbols belong under "Science and technology"? Should dice be considered "mathematics"?) While some of the tables contain clearly related groups of symbols (e.g., symbols related to various board games), others represent motley assortments of whatever the font designer felt like drawing.

TABLE 453: textcomp Genealogical Symbols

★	<code>\textborn</code>	∅	<code>\textdivorced</code>	∞	<code>\textmarried</code>
†	<code>\textdied</code>	🌿	<code>\textleaf</code>		

TABLE 454: wasysym General Symbols

🎮	<code>\ataribox</code>	🕒	<code>\clock</code>	◀	<code>\LEFTarrow</code>	▶	<code>\RIGHTarrow</code>
🔔	<code>\bell</code>	∅	<code>\diameter</code>	↶	<code>\leftturn</code>	↷	<code>\rightturn</code>
☹	<code>\blacksmiley</code>	▼	<code>\DOWNarrow</code>	⚡	<code>\lightning</code>	☺	<code>\smiley</code>
🎩	<code>\Bowtie</code>	☹	<code>\frownie</code>	☎	<code>\phone</code>	☼	<code>\sun</code>
!	<code>\brokenvert</code>	⊗	<code>\invdiameter</code>	☞	<code>\pointer</code>	▲	<code>\UParrow</code>
✓	<code>\checked</code>	✱	<code>\kreuz</code>	📻	<code>\recorder</code>	⬠	<code>\wasylounge</code>

TABLE 455: manfnt Dangerous Bend Symbols

⚡	<code>\dbend</code>	⚡	<code>\lhbend</code>	⚡	<code>\reversedvideobend</code>
---	---------------------	---	----------------------	---	---------------------------------

Note that these symbols descend far beneath the baseline. `manfnt` also defines non-descending versions, which it calls, correspondingly, `\textdbend`, `\textlhbend`, and `\textreversedvideobend`.

TABLE 456: Miscellaneous manfnt Symbols

👤	<code>\manboldkidney</code>	👤	<code>\manpenkidney</code>
🌀	<code>\manconcentriccircles</code>	🌀	<code>\manquadrifolium</code>
🔶	<code>\manconcentricdiamond</code>	↷	<code>\manquartercircle</code>
📦	<code>\mancone</code>	🌀	<code>\manrotatedquadrifolium</code>
📦	<code>\mancube</code>	↷	<code>\manrotatedquartercircle</code>
↗	<code>\manerrarrow</code>	☆	<code>\manstar</code>
📦	<code>\manfilledquartercircle</code>	📏	<code>\mantiltpennib</code>
📏	<code>\manhpennib</code>	▼	<code>\mantriangledown</code>
📦	<code>\manimpossiblecube</code>	▶	<code>\mantriangleright</code>
👤	<code>\mankidney</code>	▲	<code>\mantriangleup</code>
👤	<code>\manlhpenkidney</code>	📏	<code>\manvpennib</code>

TABLE 457: marvosym Media Control Symbols

▶	<code>\Forward</code>	▼	<code>\MoveDown</code>	⏮	<code>\RewindToIndex</code>	⏶	<code>\ToTop</code>
▶▶	<code>\ForwardToEnd</code>	▲	<code>\MoveUp</code>	⏮	<code>\RewindToStart</code>		
▶▶▶	<code>\ForwardToIndex</code>	◀	<code>\Rewind</code>	⏭	<code>\ToBottom</code>		

TABLE 458: marvosym Laundry Symbols

	<code>\AtForty</code>		<code>\Handwash</code>		<code>\ShortNinetyFive</code>
	<code>\AtNinetyFive</code>		<code>\IroningI</code>		<code>\ShortSixty</code>
	<code>\AtSixty</code>		<code>\IroningII</code>		<code>\ShortThirty</code>
	<code>\Bleech</code>		<code>\IroningIII</code>		<code>\SpecialForty</code>
	<code>\CleaningA</code>		<code>\NoBleech</code>		<code>\Tumbler</code>
	<code>\CleaningF</code>		<code>\NoChemicalCleaning</code>		<code>\WashCotton</code>
	<code>\CleaningFF</code>		<code>\NoIroning</code>		<code>\WashSynthetics</code>
	<code>\CleaningP</code>		<code>\NoTumbler</code>		<code>\WashWool</code>
	<code>\CleaningPP</code>		<code>\ShortFifty</code>		
	<code>\Dontwash</code>		<code>\ShortForty</code>		

TABLE 459: marvosym Information Symbols

	<code>\Bicycle</code>		<code>\Gentsroom</code>		<code>\PointingHand</code>
	<code>\ClockLogo</code>		<code>\Industry</code>		<code>\Wheelchair</code>
	<code>\Coffeecup</code>		<code>\Info</code>		<code>\WritingHand</code>
	<code>\Football</code>		<code>\Ladiesroom</code>		

TABLE 460: Other marvosym Symbols

	<code>\Ankh</code>		<code>\Bouquet</code>		<code>\Heart</code>		<code>\PeaceDove</code>
	<code>\Bat</code>		<code>\Celtcross</code>		<code>\ManFace</code>		<code>\Smiley</code>
	<code>\BOLogo</code>		<code>\CircledA</code>		<code>\MineSign</code>		<code>\WomanFace</code>
	<code>\BOLogoL</code>		<code>\Cross</code>		<code>\Mundus</code>		<code>\Yinyang</code>
	<code>\BOLogoP</code>		<code>\Frowny</code>		<code>\MVAt</code>		

TABLE 461: Miscellaneous universa Symbols

	<code>\bauforms</code>		<code>\bauhead</code>
--	------------------------	--	-----------------------

TABLE 462: Miscellaneous fourier Symbols

	<code>\bomb</code>		<code>\grimace</code>		<code>\texttthing*</code>		<code>\textxswup*</code>
	<code>\danger</code>		<code>\noway</code>		<code>\textxsdown*</code>		

* fourier defines math-mode synonyms for a few of the preceding symbols:
`\thething` (“”), `\xswordsup` (“”), and `\xswordsdown` (“”).

TABLE 463: ifsym Weather Symbols

	<code>\Cloud</code>		<code>\Hail</code>		<code>\Sleet</code>		<code>\WeakRain</code>
	<code>\FilledCloud</code>		<code>\HalfSun</code>		<code>\Snow</code>		<code>\WeakRainCloud</code>
	<code>\FilledRainCloud</code>		<code>\Lightning</code>		<code>\SnowCloud</code>		<code>\FilledSnowCloud</code>
	<code>\FilledSunCloud</code>		<code>\NoSun</code>		<code>\Sun</code>		
	<code>\FilledWeakRainCloud</code>		<code>\Rain</code>		<code>\SunCloud</code>		
	<code>\Fog</code>		<code>\RainCloud</code>		<code>\ThinFog</code>		

In addition, `\Thermo{0}...\Thermo{6}` produce thermometers that are between 0/6 and 6/6 full of mercury:       

Similarly, `\wind{<sun>}{<angle>}{<strength>}` will draw wind symbols with a given amount of sun (0–4), a given angle (in degrees), and a given strength in km/h (0–100). For example, `\wind{0}{0}{0}` produces “”, `\wind{2}{0}{0}` produces “”, and `\wind{4}{0}{100}` produces “”.

TABLE 464: ifsym Alpine Symbols

	<code>\SummitSign</code>		<code>\Summit</code>		<code>\SurveySign</code>		<code>\HalfFilledHut</code>
	<code>\StoneMan</code>		<code>\Mountain</code>		<code>\Joch</code>		<code>\VarSummit</code>
	<code>\Hut</code>		<code>\IceMountain</code>		<code>\Flag</code>		
	<code>\FilledHut</code>		<code>\VarMountain</code>		<code>\VarFlag</code>		
	<code>\Village</code>		<code>\VarIceMountain</code>		<code>\Tent</code>		

TABLE 465: ifsym Clocks

	<code>\Interval</code>		<code>\StopWatchStart</code>		<code>\VarClock</code>		<code>\Wecker</code>
	<code>\StopWatchEnd</code>		<code>\Taschenuhr</code>		<code>\VarTaschenuhr</code>		

ifsym also exports a `\showclock` macro. `\showclock{<hours>}{<minutes>}` outputs a clock displaying the corresponding time. For instance, “`\showclock{5}{40}`” produces “”. `<hours>` must be an integer from 0 to 11, and `<minutes>` must be an integer multiple of 5 from 0 to 55.

TABLE 466: Other ifsym Symbols

	<code>\FilledSectioningDiamond</code>		<code>\Letter</code>		<code>\Radiation</code>
	<code>\Fire</code>		<code>\PaperLandscape</code>		<code>\SectioningDiamond</code>
	<code>\Irritant</code>		<code>\PaperPortrait</code>		<code>\Telephone</code>
	<code>\Cube{1}</code>		<code>\Cube{3}</code>		<code>\Cube{5}</code>
	<code>\Cube{2}</code>		<code>\Cube{4}</code>		<code>\Cube{6}</code>
	<code>\StrokeOne</code>		<code>\StrokeThree</code>		<code>\StrokeFive</code>
	<code>\StrokeTwo</code>		<code>\StrokeFour</code>		

TABLE 467: clock Clocks

<code>\ClockStyle</code>	<code>\ClockFramefalse</code>	<code>\ClockFrametrue</code>
0		
1		
2		
3		

The `clock` package provides a `\clock` command to typeset an arbitrary time on an analog clock (and `\clocktime` to typeset the document’s build time). For example, the clocks in the above table were produced with `\clock{15}{41}`. Clock symbols are composed from a font of clock-face fragments using one of four values for `\ClockStyle` and either `\ClockFramefalse` or `\ClockFrametrue` as illustrated above. See the `clock` documentation for more information.

TABLE 468: epsdice Dice

 <code>\epsdice{1}</code>	 <code>\epsdice{3}</code>	 <code>\epsdice{5}</code>
 <code>\epsdice{2}</code>	 <code>\epsdice{4}</code>	 <code>\epsdice{6}</code>

TABLE 469: hhcount Dice

 <code>\hhdice{1}</code>	 <code>\hhdice{3}</code>	 <code>\hhdice{5}</code>
 <code>\hhdice{2}</code>	 <code>\hhdice{4}</code>	 <code>\hhdice{6}</code>

The `\hhdice` command accepts values larger than 6. For example, “`\hhdice{47}`” produces “”.

TABLE 470: stix Dice

 <code>\stixdice{i}</code>	 <code>\stixdice{iii}</code>	 <code>\stixdice{v}</code>
 <code>\stixdice{ii}</code>	 <code>\stixdice{iv}</code>	 <code>\stixdice{vi}</code>

TABLE 471: `bullcntr` Tally Markers

<code>\bullcntr{⟨1⟩}</code>		<code>\bullcntr{⟨4⟩}</code>		<code>\bullcntr{⟨7⟩}</code>
<code>\bullcntr{⟨2⟩}</code>		<code>\bullcntr{⟨5⟩}</code>		<code>\bullcntr{⟨8⟩}</code>
<code>\bullcntr{⟨3⟩}</code>		<code>\bullcntr{⟨6⟩}</code>		<code>\bullcntr{⟨9⟩}</code>

The notation for `\bullcntr` used in the above bears explanation. `\bullcntr` does not take a number as its argument but rather a L^AT_EX counter, whose value it uses to typeset a tally marker. “`\bullcntr{⟨3⟩}`”, for example, means to invoke `\bullcntr` with a counter whose value is 3. (`\bullcntr` usage is therefore akin to that of L^AT_EX’s `\fnsymbol`.) The intention is to use `\bullcntr` indirectly via the `bulldenum` package’s `bulldenum` environment, which is a variation on the `enumerate` environment that uses `\bullcntr` to typeset the labels.

To typeset individual tally markers, one can define a helper command:

```
\newcounter{bull}
\newcommand{\showbullcntr}[1]{%
  \setcounter{bull}{#1}%
  \bullcntr{bull}%
}
```

`bullcntr`’s package options `smallctrbull`, `largectrbull`, and `heartctrbull` and corresponding commands `\smallctrbull`, `\largectrbull`, and `\heartctrbull` control the formatting of each tally marker:

	small	large	heart
<code>\bullcntr{⟨5⟩}</code>			

The default is `smartctrbull` (`\smartctrbull`), which maps counter values 1–5 to large pips and 6–9 to small pips. It is also possible to use arbitrary symbols for `\bullcntr`’s pips. See the `bullcntr` documentation for more information.

TABLE 472: `hhcount` Tally Markers

<code>\fcscore{1}</code>		<code>\fcscore{3}</code>		<code>\fcscore{5}</code>
<code>\fcscore{2}</code>		<code>\fcscore{4}</code>		

The `\fcscore` command accepts values larger than 5. For example, “`\fcscore{47}`” produces “`### ### ### ### ### ### ### ###`”.

TABLE 473: `dozenal` Tally Markers

<code>\tally{1}</code>		<code>\tally{3}</code>		<code>\tally{5}</code>
<code>\tally{2}</code>		<code>\tally{4}</code>		<code>\tally{6}</code>

TABLE 474: skull Symbols

 \skull

TABLE 475: Non-Mathematical mathabx Symbols

 \rip

TABLE 476: skak Chess Informator Symbols

	\bbetter		\doublepawns		\seppawns
	\bdecisive		\ending		\shortcastling
	\betteris		\equal		\timelimit
	\bishoppair		\file		\unclear
	\bupperhand		\kside		\unitedpawns
	\capturesymbol		\longcastling		\various
	\castlingchar		\markera		\wbetter
	\castlinghyphen		\markerb		\wdecisive
	\centre		\mate		\weakpt
	\checksymbol		\morepawns		\with
	\chesscomment		\moreroom		\withattack
	\chessetc		\novelty		\withidea
	\chesssee		\onlymove		\withininit
	\compensation		\opposbishops		\without
	\counterplay		\passedpawn		\wupperhand
	\devadvantage		\qside		\zugzwang
	\diagonal		\samebishops		

TABLE 477: skak Chess Pieces and Chessboard Squares

	<code>\BlackBishopOnBlack</code>		<code>\BlackRookOnBlack</code>		<code>\WhiteKingOnBlack</code>
	<code>\BlackBishopOnWhite</code>		<code>\BlackRookOnWhite</code>		<code>\WhiteKingOnWhite</code>
	<code>\BlackEmptySquare</code>		<code>\symbishop</code>		<code>\WhiteKnightOnBlack</code>
	<code>\BlackKingOnBlack</code>		<code>\symking</code>		<code>\WhiteKnightOnWhite</code>
	<code>\BlackKingOnWhite</code>		<code>\symknight</code>		<code>\WhitePawnOnBlack</code>
	<code>\BlackKnightOnBlack</code>		<code>\sympawn</code>		<code>\WhitePawnOnWhite</code>
	<code>\BlackKnightOnWhite</code>		<code>\symqueen</code>		<code>\WhiteQueenOnBlack</code>
	<code>\BlackPawnOnBlack</code>		<code>\symrook</code>		<code>\WhiteQueenOnWhite</code>
	<code>\BlackPawnOnWhite</code>		<code>\WhiteBishopOnBlack</code>		<code>\WhiteRookOnBlack</code>
	<code>\BlackQueenOnBlack</code>		<code>\WhiteBishopOnWhite</code>		<code>\WhiteRookOnWhite</code>
	<code>\BlackQueenOnWhite</code>		<code>\WhiteEmptySquare</code>		

The skak package also provides commands for drawing complete chessboards. See the skak documentation for more information.

TABLE 478: igo Go Symbols

	<code>\blackstone[\igocircle]</code>		<code>\whitestone[\igocircle]</code>
	<code>\blackstone[\igocross]</code>		<code>\whitestone[\igocross]</code>
	<code>\blackstone[\igonone]</code>		<code>\whitestone[\igonone]</code>
	<code>\blackstone[\igosquare]</code>		<code>\whitestone[\igosquare]</code>
	<code>\blackstone[\igotriangle]</code>		<code>\whitestone[\igotriangle]</code>

In addition to the symbols shown above, igo's `\blackstone` and `\whitestone` commands accept numbers from 1 to 99 and display them circled as ❶, ❷, ❸, ..., ❹❹ and ❶, ❷, ❸, ..., ❹❹, respectively.

The igo package is intended to typeset complete Go boards (goban). See the igo documentation for more information.

TABLE 479: go Go Symbols

	<code>\botborder</code>		<code>\lftbotcorner</code>		<code>\rttopcorner</code>
	<code>\empty</code>		<code>\lfttopcorner</code>		<code>\square</code>
	<code>\hoshi</code>		<code>\rtborder</code>		<code>\topborder</code>
	<code>\lftborder</code>		<code>\rtbotcorner</code>		<code>\triangle</code>

In addition to the board fragments and stones shown above, go's `\black` and `\white` commands accept numbers from 1 to 253 and display them circled as ❶, ❷, ❸, ..., ❷❹ and ❶, ❷, ❸, ..., ❷❹, respectively. `\black` and `\white` additionally accept `\square` and `\triangle` as arguments, producing and for `\black` and and for `\white`.

The `go` package is intended to typeset complete Go boards (goban). See the `go` documentation for more information.

TABLE 480: metre Metrical Symbols

	<code>\a</code>		<code>\bBm</code>		<code>\cc</code>		<code>\Mbb</code>		<code>\Pppp</code>		<code>\t</code>
	<code>\B</code>		<code>\bbm</code>		<code>\Ccc</code>		<code>\mbbx</code>		<code>\pppp</code>		<code>\tsbm</code>
	<code>\b</code>		<code>\Bbm</code>		<code>\m</code>		<code>\oo</code>		<code>\Ppppp</code>		<code>\tsmb</code>
	<code>\Bb</code>		<code>\bbmb</code>		<code>\M</code>		<code>\p</code>		<code>\ppppp</code>		<code>\tsmm</code>
	<code>\BB</code>		<code>\bbmx</code>		<code>\ma</code>		<code>\pm</code>		<code>\ps</code>		<code>\vppm</code>
	<code>\bb</code>		<code>\bm</code>		<code>\Mb</code>		<code>\pp</code>		<code>\pxp</code>		<code>\vpppm</code>
	<code>\bB</code>		<code>\Bm</code>		<code>\mb</code>		<code>\Pp</code>		<code>\Pxp</code>		<code>\x</code>
	<code>\bba</code>		<code>\c</code>		<code>\mBb</code>		<code>\ppm</code>		<code>\R</code>		
	<code>\bbb</code>		<code>\C</code>		<code>\mbB</code>		<code>\ppp</code>		<code>\r</code>		
	<code>\BBm</code>		<code>\Cc</code>		<code>\mbb</code>		<code>\Ppp</code>		<code>\T</code>		

The preceding symbols are valid only within the argument to the `metre` command.

TABLE 481: metre Small and Large Metrical Symbols

	<code>\anacclasis</code>		<code>\Anacclasis</code>
	<code>\antidiple</code>		<code>\Antidiple</code>
	<code>\antidiple*</code>		<code>\Antidiple*</code>
	<code>\antisigma</code>		<code>\Antisigma</code>
	<code>\asteriscus</code>		<code>\Asteriscus</code>
	<code>\catalexis</code>		<code>\Catalexis</code>
	<code>\diple</code>		<code>\Diple</code>
	<code>\diple*</code>		<code>\Diple*</code>
	<code>\obelus</code>		<code>\Obelus</code>
	<code>\obelus*</code>		<code>\Obelus*</code>
	<code>\respondens</code>		<code>\Respondens</code>
	<code>\terminus</code>		<code>\Terminus</code>
	<code>\terminus*</code>		<code>\Terminus*</code>

TABLE 482: teubner Metrical Symbols

∞	\aeolicbii	⌣	\barbrevis	+	\ipercatal
∞∞	\aeolicbiii	⌢	\bbrevis	—	\longa
∞∞∞	\aeolicbiv	⌣	\brevis	⌢	\ubarbbrevis
×	\anceps	^	\catal	⌣	\ubarbrevis
×	\ancepsdbrevis	⌣	\corona	⌢	\ubarsbrevis
×	\banceps	⌣	\coronainv	⌣	\ubrevislonga
⌢	\barbbrevis	H	\hiatus		

The `teubner` package provides a `\newmetrics` command that helps users combine the preceding symbols as well as other `teubner` symbols. For example, the predefined `\pentam` symbol uses `\newmetrics` to juxtapose six `\longas`, two `\barbbrevises`, four `\brevises`, and a `\dBar` into “`_⌢_⌢_||_⌣_⌣_`”. See the `teubner` documentation for more information.

TABLE 483: dictsym Dictionary Symbols

✈	\dsaeronautical	✈	\dscommercial	✈	\dsmedical
🌾	\dsagricultural	🏰	\ds heraldical	✈	\dsmilitary
🏠	\dsarchitectural	⚖	\dsjuridical	🚂	\dsrailways
🌿	\dsbiological	📖	\dsliterary	⊕	\dstechnical
🧪	\dschemical	ℵ	\ds mathematical		

TABLE 484: simpsons Characters from *The Simpsons*

	\Bart		\Homer		\Maggie		\SNPP
	\Burns		\Lisa		\Marge		

The location of the characters’ pupils can be controlled with the `\Goofy` command. See *A METAFONT of ‘Simpsons’ characters* [Che97] for more information. Also, each of the above can be prefixed with `\Left` to make the character face left instead of right:



TABLE 485: pmboxdraw Box-Drawing Symbols

	<code>\textblock</code>		<code>\textSFli</code>		<code>\textSFxli</code>		<code>\textSFxxiii</code>
	<code>\textdkshade</code>		<code>\textSFlii</code>		<code>\textSFxlii</code>		<code>\textSFxxiv</code>
	<code>\textdnblock</code>		<code>\textSFliii</code>		<code>\textSFxliii</code>		<code>\textSFxxv</code>
	<code>\textlfblock</code>		<code>\textSFliv</code>		<code>\textSFxliv</code>		<code>\textSFxxvi</code>
	<code>\textltshade</code>		<code>\textSFv</code>		<code>\textSFxlix</code>		<code>\textSFxxvii</code>
	<code>\textrtblock</code>		<code>\textSFvi</code>		<code>\textSFxlv</code>		<code>\textSFxxviii</code>
	<code>\textSFi</code>		<code>\textSFvii</code>		<code>\textSFxlvi</code>		<code>\textSFxxxix</code>
	<code>\textSFii</code>		<code>\textSFviii</code>		<code>\textSFxlvii</code>		<code>\textSFxxxvi</code>
	<code>\textSFiii</code>		<code>\textSFx</code>		<code>\textSFxlviii</code>		<code>\textSFxxxvii</code>
	<code>\textSFiv</code>		<code>\textSFxi</code>		<code>\textSFxx</code>		<code>\textSFxxxviii</code>
	<code>\textSFix</code>		<code>\textSFxix</code>		<code>\textSFxxi</code>		<code>\textshade</code>
	<code>\textSF1</code>		<code>\textSFxl</code>		<code>\textSFxxii</code>		<code>\textupblock</code>

Code Page 437 (CP437), which was first utilized by the original IBM PC, contains the set of box-drawing symbols (sides, corners, and intersections of single- and double-ruled boxes) shown above in character positions 176–223. These symbols also appear in the Unicode Box Drawing and Block Element tables.

The `pmboxdraw` package draws the CP437 box-drawing symbols using `TEX` rules (specifically, `\vrule`) instead of with a font and thereby provides the ability to alter both rule width and the separation between rules. See the `pmboxdraw` documentation for more information.

TABLE 486: staves Magical Staves

	<code>\staveI</code>		<code>\staveXXIV</code>		<code>\staveXLVII</code>
	<code>\staveII</code>		<code>\staveXXV</code>		<code>\staveXLVIII</code>
	<code>\staveIII</code>		<code>\staveXXVI</code>		<code>\staveXLIX</code>
	<code>\staveIV</code>		<code>\staveXXVII</code>		<code>\staveL</code>
	<code>\staveV</code>		<code>\staveXXVIII</code>		<code>\staveLI</code>
	<code>\staveVI</code>		<code>\staveXXIX</code>		<code>\staveLII</code>
	<code>\staveVII</code>		<code>\staveXXX</code>		<code>\staveLIII</code>
	<code>\staveVIII</code>		<code>\staveXXXI</code>		<code>\staveLIV</code>
	<code>\staveIX</code>		<code>\staveXXXII</code>		<code>\staveLV</code>
	<code>\staveX</code>		<code>\staveXXXIII</code>		<code>\staveLVI</code>
	<code>\staveXI</code>		<code>\staveXXXIV</code>		<code>\staveLVII</code>

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	<code>\staveXII</code>		<code>\staveXXXV</code>		<code>\staveLVIII</code>
	<code>\staveXIII</code>		<code>\staveXXXVI</code>		<code>\staveLIX</code>
	<code>\staveXIV</code>		<code>\staveXXXVII</code>		<code>\staveLX</code>
	<code>\staveXV</code>		<code>\staveXXXVIII</code>		<code>\staveLXI</code>
	<code>\staveXVI</code>		<code>\staveXXXIX</code>		<code>\staveLXII</code>
	<code>\staveXVII</code>		<code>\staveXL</code>		<code>\staveLXIII</code>
	<code>\staveXVIII</code>		<code>\staveXLI</code>		<code>\staveLXIV</code>
	<code>\staveXIX</code>		<code>\staveXLII</code>		<code>\staveLXV</code>
	<code>\staveXX</code>		<code>\staveXLIII</code>		<code>\staveLXVI</code>
	<code>\staveXXI</code>		<code>\staveXLIV</code>		<code>\staveLXVII</code>
	<code>\staveXXII</code>		<code>\staveXLV</code>		<code>\staveLXVIII</code>
	<code>\staveXXIII</code>		<code>\staveXLVI</code>		

The meanings of these symbols are described on the Web site for the Museum of Icelandic Sorcery and Witchcraft at http://www.galdrasynning.is/index.php?option=com_content&task=category§ionid=5&id=18&Itemid=60 (TinyURL: <http://tinyurl.com/25979m>). For example, `\staveL` (“”) is intended to ward off ghosts and evil spirits.

TABLE 487: pigpen Cipher Symbols

	<code>{\pigpenfont A}</code>		<code>{\pigpenfont J}</code>		<code>{\pigpenfont S}</code>
	<code>{\pigpenfont B}</code>		<code>{\pigpenfont K}</code>		<code>{\pigpenfont T}</code>
	<code>{\pigpenfont C}</code>		<code>{\pigpenfont L}</code>		<code>{\pigpenfont U}</code>
	<code>{\pigpenfont D}</code>		<code>{\pigpenfont M}</code>		<code>{\pigpenfont V}</code>
	<code>{\pigpenfont E}</code>		<code>{\pigpenfont N}</code>		<code>{\pigpenfont W}</code>
	<code>{\pigpenfont F}</code>		<code>{\pigpenfont O}</code>		<code>{\pigpenfont X}</code>
	<code>{\pigpenfont G}</code>		<code>{\pigpenfont P}</code>		<code>{\pigpenfont Y}</code>
	<code>{\pigpenfont H}</code>		<code>{\pigpenfont Q}</code>		<code>{\pigpenfont Z}</code>
	<code>{\pigpenfont I}</code>		<code>{\pigpenfont R}</code>		

TABLE 488: GnA2e Phases of the Moon

	<code>\MoonPha{1}</code>		<code>\MoonPha{2}</code>		<code>\MoonPha{3}</code>		<code>\MoonPha{4}</code>
---	--------------------------	---	--------------------------	---	--------------------------	---	--------------------------

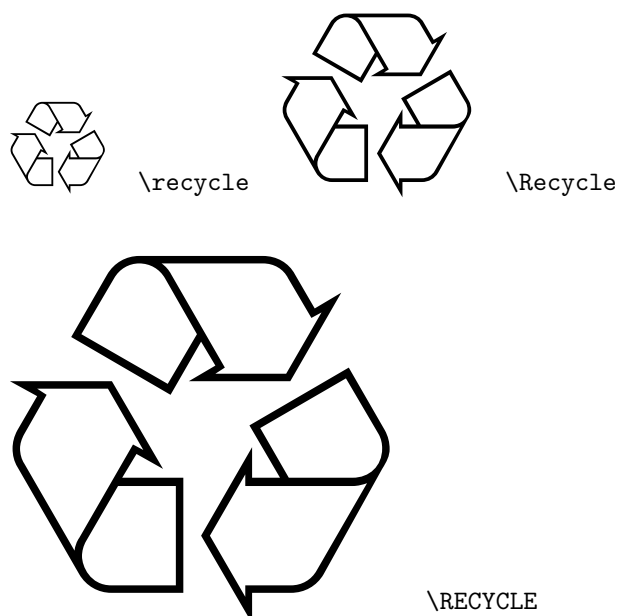
TABLE 489: GnA2e Recycling Symbols

	<code>\Greenpoint</code>
---	--------------------------

TABLE 490: marvosym Recycling Symbols

 `\PackingWaste`  `\Recycling`

TABLE 491: recycle Recycling Symbols



The METAFONT code that implements the recycling symbols shown above is, in the words of its author, “awful code [that] doesn’t even put the logo in a box (properly)”. Expect to receive “**Inconsistent equation** (off by $\langle number \rangle$)” errors from METAFONT. Fortunately, if you tell METAFONT to proceed past those errors (e.g., by pressing Enter after each one or by specifying “`-interaction=nonstopmode`” on the METAFONT command line) it should produce a valid font.

The commands listed above should be used within a group (e.g., “`{\recycle}`”) because they exhibit the side effect of *changing* the font to the recycle font.

TABLE 492: Other QiA2e Symbols

 `\Info`  `\Request`
 `\Postbox`  `\Telephone`

TABLE 493: soyombo Soyombo Symbols

 `\Soyombo`  `\sA*`  `\sO*`

* These symbols require that the Soyombo font be active (“`{\soyombo ... }`”).

TABLE 494: knitting Knitting Symbols

$\wedge$	<code>\textknit{!}</code>	$\rightarrow$	<code>\textknit{[}</code>		<code>\textknit{Q}</code>
	<code>\textknit{"}</code>	$\leftarrow$	<code>\textknit{]}</code>		<code>\textknit{q}</code>
$\backslash$	<code>\textknit{(}</code>	$\wedge$	<code>\textknit{A}</code>	$\nearrow$	<code>\textknit{R}</code>
$/$	<code>\textknit{)}</code>	$\wedge$	<code>\textknit{a}</code>	$\nwarrow$	<code>\textknit{r}</code>
$*$	<code>\textknit{*}</code>		<code>\textknit{B}</code>	$\leftarrow$	<code>\textknit{S}</code>
$ $	<code>\textknit{-}</code>		<code>\textknit{b}</code>	$\rightarrow$	<code>\textknit{s}</code>
	<code>\textknit{2}</code>	∇	<code>\textknit{E}</code>		<code>\textknit{T}</code>
	<code>\textknit{3}</code>		<code>\textknit{F}</code>		<code>\textknit{t}</code>
$\searrow$	<code>\textknit{4}</code>	$\frown$	<code>\textknit{f}</code>		<code>\textknit{U}</code>
$\swarrow$	<code>\textknit{5}</code>	$\uparrow$	<code>\textknit{H}</code>	$\searrow$	<code>\textknit{u}</code>
$\forall$	<code>\textknit{6}</code>	$\downarrow$	<code>\textknit{h}</code>		<code>\textknit{V}</code>
∇	<code>\textknit{7}</code>		<code>\textknit{I}</code>	∇	<code>\textknit{v}</code>
∇	<code>\textknit{8}</code>		<code>\textknit{i}</code>		<code>\textknit{W}</code>
	<code>\textknit{9}</code>		<code>\textknit{J}</code>	∇	<code>\textknit{w}</code>
	<code>\textknit{:}</code>		<code>\textknit{j}</code>		<code>\textknit{X}</code>
	<code>\textknit{;}</code>	∇	<code>\textknit{L}</code>		<code>\textknit{x}</code>
∇	<code>\textknit{<}</code>	∇	<code>\textknit{l}</code>	∇	<code>\textknit{Y}</code>
	<code>\textknit{=}</code>		<code>\textknit{M}</code>	∇	<code>\textknit{y}</code>
$\nearrow$	<code>\textknit{>}</code>	m	<code>\textknit{m}</code>		<code>\textknit{Z}</code>
$\bullet$	<code>\textknit{@}</code>	$\bigcirc$	<code>\textknit{O}</code>		<code>\textknit{z}</code>

The knitting package is intended to typeset complete knitting charts. See the knitting documentation for more information.

Some symbols behave differently when used as part of a sequence. For example, contrast `\textknit{1}` (“ ∇ ”), `\textknit{11}` (“ $\nabla\nabla$ ”), and `\textknit{111}` (“ $\nabla\nabla\nabla$ ”). Similarly, contrast `\textknit{"}` (“ $\rightarrow$ ”) and `\textknit{"}` (“ $\rightarrow$ ”). Again, see the knitting documentation for more information.

TABLE 495: CountriesOfEurope Country Maps

	<code>\Albania</code>		<code>\Latvia</code>
	<code>\Andorra</code>		<code>\Liechtenstein</code>
	<code>\Austria</code>		<code>\Lithuania</code>
	<code>\Belarus</code>		<code>\Luxembourg</code>
	<code>\Belgium</code>		<code>\Macedonia</code>
	<code>\Bosnia</code>		<code>\Malta</code>

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	\Bulgaria		\Moldova
	\Croatia		\Montenegro
	\Czechia		\Netherlands
	\Denmark		\Norway
	\Estonia		\Poland
	\Finland		\Portugal
	\France		\Romania
	\Germany		\Serbia
	\GreatBritain		\Slovakia
	\Greece		\Slovenia

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The preceding commands work only when the `CountriesOfEurope` font family is active. For convenience, the package defines a `\CountriesOfEuropeFamily` command that switches to that font family.

By default, countries are drawn in the current font size. Hence, “`{\CountriesOfEuropeFamily\France}`” draws a nearly unrecognizable “”. For clarity of presentation, Table 495 scales each glyph to 72 pt. via an explicit `\fontsize{72}{72}`. An alternative is to specify the `scaled` package option to scale all country glyphs by a given factor of the font size.

TABLE 496: Miscellaneous arev Symbols

	<code>\anchor</code>		<code>\invsmileface</code>		<code>\skull</code>		<code>\warning</code>
	<code>\biohazard</code>		<code>\radiation</code>		<code>\smileface</code>		<code>\yinyang</code>
	<code>\heavyqleft</code>		<code>\recycle</code>		<code>\steaming</code>		
	<code>\heavyqtright</code>		<code>\sadface</code>		<code>\swords</code>		

TABLE 497: cookingsymbols Cooking Symbols

	<code>\Bottomheat</code>		<code>\Fork</code>		<code>\Knife</code>		<code>\Topbottomheat</code>
	<code>\Dish</code>		<code>\Gasstove</code>		<code>\Oven</code>		<code>\Topheat</code>
	<code>\Fanoven</code>		<code>\Gloves</code>		<code>\Spoon</code>		

TABLE 498: tikzsymbols Cooking Symbols

	<code>\bakingplate</code>		<code>\cooker</code>		<code>\oven</code>		<code>\rollingpin</code>
	<code>\blender</code>		<code>\eggbeater</code>		<code>\pan</code>		<code>\sieve</code>
	<code>\bottle</code>		<code>\fryingpan</code>		<code>\peeler</code>		<code>\squeezer</code>
	<code>\bowl</code>		<code>\grater</code>		<code>\pot</code>		<code>\trident</code>

tikzsymbols defines German-language aliases for each of the above: `\Backblech` for `\bakingplate`, `\Bratpfanne` for `\fryingpan`, `\Dreizack` for `\trident`, `\Flasche` for `\bottle`, `\Herd` for `\cooker`, `\Kochtopf` for `\pot`, `\Nudelholz` for `\rollingpin`, `\Ofen` for `\oven`, `\Pfanne` for `\pan`, `\Purierstab` for `\blender`, `\Reibe` for `\grater`, `\Saftpresse` for `\squeezer`, `\Schaler` for `\peeler`, `\Schneebesen` for `\eggbeater`, `\Schussel` for `\bowl`, and `\Sieb` for `\sieve`.

All tikzsymbols symbols are implemented with TikZ graphics, not with a font.

TABLE 499: tikzsymbols Emoticons

	<code>\Annoey</code>		<code>\Neutrey</code>		<code>\rWalley</code>		<code>\Vomey</code>
	<code>\Cat</code>		<code>\NiceReapey</code>		<code>\Sadey</code>		<code>\Walley</code>
	<code>\Cooley</code>		<code>\Ninja</code>		<code>\Sey</code>		<code>\Winkey</code>
	<code>\Innocey</code>		<code>\Nursey</code>		<code>\Smiley</code>		<code>\wInnocey</code>
	<code>\Laughy</code>		<code>\oldWinkey</code>		<code>\Tongey</code>		<code>\Xey</code>

All tikzsymbols symbols are implemented with TikZ graphics, not with a font. Hence, symbols like `\Ninja` can include color. In fact, most of the commands shown above accept one or more color arguments for further customization. See the tikzsymbols documentation for more information.

TABLE 500: tikzsymbols 3D Emoticons

	<code>\dAnnoey</code>		<code>\dNinja</code>		<code>\dSmiley</code>		<code>\dXey</code>
	<code>\dCooley</code>		<code>\dNursey</code>		<code>\dTongey</code>		<code>\dolddWinkey</code>
	<code>\dInnocey</code>		<code>\drWalley</code>		<code>\dVomey</code>		
	<code>\dLaughy</code>		<code>\dSadey</code>		<code>\dWalley</code>		
	<code>\dNeutrey</code>		<code>\dSey</code>		<code>\dWinkey</code>		

All tikzsymbols symbols are implemented with TikZ graphics, not with a font. Hence, all of the symbols shown above can include color. In fact, each command in Table 500 accepts one or more color arguments for further customization. See the tikzsymbols documentation for more information.

TABLE 501: tikzsymbols Trees

	<code>\Autumntree</code>		<code>\Summertree</code>		<code>\WorstTree</code>
	<code>\Springtree</code>		<code>\Wintertree</code>		

All tikzsymbols symbols are implemented with TikZ graphics, not with a font. Hence, all of the symbols shown above can include color. tikzsymbols additionally defines a `\BasicTree` command that supports customization of trunk and leaf colors. See the tikzsymbols documentation for more information.

TABLE 502: Miscellaneous tikzsymbols Symbols

	<code>\Bed</code>		<code>\Chair</code>		<code>\Fire</code>		<code>\Snowman</code>		<code>\Tribar</code>
	<code>\Candle</code>		<code>\Coffeecup</code>		<code>\Moai</code>		<code>\Strichmaxerl</code>		

All `tikzsymbols` symbols are implemented with `TikZ` graphics, not with a font. `\Tribar` supports customization of the fill color for each bar. `\Strichmaxerl` supports customization of the angles at which the stick figure's arms and legs are drawn. See the `tikzsymbols` documentation for more information.

TABLE 503: Miscellaneous bclogo Symbols

	<code>\bcattention</code>		<code>\bcetoile</code>		<code>\bcpanchant</code>
	<code>\bcbombe</code>		<code>\bcfemme</code>		<code>\bcpeaceandlove</code>
	<code>\bcbook</code>		<code>\bcfeujaune</code>		<code>\bcpluie</code>
	<code>\bccalendrier</code>		<code>\bcfeurouge</code>		<code>\bcplume</code>
	<code>\bccle</code>		<code>\bcfeutricolore</code>		<code>\bcpoisson</code>
	<code>\bcclefa</code>		<code>\bcfeuvert</code>		<code>\bcquestion</code>
	<code>\bcclesol</code>		<code>\bcfleur</code>		<code>\bcrecyclage</code>
	<code>\bccoeur</code>		<code>\bchomme</code>		<code>\bcrosevents</code>
	<code>\bccrayon</code>		<code>\bchorloge</code>		<code>\bcsmbh</code>
	<code>\bccube</code>		<code>\bcicosaedre</code>		<code>\bcsmmh</code>
	<code>\bcdallemagne</code>		<code>\bcinfo</code>		<code>\bcsoleil</code>
	<code>\bcdanger</code>		<code>\bcinterdit</code>		<code>\bcspadesuit</code>
	<code>\bcdautriche</code>		<code>\bclampe</code>		<code>\bcstop</code>
	<code>\bcdbelgique</code>		<code>\bcloupe</code>		<code>\bctakecare</code>
	<code>\bcdbulgarie</code>		<code>\bcneige</code>		<code>\bctetraedre</code>
	<code>\bcdfrance</code>		<code>\bcnote</code>		<code>\bctrefle</code>
	<code>\bcditalie</code>		<code>\bcnucleaire</code>		<code>\bctrombone</code>
	<code>\bcdluxembourg</code>		<code>\bcocetaedre</code>		<code>\bcvaletcoeur</code>
	<code>\bcdodecaedre</code>		<code>\bcocail</code>		<code>\bcvelo</code>

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	<code>\bcdpaysbas</code>		<code>\bcorne</code>		<code>\bcyin</code>
	<code>\bcdz</code>		<code>\bcours</code>		
	<code>\bceclaircie</code>		<code>\bcoutil</code>		

All `bclogo` symbols are implemented with `TikZ` (or alternatively, `PSTricks`) graphics, not with a font. This is how the symbols shown above can include color.

TABLE 504: fontawesome Web-Related Icons

	<code>\fa500px</code>		<code>\faFemale</code>		<code>\faPlane</code>
	<code>\faAdjust</code>		<code>\faFighterJet</code>		<code>\faPlay</code>
	<code>\faAdn</code>		<code>\faFile</code>		<code>\faPlayCircle</code>
	<code>\faAlignCenter</code>		<code>\faFileArchive0</code>		<code>\faPlayCircle0</code>
	<code>\faAlignJustify</code>		<code>\faFileAudio0</code>		<code>\faPlug</code>
	<code>\faAlignLeft</code>		<code>\faFileCode0</code>		<code>\faPlus</code>
	<code>\faAlignRight</code>		<code>\faFileExcel0</code>		<code>\faPlusCircle</code>
	<code>\faAmazon</code>		<code>\faFileImage0</code>		<code>\faPlusSquare</code>
	<code>\faAmbulance</code>		<code>\faFile0</code>		<code>\faPlusSquare0</code>
	<code>\faAnchor</code>		<code>\faFilePdf0</code>		<code>\faPowerOff</code>
	<code>\faAndroid</code>		<code>\faFilePowerpoint0</code>		<code>\faPrint</code>
	<code>\faAngellist</code>		<code>\faFiles0</code>		<code>\faPuzzlePiece</code>
	<code>\faAngleDoubleDown</code>		<code>\faFileText</code>		<code>\faQq</code>
	<code>\faAngleDoubleLeft</code>		<code>\faFileText0</code>		<code>\faQrcode</code>
	<code>\faAngleDoubleRight</code>		<code>\faFileVideo0</code>		<code>\faQuestion</code>
	<code>\faAngleDoubleUp</code>		<code>\faFileWord0</code>		<code>\faQuestionCircle</code>
	<code>\faAngleDown</code>		<code>\faFilm</code>		<code>\faQuoteLeft</code>
	<code>\faAngleLeft</code>		<code>\faFilter</code>		<code>\faQuoteRight</code>
	<code>\faAngleRight</code>		<code>\faFire</code>		<code>\faRandom</code>
	<code>\faAngleUp</code>		<code>\faFireExtinguisher</code>		<code>\faRebel</code>
	<code>\faApple</code>		<code>\faFirefox</code>		<code>\faRecycle</code>
	<code>\faArchive</code>		<code>\faFlag</code>		<code>\faReddit</code>
	<code>\faAreaChart</code>		<code>\faFlagCheckered</code>		<code>\faRedditSquare</code>
	<code>\faAsterisk</code>		<code>\faFlag0</code>		<code>\faRefresh</code>
	<code>\faAt</code>		<code>\faFlask</code>		<code>\faRenren</code>
	<code>\faBackward</code>		<code>\faFlickr</code>		<code>\faReply</code>
	<code>\faBalanceScale</code>		<code>\faFloppy0</code>		<code>\faReplyAll</code>
	<code>\faBan</code>		<code>\faFolder</code>		<code>\faRetweet</code>
	<code>\faBarChart</code>		<code>\faFolder0</code>		<code>\faRoad</code>
	<code>\faBarcode</code>		<code>\faFolderOpen</code>		<code>\faRocket</code>
	<code>\faBars</code>		<code>\faFolderOpen0</code>		<code>\faRss</code>
	<code>\faBatteryEmpty</code>		<code>\faFont</code>		<code>\faRssSquare</code>
	<code>\faBatteryFull</code>		<code>\faFonticons</code>		<code>\faSafari</code>
	<code>\faBatteryHalf</code>		<code>\faForumbee</code>		<code>\faScissors</code>
	<code>\faBatteryQuarter</code>		<code>\faForward</code>		<code>\faSearch</code>
	<code>\faBatteryThreeQuarters</code>		<code>\faFoursquare</code>		<code>\faSearchMinus</code>

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	\faBed		\faFrownO		\faSearchPlus
	\faBeer		\faFutbolO		\faSellsy
	\faBehance		\faGamepad		\faServer
	\faBehanceSquare		\faGavel		\faShare
	\faBell		\faGetPocket		\faShareAlt
	\faBellO		\faGg		\faShareAltSquare
	\faBellSlash		\faGgCircle		\faShareSquare
	\faBellSlashO		\faGift		\faShareSquareO
	\faBicycle		\faGit		\faShield
	\faBinoculars		\faGithub		\faShip
	\faBirthdayCake		\faGithubAlt		\faShirtsinbulk
	\faBitbucket		\faGithubSquare		\faShoppingCart
	\faBitbucketSquare		\faGitSquare		\faSignal
	\faBlackTie		\faGlass		\faSignIn
	\faBold		\faGlobe		\faSignOut
	\faBolt		\faGoogle		\faSimplybuilt
	\faBomb		\faGooglePlus		\faSitemap
	\faBook		\faGooglePlusSquare		\faSkyatlas
	\faBookmark		\faGoogleWallet		\faSkype
	\faBookmarkO		\faGraduationCap		\faSlack
	\faBriefcase		\faGratipay		\faSliders
	\faBug		\faHackerNews		\faSlideshare
	\faBuilding		\faHddO		\faSmileO
	\faBuildingO		\faHeader		\faSort
	\faBullhorn		\faHeadphones		\faSortAlphaAsc
	\faBullseye		\faHeart		\faSortAlphaDesc
	\faBus		\faHeartbeat		\faSortAmountAsc
	\faBuysellads		\faHeartO		\faSortAmountDesc
	\faCalculator		\faHistory		\faSortAsc
	\faCalendar		\faHome		\faSortDesc
	\faCalendarCheckO		\faHospitalO		\faSortNumericAsc
	\faCalendarMinusO		\faHourglass		\faSortNumericDesc
	\faCalendarO		\faHourglassEnd		\faSoundcloud
	\faCalendarPlusO		\faHourglassHalf		\faSpaceShuttle
	\faCalendarTimesO		\faHourglassO		\faSpinner
	\faCamera		\faHourglassStart		\faSpoon
	\faCameraRetro		\faHouzz		\faSpotify
	\faCar		\faHSquare		\faStackExchange
	\faCaretDown		\faHtml5		\faStackOverflow
	\faCaretLeft		\faICursor		\faSteam
	\faCaretRight		\faInbox		\faSteamSquare
	\faCaretSquareODown		\faIndent		\faStepBackward
	\faCaretSquareOLeft		\faIndustry		\faStepForward
	\faCaretSquareORight		\faInfo		\faStethoscope
	\faCaretSquareOUp		\faInfoCircle		\faStickyNote
	\faCaretUp		\faInstagram		\faStickyNoteO
	\faCartArrowDown		\faInternetExplorer		\faStop
	\faCartPlus		\faIoxhost		\faStreetView
	\faCc		\faItalic		\faStrikethrough
	\faCcAmex		\faJoomla		\faStumbleupon
	\faCcDinersClub		\faJsfiddle		\faStumbleuponCircle
	\faCcDiscover		\faKey		\faSubscript
	\faCcJcb		\faKeyboardO		\faSubway

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	\faCcMastercard		\faLanguage		\faSuitcase
	\faCcPaypal		\faLaptop		\faSuperscript
	\faCcStripe		\faLastfm		\faTable
	\faCcVisa		\faLastfmSquare		\faTablet
	\faCertificate		\faLeaf		\faTachometer
	\faChainBroken		\faLeanpub		\faTag
	\faChild		\faLemon0		\faTags
	\faChrome		\faLevelDown		\faTasks
	\faClipboard		\faLevelUp		\faTaxi
	\faClock0		\faLifeRing		\faTelevision
	\faClone		\faLightbulb0		\faTencentWeibo
	\faCloud		\faLineChart		\faTerminal
	\faCloudDownload		\faLink		\faTextHeight
	\faCloudUpload		\faLinkedin		\faTextWidth
	\faCode		\faLinkedinSquare		\faTh
	\faCodeFork		\faLinux		\faThLarge
	\faCodepen		\faList		\faThList
	\faCoffee		\faListAlt		\faThumbTack
	\faCog		\faList01		\faTicket
	\faCogs		\faListU1		\faTint
	\faColumns		\faLocationArrow		\faToggleOff
	\faComment		\faLock		\faToggleOn
	\faCommenting		\faMagic		\faTrain
	\faCommenting0		\faMagnet		\faTrash
	\faComment0		\faMale		\faTrash0
	\faComments		\faMap		\faTree
	\faComments0		\faMapMarker		\faTrello
	\faCompass		\faMap0		\faTripadvisor
	\faCompress		\faMapPin		\faTrophy
	\faConnectdevelop		\faMapSigns		\faTruck
	\faContao		\faMaxcdn		\faTty
	\faCreditCard		\faMeanpath		\faTumblr
	\faCrop		\faMedium		\faTumblrSquare
	\faCrosshairs		\faMedkit		\faTwitch
	\faCss3		\faMeh0		\faTwitter
	\faCube		\faMicrophone		\faTwitterSquare
	\faCubes		\faMicrophoneSlash		\faUmbrella
	\faCutlery		\faMinus		\faUnderline
	\faDashcube		\faMinusCircle		\faUniversity
	\faDatabase		\faMinusSquare		\faUnlock
	\faDelicious		\faMinusSquare0		\faUnlockAlt
	\faDesktop		\faMobile		\faUpload
	\faDeviantart		\faMoney		\faUser
	\faDiamond		\faMotorcycle		\faUserMd
	\faDigg		\faMousePointer		\faUserPlus
	\faDownload		\faMusic		\faUsers
	\faDribbble		\faNewspaper0		\faUserSecret
	\faDropbox		\faObjectGroup		\faUserTimes
	\faDrupal		\faObjectUngroup		\faVideoCamera
	\faEject		\faOdnoklassniki		\faVimeo
	\faEllipsisH		\faOdnoklassnikiSquare		\faVimeoSquare
	\faEllipsisV		\faOpencart		\faVine
	\faEmpire		\faOpenid		\faVk

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	\faEnvelope		\faOpera		\faVolumeDown
	\faEnvelopeO		\faOptinMonster		\faVolumeOff
	\faEnvelopeSquare		\faOutdent		\faVolumeUp
	\faEraser		\faPagelines		\faWeibo
	\faExchange		\faPaintBrush		\faWeixin
	\faExclamation		\faPaperclip		\faWhatsapp
	\faExclamationCircle		\faPaperPlane		\faWheelchair
	\faExclamationTriangle		\faPaperPlaneO		\faWifi
	\faExpand		\faParagraph		\faWikipediaW
	\faExpeditedssl		\faPause		\faWindows
	\faExternalLink		\faPaw		\faWordpress
	\faExternalLinkSquare		\faPaypal		\faWrench
	\faEye		\faPhone		\faXing
	\faEyedropper		\faPhoneSquare		\faXingSquare
	\faEyeSlash		\faPictureO		\faYahoo
	\faFacebook		\faPieChart		\faYCombinator
	\faFacebookOfficial		\faPiedPiper		\faYelp
	\faFacebookSquare		\faPiedPiperAlt		\faYoutube
	\faFastBackward		\faPinterest		\faYoutubePlay
	\faFastForward		\faPinterestP		\faYoutubeSquare
	\faFax		\faPinterestSquare		

fontawesome defines synonyms for many of the preceding symbols:

	\faAutomobile		\faFileZipO		\faRa
	\faBank		\faFlash		\faReorder
	\faBarChartO		\faGe		\faSave
	\faBattery0		\faGear		\faSend
	\faBattery1		\faGears		\faSendO
	\faBattery2		\faGittip		\faSoccerBallO
	\faBattery3		\faGroup		\faSortDown
	\faBattery4		\faHotel		\faSortUp
	\faCab		\faImage		\faSupport
	\faChain		\faInstitution		\faToggleDown
	\faCopy		\faLegal		\faToggleLeft
	\faCut		\faLifeBouy		\faToggleRight
	\faDashboard		\faLifeSaver		\faToggleUp
	\faDedent		\faMailForward		\faTv
	\faEdit		\faMailReply		\faUnlink
	\faFacebookF		\faMailReplyAll		\faUnsorted
	\faFeed		\faMobilePhone		\faWarning
	\faFileMovieO		\faMortarBoard		\faWechat
	\faFilePhotoO		\faNavicon		\faYc
	\faFilePictureO		\faPaste		\faYCombinatorSquare
	\faFileSoundO		\faPhoto		\faYcSquare

TABLE 505: rubikcube Rubik’s Cube Rotations

	<code>\rrhD</code>		<code>\rrhF</code>		<code>\rrhLw</code>		<code>\rrhRw</code>		<code>\rrhU</code>
	<code>\rrhDa</code>		<code>\rrhFp</code>		<code>\rrhLwp</code>		<code>\rrhRwp</code>		<code>\rrhUa</code>
	<code>\rrhDap</code>		<code>\rrhFw</code>		<code>\rrhM</code>		<code>\rrhSd</code>		<code>\rrhUap</code>
	<code>\rrhDp</code>		<code>\rrhFwp</code>		<code>\rrhMp</code>		<code>\rrhSdp</code>		<code>\rrhUp</code>
	<code>\rrhDs</code>		<code>\rrhL</code>		<code>\rrhR</code>		<code>\rrhSl</code>		<code>\rrhUs</code>
	<code>\rrhDsp</code>		<code>\rrhLa</code>		<code>\rrhRa</code>		<code>\rrhSlp</code>		<code>\rrhUsp</code>
	<code>\rrhDw</code>		<code>\rrhLap</code>		<code>\rrhRap</code>		<code>\rrhSr</code>		<code>\rrhUw</code>
	<code>\rrhDwp</code>		<code>\rrhLp</code>		<code>\rrhRp</code>		<code>\rrhSrp</code>		<code>\rrhUwp</code>
	<code>\rrhE</code>		<code>\rrhLs</code>		<code>\rrhRs</code>		<code>\rrhSu</code>		
	<code>\rrhEp</code>		<code>\rrhLsp</code>		<code>\rrhRsp</code>		<code>\rrhSup</code>		

All rubikcube symbols are implemented with TikZ graphics, not with a font. In addition to the symbols shown above, the rubikcube package defines commands for combinations of textual and graphical representations of rotations (e.g., `\textRubikUa` produces “**Ua** ”) as well as commands that produce colored illustrations of Rubik’s Cube configurations and rotations. See the rubikcube documentation for more information.

9 Fonts with minimal L^AT_EX support

The symbol fonts shown in this section are provided without a corresponding L^AT_EX 2_ε style file that assigns a convenient name to each glyph. Consequently, each glyph must be accessed by number. To help with this, the `pifont` package defines a `\Pisymbol` command that typesets a specified character by number from a specified L^AT_EX font family. Alas, most of the fonts in this section do not even define a L^AT_EX font family. Hence, except where otherwise specified, a document will need to include code like the following in its preamble:

```
\usepackage{pifont}
\DeclareFontFamily{U}{\langle name \rangle}{}
\DeclareFontShape{U}{\langle name \rangle}{m}{n}{<-> \langle font \rangle}{}

```

where `\langle font \rangle` is the name of the `.tfm` font file (or `.mf` font file, from which a `.tfm` font file can be generated automatically), and `\langle name \rangle` is a name to use to refer to that font. It's generally good practice to use the name of the font file for `\langle name \rangle`, as in the following:

```
\usepackage{pifont}
\DeclareFontFamily{U}{hands}{}
\DeclareFontShape{U}{hands}{m}{n}{<-> hands}{}

```

TABLE 506: hands Fists

	<code>\Pisymbol{hands}{65}</code>		<code>\Pisymbol{hands}{67}</code>
	<code>\Pisymbol{hands}{66}</code>		<code>\Pisymbol{hands}{68}</code>

TABLE 507: greenpoint Recycling Symbols

	<code>\Pisymbol{greenpoint}{71}</code>
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TABLE 508: nkarta Map Symbols

	<code>\Pisymbol{nkarta}{33}</code>		<code>\Pisymbol{nkarta}{96}</code>		<code>\Pisymbol{nkarta}{193}</code>
	<code>\Pisymbol{nkarta}{34}</code>		<code>\Pisymbol{nkarta}{97}</code>		<code>\Pisymbol{nkarta}{194}</code>
	<code>\Pisymbol{nkarta}{35}</code>		<code>\Pisymbol{nkarta}{98}</code>		<code>\Pisymbol{nkarta}{195}</code>
	<code>\Pisymbol{nkarta}{36}</code>		<code>\Pisymbol{nkarta}{99}</code>		<code>\Pisymbol{nkarta}{196}</code>
	<code>\Pisymbol{nkarta}{37}</code>		<code>\Pisymbol{nkarta}{100}</code>		<code>\Pisymbol{nkarta}{197}</code>
	<code>\Pisymbol{nkarta}{38}</code>		<code>\Pisymbol{nkarta}{101}</code>		<code>\Pisymbol{nkarta}{198}</code>
	<code>\Pisymbol{nkarta}{39}</code>		<code>\Pisymbol{nkarta}{102}</code>		<code>\Pisymbol{nkarta}{199}</code>
	<code>\Pisymbol{nkarta}{40}</code>		<code>\Pisymbol{nkarta}{103}</code>		<code>\Pisymbol{nkarta}{200}</code>
	<code>\Pisymbol{nkarta}{41}</code>		<code>\Pisymbol{nkarta}{104}</code>		<code>\Pisymbol{nkarta}{201}</code>
	<code>\Pisymbol{nkarta}{42}</code>		<code>\Pisymbol{nkarta}{105}</code>		<code>\Pisymbol{nkarta}{202}</code>
	<code>\Pisymbol{nkarta}{43}</code>		<code>\Pisymbol{nkarta}{106}</code>		<code>\Pisymbol{nkarta}{203}</code>
	<code>\Pisymbol{nkarta}{44}</code>		<code>\Pisymbol{nkarta}{107}</code>		<code>\Pisymbol{nkarta}{204}</code>
	<code>\Pisymbol{nkarta}{45}</code>		<code>\Pisymbol{nkarta}{108}</code>		<code>\Pisymbol{nkarta}{205}</code>
	<code>\Pisymbol{nkarta}{46}</code>		<code>\Pisymbol{nkarta}{109}</code>		<code>\Pisymbol{nkarta}{206}</code>
	<code>\Pisymbol{nkarta}{47}</code>		<code>\Pisymbol{nkarta}{110}</code>		<code>\Pisymbol{nkarta}{207}</code>
	<code>\Pisymbol{nkarta}{48}</code>		<code>\Pisymbol{nkarta}{111}</code>		<code>\Pisymbol{nkarta}{208}</code>
	<code>\Pisymbol{nkarta}{49}</code>		<code>\Pisymbol{nkarta}{112}</code>		<code>\Pisymbol{nkarta}{209}</code>

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2	\Pisymbol{nkarta}{50}		\Pisymbol{nkarta}{113}		\Pisymbol{nkarta}{210}
3	\Pisymbol{nkarta}{51}		\Pisymbol{nkarta}{114}		\Pisymbol{nkarta}{211}
4	\Pisymbol{nkarta}{52}		\Pisymbol{nkarta}{115}		\Pisymbol{nkarta}{212}
5	\Pisymbol{nkarta}{53}		\Pisymbol{nkarta}{116}		\Pisymbol{nkarta}{213}
6	\Pisymbol{nkarta}{54}		\Pisymbol{nkarta}{117}		\Pisymbol{nkarta}{214}
7	\Pisymbol{nkarta}{55}		\Pisymbol{nkarta}{118}		\Pisymbol{nkarta}{215}
8	\Pisymbol{nkarta}{56}		\Pisymbol{nkarta}{119}		\Pisymbol{nkarta}{216}
9	\Pisymbol{nkarta}{57}		\Pisymbol{nkarta}{120}		\Pisymbol{nkarta}{217}
□	\Pisymbol{nkarta}{58}		\Pisymbol{nkarta}{121}		\Pisymbol{nkarta}{218}
○	\Pisymbol{nkarta}{59}		\Pisymbol{nkarta}{122}		\Pisymbol{nkarta}{219}
○	\Pisymbol{nkarta}{60}		\Pisymbol{nkarta}{123}		\Pisymbol{nkarta}{220}
▮	\Pisymbol{nkarta}{61}		\Pisymbol{nkarta}{124}		\Pisymbol{nkarta}{221}
✕	\Pisymbol{nkarta}{62}		\Pisymbol{nkarta}{125}		\Pisymbol{nkarta}{222}
▮	\Pisymbol{nkarta}{63}		\Pisymbol{nkarta}{126}		\Pisymbol{nkarta}{223}
□	\Pisymbol{nkarta}{64}		\Pisymbol{nkarta}{161}		\Pisymbol{nkarta}{224}
✱	\Pisymbol{nkarta}{65}		\Pisymbol{nkarta}{162}		\Pisymbol{nkarta}{225}
♠	\Pisymbol{nkarta}{66}		\Pisymbol{nkarta}{163}		\Pisymbol{nkarta}{226}
♣	\Pisymbol{nkarta}{67}		\Pisymbol{nkarta}{164}		\Pisymbol{nkarta}{227}
▲	\Pisymbol{nkarta}{68}		\Pisymbol{nkarta}{165}		\Pisymbol{nkarta}{228}
☆	\Pisymbol{nkarta}{69}		\Pisymbol{nkarta}{166}		\Pisymbol{nkarta}{229}
♣	\Pisymbol{nkarta}{70}		\Pisymbol{nkarta}{167}		\Pisymbol{nkarta}{230}
▮	\Pisymbol{nkarta}{71}		\Pisymbol{nkarta}{168}		\Pisymbol{nkarta}{231}
♣	\Pisymbol{nkarta}{72}		\Pisymbol{nkarta}{169}		\Pisymbol{nkarta}{232}
◊	\Pisymbol{nkarta}{73}		\Pisymbol{nkarta}{170}		\Pisymbol{nkarta}{233}
+	\Pisymbol{nkarta}{74}		\Pisymbol{nkarta}{171}		\Pisymbol{nkarta}{234}
)	\Pisymbol{nkarta}{75}		\Pisymbol{nkarta}{172}		\Pisymbol{nkarta}{235}
□	\Pisymbol{nkarta}{76}		\Pisymbol{nkarta}{173}		\Pisymbol{nkarta}{236}
♣	\Pisymbol{nkarta}{77}		\Pisymbol{nkarta}{174}		\Pisymbol{nkarta}{237}
♣	\Pisymbol{nkarta}{78}		\Pisymbol{nkarta}{175}		\Pisymbol{nkarta}{238}
◊	\Pisymbol{nkarta}{79}		\Pisymbol{nkarta}{176}		\Pisymbol{nkarta}{239}
▽	\Pisymbol{nkarta}{80}		\Pisymbol{nkarta}{177}		\Pisymbol{nkarta}{240}
♣	\Pisymbol{nkarta}{81}		\Pisymbol{nkarta}{178}		\Pisymbol{nkarta}{241}
★	\Pisymbol{nkarta}{82}		\Pisymbol{nkarta}{179}		\Pisymbol{nkarta}{242}
♣	\Pisymbol{nkarta}{83}		\Pisymbol{nkarta}{180}		\Pisymbol{nkarta}{243}
◎	\Pisymbol{nkarta}{84}		\Pisymbol{nkarta}{181}		\Pisymbol{nkarta}{244}
◊	\Pisymbol{nkarta}{85}		\Pisymbol{nkarta}{182}		\Pisymbol{nkarta}{245}
♣	\Pisymbol{nkarta}{86}		\Pisymbol{nkarta}{183}		\Pisymbol{nkarta}{246}
♣	\Pisymbol{nkarta}{87}		\Pisymbol{nkarta}{184}		\Pisymbol{nkarta}{247}
♣	\Pisymbol{nkarta}{88}		\Pisymbol{nkarta}{185}		\Pisymbol{nkarta}{248}
♣	\Pisymbol{nkarta}{89}		\Pisymbol{nkarta}{186}		\Pisymbol{nkarta}{249}
♣	\Pisymbol{nkarta}{90}		\Pisymbol{nkarta}{187}		\Pisymbol{nkarta}{250}
♣	\Pisymbol{nkarta}{91}		\Pisymbol{nkarta}{188}		\Pisymbol{nkarta}{251}
♣	\Pisymbol{nkarta}{92}		\Pisymbol{nkarta}{189}		\Pisymbol{nkarta}{252}
♣	\Pisymbol{nkarta}{93}		\Pisymbol{nkarta}{190}		\Pisymbol{nkarta}{253}
♣	\Pisymbol{nkarta}{94}		\Pisymbol{nkarta}{191}		\Pisymbol{nkarta}{254}
♣	\Pisymbol{nkarta}{95}		\Pisymbol{nkarta}{192}		

TABLE 509: moonphase Astronomical Symbols

	<code>\Pisymbol{moonphase}{0}</code>		<code>\Pisymbol{moonphase}{2}</code>
	<code>\Pisymbol{moonphase}{1}</code>		<code>\Pisymbol{moonphase}{3}</code>

TABLE 510: astrosym Astronomical Symbols

	<code>\Pisymbol{astrosym}{0}</code>		<code>\Pisymbol{astrosym}{132}</code>
	<code>\Pisymbol{astrosym}{1}</code>		<code>\Pisymbol{astrosym}{133}</code>
	<code>\Pisymbol{astrosym}{2}</code>		<code>\Pisymbol{astrosym}{134}</code>
	<code>\Pisymbol{astrosym}{3}</code>		<code>\Pisymbol{astrosym}{135}</code>
	<code>\Pisymbol{astrosym}{4}</code>		<code>\Pisymbol{astrosym}{136}</code>
	<code>\Pisymbol{astrosym}{5}</code>		<code>\Pisymbol{astrosym}{137}</code>
	<code>\Pisymbol{astrosym}{6}</code>		<code>\Pisymbol{astrosym}{138}</code>
	<code>\Pisymbol{astrosym}{7}</code>		<code>\Pisymbol{astrosym}{139}</code>
	<code>\Pisymbol{astrosym}{8}</code>		<code>\Pisymbol{astrosym}{140}</code>
	<code>\Pisymbol{astrosym}{9}</code>		<code>\Pisymbol{astrosym}{141}</code>
	<code>\Pisymbol{astrosym}{10}</code>		<code>\Pisymbol{astrosym}{142}</code>
	<code>\Pisymbol{astrosym}{11}</code>		<code>\Pisymbol{astrosym}{143}</code>
	<code>\Pisymbol{astrosym}{12}</code>		<code>\Pisymbol{astrosym}{144}</code>
	<code>\Pisymbol{astrosym}{13}</code>		<code>\Pisymbol{astrosym}{145}</code>
	<code>\Pisymbol{astrosym}{14}</code>		<code>\Pisymbol{astrosym}{146}</code>
	<code>\Pisymbol{astrosym}{15}</code>		<code>\Pisymbol{astrosym}{147}</code>
	<code>\Pisymbol{astrosym}{16}</code>		<code>\Pisymbol{astrosym}{148}</code>
	<code>\Pisymbol{astrosym}{17}</code>		<code>\Pisymbol{astrosym}{149}</code>
	<code>\Pisymbol{astrosym}{18}</code>		<code>\Pisymbol{astrosym}{150}</code>
	<code>\Pisymbol{astrosym}{19}</code>		<code>\Pisymbol{astrosym}{151}</code>
	<code>\Pisymbol{astrosym}{20}</code>		<code>\Pisymbol{astrosym}{152}</code>
	<code>\Pisymbol{astrosym}{21}</code>		<code>\Pisymbol{astrosym}{153}</code>
	<code>\Pisymbol{astrosym}{22}</code>		<code>\Pisymbol{astrosym}{154}</code>
	<code>\Pisymbol{astrosym}{23}</code>		<code>\Pisymbol{astrosym}{155}</code>
	<code>\Pisymbol{astrosym}{24}</code>		<code>\Pisymbol{astrosym}{156}</code>
	<code>\Pisymbol{astrosym}{25}</code>		<code>\Pisymbol{astrosym}{157}</code>
	<code>\Pisymbol{astrosym}{26}</code>		<code>\Pisymbol{astrosym}{158}</code>
	<code>\Pisymbol{astrosym}{27}</code>		<code>\Pisymbol{astrosym}{159}</code>
	<code>\Pisymbol{astrosym}{28}</code>		<code>\Pisymbol{astrosym}{160}</code>
	<code>\Pisymbol{astrosym}{29}</code>		<code>\Pisymbol{astrosym}{161}</code>
	<code>\Pisymbol{astrosym}{30}</code>		<code>\Pisymbol{astrosym}{162}</code>
	<code>\Pisymbol{astrosym}{31}</code>		<code>\Pisymbol{astrosym}{163}</code>
	<code>\Pisymbol{astrosym}{32}</code>		<code>\Pisymbol{astrosym}{164}</code>

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	\Pisymbol{astroSYM}{33}		\Pisymbol{astroSYM}{165}
	\Pisymbol{astroSYM}{34}		\Pisymbol{astroSYM}{166}
	\Pisymbol{astroSYM}{35}		\Pisymbol{astroSYM}{167}
	\Pisymbol{astroSYM}{36}		\Pisymbol{astroSYM}{168}
	\Pisymbol{astroSYM}{37}		\Pisymbol{astroSYM}{169}
	\Pisymbol{astroSYM}{38}		\Pisymbol{astroSYM}{178}
	\Pisymbol{astroSYM}{39}		\Pisymbol{astroSYM}{179}
	\Pisymbol{astroSYM}{40}		\Pisymbol{astroSYM}{180}
	\Pisymbol{astroSYM}{41}		\Pisymbol{astroSYM}{181}
	\Pisymbol{astroSYM}{42}		\Pisymbol{astroSYM}{182}
	\Pisymbol{astroSYM}{43}		\Pisymbol{astroSYM}{183}
	\Pisymbol{astroSYM}{44}		\Pisymbol{astroSYM}{184}
	\Pisymbol{astroSYM}{45}		\Pisymbol{astroSYM}{185}
	\Pisymbol{astroSYM}{46}		\Pisymbol{astroSYM}{186}
	\Pisymbol{astroSYM}{47}		\Pisymbol{astroSYM}{187}
	\Pisymbol{astroSYM}{48}		\Pisymbol{astroSYM}{188}
	\Pisymbol{astroSYM}{49}		\Pisymbol{astroSYM}{189}
	\Pisymbol{astroSYM}{50}		\Pisymbol{astroSYM}{190}
	\Pisymbol{astroSYM}{51}		\Pisymbol{astroSYM}{191}
	\Pisymbol{astroSYM}{52}		\Pisymbol{astroSYM}{200}
	\Pisymbol{astroSYM}{53}		\Pisymbol{astroSYM}{201}
	\Pisymbol{astroSYM}{54}		\Pisymbol{astroSYM}{202}
	\Pisymbol{astroSYM}{55}		\Pisymbol{astroSYM}{203}
	\Pisymbol{astroSYM}{56}		\Pisymbol{astroSYM}{204}
	\Pisymbol{astroSYM}{57}		\Pisymbol{astroSYM}{205}
	\Pisymbol{astroSYM}{58}		\Pisymbol{astroSYM}{206}
	\Pisymbol{astroSYM}{59}		\Pisymbol{astroSYM}{207}
	\Pisymbol{astroSYM}{60}		\Pisymbol{astroSYM}{208}
	\Pisymbol{astroSYM}{61}		\Pisymbol{astroSYM}{209}
	\Pisymbol{astroSYM}{62}		\Pisymbol{astroSYM}{210}
	\Pisymbol{astroSYM}{63}		\Pisymbol{astroSYM}{211}
	\Pisymbol{astroSYM}{64}		\Pisymbol{astroSYM}{212}
	\Pisymbol{astroSYM}{65}		\Pisymbol{astroSYM}{213}
	\Pisymbol{astroSYM}{66}		\Pisymbol{astroSYM}{214}
	\Pisymbol{astroSYM}{67}		\Pisymbol{astroSYM}{215}
	\Pisymbol{astroSYM}{68}		\Pisymbol{astroSYM}{216}
	\Pisymbol{astroSYM}{69}		\Pisymbol{astroSYM}{217}
	\Pisymbol{astroSYM}{90}		\Pisymbol{astroSYM}{218}
	\Pisymbol{astroSYM}{91}		\Pisymbol{astroSYM}{219}
	\Pisymbol{astroSYM}{92}		\Pisymbol{astroSYM}{220}
	\Pisymbol{astroSYM}{93}		\Pisymbol{astroSYM}{221}

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	<code>\Pisymbol{astrosym}{94}</code>		<code>\Pisymbol{astrosym}{222}</code>
	<code>\Pisymbol{astrosym}{95}</code>		<code>\Pisymbol{astrosym}{223}</code>
	<code>\Pisymbol{astrosym}{100}</code>		<code>\Pisymbol{astrosym}{224}</code>
	<code>\Pisymbol{astrosym}{101}</code>		<code>\Pisymbol{astrosym}{225}</code>
	<code>\Pisymbol{astrosym}{102}</code>		<code>\Pisymbol{astrosym}{226}</code>
	<code>\Pisymbol{astrosym}{103}</code>		<code>\Pisymbol{astrosym}{227}</code>
	<code>\Pisymbol{astrosym}{104}</code>		<code>\Pisymbol{astrosym}{228}</code>
	<code>\Pisymbol{astrosym}{105}</code>		<code>\Pisymbol{astrosym}{229}</code>
	<code>\Pisymbol{astrosym}{106}</code>		<code>\Pisymbol{astrosym}{230}</code>
	<code>\Pisymbol{astrosym}{107}</code>		<code>\Pisymbol{astrosym}{231}</code>
	<code>\Pisymbol{astrosym}{108}</code>		<code>\Pisymbol{astrosym}{232}</code>
	<code>\Pisymbol{astrosym}{109}</code>		<code>\Pisymbol{astrosym}{233}</code>
	<code>\Pisymbol{astrosym}{110}</code>		<code>\Pisymbol{astrosym}{234}</code>
	<code>\Pisymbol{astrosym}{111}</code>		<code>\Pisymbol{astrosym}{235}</code>
	<code>\Pisymbol{astrosym}{112}</code>		<code>\Pisymbol{astrosym}{236}</code>
	<code>\Pisymbol{astrosym}{113}</code>		<code>\Pisymbol{astrosym}{237}</code>
	<code>\Pisymbol{astrosym}{114}</code>		<code>\Pisymbol{astrosym}{238}</code>
	<code>\Pisymbol{astrosym}{115}</code>		<code>\Pisymbol{astrosym}{239}</code>
	<code>\Pisymbol{astrosym}{116}</code>		<code>\Pisymbol{astrosym}{240}</code>
	<code>\Pisymbol{astrosym}{117}</code>		<code>\Pisymbol{astrosym}{241}</code>
	<code>\Pisymbol{astrosym}{118}</code>		<code>\Pisymbol{astrosym}{242}</code>
	<code>\Pisymbol{astrosym}{119}</code>		<code>\Pisymbol{astrosym}{243}</code>
	<code>\Pisymbol{astrosym}{120}</code>		<code>\Pisymbol{astrosym}{244}</code>
	<code>\Pisymbol{astrosym}{121}</code>		<code>\Pisymbol{astrosym}{245}</code>
	<code>\Pisymbol{astrosym}{122}</code>		<code>\Pisymbol{astrosym}{246}</code>
	<code>\Pisymbol{astrosym}{123}</code>		<code>\Pisymbol{astrosym}{247}</code>
	<code>\Pisymbol{astrosym}{124}</code>		<code>\Pisymbol{astrosym}{248}</code>
	<code>\Pisymbol{astrosym}{125}</code>		<code>\Pisymbol{astrosym}{249}</code>
	<code>\Pisymbol{astrosym}{126}</code>		<code>\Pisymbol{astrosym}{250}</code>
	<code>\Pisymbol{astrosym}{127}</code>		<code>\Pisymbol{astrosym}{251}</code>
	<code>\Pisymbol{astrosym}{128}</code>		<code>\Pisymbol{astrosym}{252}</code>
	<code>\Pisymbol{astrosym}{129}</code>		<code>\Pisymbol{astrosym}{253}</code>
	<code>\Pisymbol{astrosym}{130}</code>		<code>\Pisymbol{astrosym}{254}</code>
	<code>\Pisymbol{astrosym}{131}</code>		<code>\Pisymbol{astrosym}{255}</code>

TABLE 511: webomints Decorative Borders

	<code>\Pisymbol{WebOMintsGD}{47}</code>		<code>\Pisymbol{WebOMintsGD}{87}</code>
	<code>\Pisymbol{WebOMintsGD}{48}</code>		<code>\Pisymbol{WebOMintsGD}{88}</code>
	<code>\Pisymbol{WebOMintsGD}{49}</code>		<code>\Pisymbol{WebOMintsGD}{89}</code>
	<code>\Pisymbol{WebOMintsGD}{50}</code>		<code>\Pisymbol{WebOMintsGD}{90}</code>
	<code>\Pisymbol{WebOMintsGD}{51}</code>		<code>\Pisymbol{WebOMintsGD}{91}</code>
	<code>\Pisymbol{WebOMintsGD}{52}</code>		<code>\Pisymbol{WebOMintsGD}{93}</code>
	<code>\Pisymbol{WebOMintsGD}{53}</code>		<code>\Pisymbol{WebOMintsGD}{97}</code>
	<code>\Pisymbol{WebOMintsGD}{54}</code>		<code>\Pisymbol{WebOMintsGD}{98}</code>
	<code>\Pisymbol{WebOMintsGD}{55}</code>		<code>\Pisymbol{WebOMintsGD}{99}</code>
	<code>\Pisymbol{WebOMintsGD}{56}</code>		<code>\Pisymbol{WebOMintsGD}{100}</code>
	<code>\Pisymbol{WebOMintsGD}{57}</code>		<code>\Pisymbol{WebOMintsGD}{101}</code>
	<code>\Pisymbol{WebOMintsGD}{65}</code>		<code>\Pisymbol{WebOMintsGD}{102}</code>
	<code>\Pisymbol{WebOMintsGD}{66}</code>		<code>\Pisymbol{WebOMintsGD}{103}</code>
	<code>\Pisymbol{WebOMintsGD}{67}</code>		<code>\Pisymbol{WebOMintsGD}{104}</code>
	<code>\Pisymbol{WebOMintsGD}{68}</code>		<code>\Pisymbol{WebOMintsGD}{105}</code>
	<code>\Pisymbol{WebOMintsGD}{69}</code>		<code>\Pisymbol{WebOMintsGD}{106}</code>
	<code>\Pisymbol{WebOMintsGD}{70}</code>		<code>\Pisymbol{WebOMintsGD}{107}</code>
	<code>\Pisymbol{WebOMintsGD}{71}</code>		<code>\Pisymbol{WebOMintsGD}{108}</code>
	<code>\Pisymbol{WebOMintsGD}{72}</code>		<code>\Pisymbol{WebOMintsGD}{109}</code>
	<code>\Pisymbol{WebOMintsGD}{73}</code>		<code>\Pisymbol{WebOMintsGD}{110}</code>
	<code>\Pisymbol{WebOMintsGD}{74}</code>		<code>\Pisymbol{WebOMintsGD}{111}</code>
	<code>\Pisymbol{WebOMintsGD}{75}</code>		<code>\Pisymbol{WebOMintsGD}{112}</code>
	<code>\Pisymbol{WebOMintsGD}{76}</code>		<code>\Pisymbol{WebOMintsGD}{113}</code>
	<code>\Pisymbol{WebOMintsGD}{77}</code>		<code>\Pisymbol{WebOMintsGD}{114}</code>
	<code>\Pisymbol{WebOMintsGD}{78}</code>		<code>\Pisymbol{WebOMintsGD}{115}</code>
	<code>\Pisymbol{WebOMintsGD}{79}</code>		<code>\Pisymbol{WebOMintsGD}{116}</code>
	<code>\Pisymbol{WebOMintsGD}{80}</code>		<code>\Pisymbol{WebOMintsGD}{117}</code>
	<code>\Pisymbol{WebOMintsGD}{81}</code>		<code>\Pisymbol{WebOMintsGD}{118}</code>
	<code>\Pisymbol{WebOMintsGD}{82}</code>		<code>\Pisymbol{WebOMintsGD}{119}</code>
	<code>\Pisymbol{WebOMintsGD}{83}</code>		<code>\Pisymbol{WebOMintsGD}{120}</code>
	<code>\Pisymbol{WebOMintsGD}{84}</code>		<code>\Pisymbol{WebOMintsGD}{121}</code>
	<code>\Pisymbol{WebOMintsGD}{85}</code>		<code>\Pisymbol{WebOMintsGD}{122}</code>
	<code>\Pisymbol{WebOMintsGD}{86}</code>		

webomints provides a `uwebo.fd` font-definition file. Instead of using `pifont` and `\Pisymbol` to typeset a glyph, a document can select the `webomints` font directly. For example, `{\usefont{U}{webo}{x1}{n}\char73\char74}`—alternatively, `{\usefont{U}{webo}{x1}{n}IJ}`—will typeset “ ”. This can be useful for typesetting a number of `webomints` glyphs in a row.

The `niceframe` package can be used to typeset decorative frames using fonts such as `webomints`.

TABLE 512: umranda Decorative Borders

	<code>\Pisymbol{umranda}{0}</code>		<code>\Pisymbol{umranda}{34}</code>		<code>\Pisymbol{umranda}{68}</code>
	<code>\Pisymbol{umranda}{1}</code>		<code>\Pisymbol{umranda}{35}</code>		<code>\Pisymbol{umranda}{69}</code>
	<code>\Pisymbol{umranda}{2}</code>		<code>\Pisymbol{umranda}{36}</code>		<code>\Pisymbol{umranda}{70}</code>
	<code>\Pisymbol{umranda}{3}</code>		<code>\Pisymbol{umranda}{37}</code>		<code>\Pisymbol{umranda}{71}</code>
	<code>\Pisymbol{umranda}{4}</code>		<code>\Pisymbol{umranda}{38}</code>		<code>\Pisymbol{umranda}{72}</code>
	<code>\Pisymbol{umranda}{5}</code>		<code>\Pisymbol{umranda}{39}</code>		<code>\Pisymbol{umranda}{73}</code>
	<code>\Pisymbol{umranda}{6}</code>		<code>\Pisymbol{umranda}{40}</code>		<code>\Pisymbol{umranda}{74}</code>
	<code>\Pisymbol{umranda}{7}</code>		<code>\Pisymbol{umranda}{41}</code>		<code>\Pisymbol{umranda}{75}</code>
	<code>\Pisymbol{umranda}{8}</code>		<code>\Pisymbol{umranda}{42}</code>		<code>\Pisymbol{umranda}{76}</code>
	<code>\Pisymbol{umranda}{9}</code>		<code>\Pisymbol{umranda}{43}</code>		<code>\Pisymbol{umranda}{77}</code>
	<code>\Pisymbol{umranda}{10}</code>		<code>\Pisymbol{umranda}{44}</code>		<code>\Pisymbol{umranda}{78}</code>
	<code>\Pisymbol{umranda}{11}</code>		<code>\Pisymbol{umranda}{45}</code>		<code>\Pisymbol{umranda}{79}</code>
	<code>\Pisymbol{umranda}{12}</code>		<code>\Pisymbol{umranda}{46}</code>		<code>\Pisymbol{umranda}{80}</code>
	<code>\Pisymbol{umranda}{13}</code>		<code>\Pisymbol{umranda}{47}</code>		<code>\Pisymbol{umranda}{81}</code>
	<code>\Pisymbol{umranda}{14}</code>		<code>\Pisymbol{umranda}{48}</code>		<code>\Pisymbol{umranda}{82}</code>
	<code>\Pisymbol{umranda}{15}</code>		<code>\Pisymbol{umranda}{49}</code>		<code>\Pisymbol{umranda}{83}</code>
	<code>\Pisymbol{umranda}{16}</code>		<code>\Pisymbol{umranda}{50}</code>		<code>\Pisymbol{umranda}{84}</code>
	<code>\Pisymbol{umranda}{17}</code>		<code>\Pisymbol{umranda}{51}</code>		<code>\Pisymbol{umranda}{85}</code>
	<code>\Pisymbol{umranda}{18}</code>		<code>\Pisymbol{umranda}{52}</code>		<code>\Pisymbol{umranda}{86}</code>
	<code>\Pisymbol{umranda}{19}</code>		<code>\Pisymbol{umranda}{53}</code>		<code>\Pisymbol{umranda}{87}</code>
	<code>\Pisymbol{umranda}{20}</code>		<code>\Pisymbol{umranda}{54}</code>		<code>\Pisymbol{umranda}{88}</code>
	<code>\Pisymbol{umranda}{21}</code>		<code>\Pisymbol{umranda}{55}</code>		<code>\Pisymbol{umranda}{89}</code>
	<code>\Pisymbol{umranda}{22}</code>		<code>\Pisymbol{umranda}{56}</code>		<code>\Pisymbol{umranda}{90}</code>
	<code>\Pisymbol{umranda}{23}</code>		<code>\Pisymbol{umranda}{57}</code>		<code>\Pisymbol{umranda}{91}</code>
	<code>\Pisymbol{umranda}{24}</code>		<code>\Pisymbol{umranda}{58}</code>		<code>\Pisymbol{umranda}{92}</code>
	<code>\Pisymbol{umranda}{25}</code>		<code>\Pisymbol{umranda}{59}</code>		<code>\Pisymbol{umranda}{93}</code>
	<code>\Pisymbol{umranda}{26}</code>		<code>\Pisymbol{umranda}{60}</code>		<code>\Pisymbol{umranda}{94}</code>
	<code>\Pisymbol{umranda}{27}</code>		<code>\Pisymbol{umranda}{61}</code>		<code>\Pisymbol{umranda}{95}</code>
	<code>\Pisymbol{umranda}{28}</code>		<code>\Pisymbol{umranda}{62}</code>		<code>\Pisymbol{umranda}{96}</code>
	<code>\Pisymbol{umranda}{29}</code>		<code>\Pisymbol{umranda}{63}</code>		<code>\Pisymbol{umranda}{97}</code>
	<code>\Pisymbol{umranda}{30}</code>		<code>\Pisymbol{umranda}{64}</code>		<code>\Pisymbol{umranda}{98}</code>
	<code>\Pisymbol{umranda}{31}</code>		<code>\Pisymbol{umranda}{65}</code>		<code>\Pisymbol{umranda}{99}</code>
	<code>\Pisymbol{umranda}{32}</code>		<code>\Pisymbol{umranda}{66}</code>		<code>\Pisymbol{umranda}{100}</code>
	<code>\Pisymbol{umranda}{33}</code>		<code>\Pisymbol{umranda}{67}</code>		<code>\Pisymbol{umranda}{101}</code>

The niceframe package can be used to typeset decorative frames using fonts such as umranda.

TABLE 513: umrandb Decorative Borders

	<code>\Pisymbol{umrandb}{0}</code>		<code>\Pisymbol{umrandb}{42}</code>		<code>\Pisymbol{umrandb}{84}</code>
	<code>\Pisymbol{umrandb}{1}</code>		<code>\Pisymbol{umrandb}{43}</code>		<code>\Pisymbol{umrandb}{85}</code>
	<code>\Pisymbol{umrandb}{2}</code>		<code>\Pisymbol{umrandb}{44}</code>		<code>\Pisymbol{umrandb}{86}</code>
	<code>\Pisymbol{umrandb}{3}</code>		<code>\Pisymbol{umrandb}{45}</code>		<code>\Pisymbol{umrandb}{87}</code>
	<code>\Pisymbol{umrandb}{4}</code>		<code>\Pisymbol{umrandb}{46}</code>		<code>\Pisymbol{umrandb}{88}</code>
	<code>\Pisymbol{umrandb}{5}</code>		<code>\Pisymbol{umrandb}{47}</code>		<code>\Pisymbol{umrandb}{89}</code>
	<code>\Pisymbol{umrandb}{6}</code>		<code>\Pisymbol{umrandb}{48}</code>		<code>\Pisymbol{umrandb}{90}</code>
	<code>\Pisymbol{umrandb}{7}</code>		<code>\Pisymbol{umrandb}{49}</code>		<code>\Pisymbol{umrandb}{91}</code>
	<code>\Pisymbol{umrandb}{8}</code>		<code>\Pisymbol{umrandb}{50}</code>		<code>\Pisymbol{umrandb}{92}</code>
	<code>\Pisymbol{umrandb}{9}</code>		<code>\Pisymbol{umrandb}{51}</code>		<code>\Pisymbol{umrandb}{93}</code>
	<code>\Pisymbol{umrandb}{10}</code>		<code>\Pisymbol{umrandb}{52}</code>		<code>\Pisymbol{umrandb}{94}</code>
	<code>\Pisymbol{umrandb}{11}</code>		<code>\Pisymbol{umrandb}{53}</code>		<code>\Pisymbol{umrandb}{95}</code>
	<code>\Pisymbol{umrandb}{12}</code>		<code>\Pisymbol{umrandb}{54}</code>		<code>\Pisymbol{umrandb}{96}</code>
	<code>\Pisymbol{umrandb}{13}</code>		<code>\Pisymbol{umrandb}{55}</code>		<code>\Pisymbol{umrandb}{97}</code>
	<code>\Pisymbol{umrandb}{14}</code>		<code>\Pisymbol{umrandb}{56}</code>		<code>\Pisymbol{umrandb}{98}</code>
	<code>\Pisymbol{umrandb}{15}</code>		<code>\Pisymbol{umrandb}{57}</code>		<code>\Pisymbol{umrandb}{99}</code>
	<code>\Pisymbol{umrandb}{16}</code>		<code>\Pisymbol{umrandb}{58}</code>		<code>\Pisymbol{umrandb}{100}</code>
	<code>\Pisymbol{umrandb}{17}</code>		<code>\Pisymbol{umrandb}{59}</code>		<code>\Pisymbol{umrandb}{101}</code>
	<code>\Pisymbol{umrandb}{18}</code>		<code>\Pisymbol{umrandb}{60}</code>		<code>\Pisymbol{umrandb}{102}</code>
	<code>\Pisymbol{umrandb}{19}</code>		<code>\Pisymbol{umrandb}{61}</code>		<code>\Pisymbol{umrandb}{103}</code>
	<code>\Pisymbol{umrandb}{20}</code>		<code>\Pisymbol{umrandb}{62}</code>		<code>\Pisymbol{umrandb}{104}</code>
	<code>\Pisymbol{umrandb}{21}</code>		<code>\Pisymbol{umrandb}{63}</code>		<code>\Pisymbol{umrandb}{105}</code>
	<code>\Pisymbol{umrandb}{22}</code>		<code>\Pisymbol{umrandb}{64}</code>		<code>\Pisymbol{umrandb}{106}</code>
	<code>\Pisymbol{umrandb}{23}</code>		<code>\Pisymbol{umrandb}{65}</code>		<code>\Pisymbol{umrandb}{107}</code>
	<code>\Pisymbol{umrandb}{24}</code>		<code>\Pisymbol{umrandb}{66}</code>		<code>\Pisymbol{umrandb}{108}</code>
	<code>\Pisymbol{umrandb}{25}</code>		<code>\Pisymbol{umrandb}{67}</code>		<code>\Pisymbol{umrandb}{109}</code>
	<code>\Pisymbol{umrandb}{26}</code>		<code>\Pisymbol{umrandb}{68}</code>		<code>\Pisymbol{umrandb}{110}</code>
	<code>\Pisymbol{umrandb}{27}</code>		<code>\Pisymbol{umrandb}{69}</code>		<code>\Pisymbol{umrandb}{111}</code>
	<code>\Pisymbol{umrandb}{28}</code>		<code>\Pisymbol{umrandb}{70}</code>		<code>\Pisymbol{umrandb}{112}</code>
	<code>\Pisymbol{umrandb}{29}</code>		<code>\Pisymbol{umrandb}{71}</code>		<code>\Pisymbol{umrandb}{113}</code>
	<code>\Pisymbol{umrandb}{30}</code>		<code>\Pisymbol{umrandb}{72}</code>		<code>\Pisymbol{umrandb}{114}</code>
	<code>\Pisymbol{umrandb}{31}</code>		<code>\Pisymbol{umrandb}{73}</code>		<code>\Pisymbol{umrandb}{115}</code>
	<code>\Pisymbol{umrandb}{32}</code>		<code>\Pisymbol{umrandb}{74}</code>		<code>\Pisymbol{umrandb}{116}</code>
	<code>\Pisymbol{umrandb}{33}</code>		<code>\Pisymbol{umrandb}{75}</code>		<code>\Pisymbol{umrandb}{117}</code>
	<code>\Pisymbol{umrandb}{34}</code>		<code>\Pisymbol{umrandb}{76}</code>		<code>\Pisymbol{umrandb}{118}</code>
	<code>\Pisymbol{umrandb}{35}</code>		<code>\Pisymbol{umrandb}{77}</code>		<code>\Pisymbol{umrandb}{119}</code>
	<code>\Pisymbol{umrandb}{36}</code>		<code>\Pisymbol{umrandb}{78}</code>		<code>\Pisymbol{umrandb}{120}</code>
	<code>\Pisymbol{umrandb}{37}</code>		<code>\Pisymbol{umrandb}{79}</code>		<code>\Pisymbol{umrandb}{121}</code>
	<code>\Pisymbol{umrandb}{38}</code>		<code>\Pisymbol{umrandb}{80}</code>		<code>\Pisymbol{umrandb}{122}</code>
	<code>\Pisymbol{umrandb}{39}</code>		<code>\Pisymbol{umrandb}{81}</code>		<code>\Pisymbol{umrandb}{123}</code>
	<code>\Pisymbol{umrandb}{40}</code>		<code>\Pisymbol{umrandb}{82}</code>		
	<code>\Pisymbol{umrandb}{41}</code>		<code>\Pisymbol{umrandb}{83}</code>		

The niceframe package can be used to typeset decorative frames using fonts such as umrandb.

TABLE 514: dingbat Decorative Borders

	<code>\Pisymbol{dingbat}{69}</code>		<code>\Pisymbol{dingbat}{97}</code>
	<code>\Pisymbol{dingbat}{70}</code>		<code>\Pisymbol{dingbat}{98}</code>
	<code>\Pisymbol{dingbat}{71}</code>		<code>\Pisymbol{dingbat}{99}</code>
	<code>\Pisymbol{dingbat}{72}</code>		<code>\Pisymbol{dingbat}{100}</code>
	<code>\Pisymbol{dingbat}{74}</code>		<code>\Pisymbol{dingbat}{101}</code>
	<code>\Pisymbol{dingbat}{75}</code>		<code>\Pisymbol{dingbat}{102}</code>
	<code>\Pisymbol{dingbat}{76}</code>		<code>\Pisymbol{dingbat}{103}</code>
	<code>\Pisymbol{dingbat}{77}</code>		<code>\Pisymbol{dingbat}{104}</code>

The preceding table is incomplete in that it includes only unnamed dingbat symbols. Named symbols are included in Table 352 and Table 396 (both intermixed with symbols from the ark10 font).

The `dingbat` package includes a `udingbat.fd` file so a document does not need to specify the `\DeclareFontFamily` and `\DeclareFontShape` commands list at the beginning of Section 9.

The `niceframe` package can be used to typeset decorative frames using fonts such as `dingbat`.

TABLE 515: knot Celtic Knots

	<code>\Pisymbol{knot1}{48}</code>		<code>\Pisymbol{knot1}{68}</code>		<code>\Pisymbol{knot1}{84}</code>
	<code>\Pisymbol{knot1}{49}</code>		<code>\Pisymbol{knot1}{69}</code>		<code>\Pisymbol{knot1}{85}</code>
	<code>\Pisymbol{knot1}{50}</code>		<code>\Pisymbol{knot1}{70}</code>		<code>\Pisymbol{knot1}{86}</code>
	<code>\Pisymbol{knot1}{51}</code>		<code>\Pisymbol{knot1}{71}</code>		<code>\Pisymbol{knot1}{87}</code>
	<code>\Pisymbol{knot1}{52}</code>		<code>\Pisymbol{knot1}{72}</code>		<code>\Pisymbol{knot1}{88}</code>
	<code>\Pisymbol{knot1}{53}</code>		<code>\Pisymbol{knot1}{73}</code>		<code>\Pisymbol{knot1}{96}</code>
	<code>\Pisymbol{knot1}{58}</code>		<code>\Pisymbol{knot1}{74}</code>		<code>\Pisymbol{knot1}{97}</code>
	<code>\Pisymbol{knot1}{59}</code>		<code>\Pisymbol{knot1}{75}</code>		<code>\Pisymbol{knot1}{98}</code>
	<code>\Pisymbol{knot1}{60}</code>		<code>\Pisymbol{knot1}{76}</code>		<code>\Pisymbol{knot1}{99}</code>
	<code>\Pisymbol{knot1}{61}</code>		<code>\Pisymbol{knot1}{77}</code>		<code>\Pisymbol{knot1}{100}</code>

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	<code>\Pisymbol{knot1}{62}</code>		<code>\Pisymbol{knot1}{78}</code>		<code>\Pisymbol{knot1}{101}</code>
	<code>\Pisymbol{knot1}{63}</code>		<code>\Pisymbol{knot1}{79}</code>		<code>\Pisymbol{knot1}{102}</code>
	<code>\Pisymbol{knot1}{64}</code>		<code>\Pisymbol{knot1}{80}</code>		<code>\Pisymbol{knot1}{103}</code>
	<code>\Pisymbol{knot1}{65}</code>		<code>\Pisymbol{knot1}{81}</code>		<code>\Pisymbol{knot1}{104}</code>
	<code>\Pisymbol{knot1}{66}</code>		<code>\Pisymbol{knot1}{82}</code>		<code>\Pisymbol{knot1}{105}</code>
	<code>\Pisymbol{knot1}{67}</code>		<code>\Pisymbol{knot1}{83}</code>		
	<code>\Pisymbol{knot2}{48}</code>		<code>\Pisymbol{knot2}{68}</code>		<code>\Pisymbol{knot2}{84}</code>
	<code>\Pisymbol{knot2}{49}</code>		<code>\Pisymbol{knot2}{69}</code>		<code>\Pisymbol{knot2}{85}</code>
	<code>\Pisymbol{knot2}{50}</code>		<code>\Pisymbol{knot2}{70}</code>		<code>\Pisymbol{knot2}{86}</code>
	<code>\Pisymbol{knot2}{51}</code>		<code>\Pisymbol{knot2}{71}</code>		<code>\Pisymbol{knot2}{87}</code>
	<code>\Pisymbol{knot2}{52}</code>		<code>\Pisymbol{knot2}{72}</code>		<code>\Pisymbol{knot2}{88}</code>
	<code>\Pisymbol{knot2}{53}</code>		<code>\Pisymbol{knot2}{73}</code>		<code>\Pisymbol{knot2}{96}</code>
	<code>\Pisymbol{knot2}{58}</code>		<code>\Pisymbol{knot2}{74}</code>		<code>\Pisymbol{knot2}{97}</code>
	<code>\Pisymbol{knot2}{59}</code>		<code>\Pisymbol{knot2}{75}</code>		<code>\Pisymbol{knot2}{98}</code>
	<code>\Pisymbol{knot2}{60}</code>		<code>\Pisymbol{knot2}{76}</code>		<code>\Pisymbol{knot2}{99}</code>
	<code>\Pisymbol{knot2}{61}</code>		<code>\Pisymbol{knot2}{77}</code>		<code>\Pisymbol{knot2}{100}</code>
	<code>\Pisymbol{knot2}{62}</code>		<code>\Pisymbol{knot2}{78}</code>		<code>\Pisymbol{knot2}{101}</code>
	<code>\Pisymbol{knot2}{63}</code>		<code>\Pisymbol{knot2}{79}</code>		<code>\Pisymbol{knot2}{102}</code>
	<code>\Pisymbol{knot2}{64}</code>		<code>\Pisymbol{knot2}{80}</code>		<code>\Pisymbol{knot2}{103}</code>
	<code>\Pisymbol{knot2}{65}</code>		<code>\Pisymbol{knot2}{81}</code>		<code>\Pisymbol{knot2}{104}</code>
	<code>\Pisymbol{knot2}{66}</code>		<code>\Pisymbol{knot2}{82}</code>		<code>\Pisymbol{knot2}{105}</code>
	<code>\Pisymbol{knot2}{67}</code>		<code>\Pisymbol{knot2}{83}</code>		
	<code>\Pisymbol{knot3}{48}</code>		<code>\Pisymbol{knot3}{68}</code>		<code>\Pisymbol{knot3}{84}</code>
	<code>\Pisymbol{knot3}{49}</code>		<code>\Pisymbol{knot3}{69}</code>		<code>\Pisymbol{knot3}{85}</code>
	<code>\Pisymbol{knot3}{50}</code>		<code>\Pisymbol{knot3}{70}</code>		<code>\Pisymbol{knot3}{86}</code>
	<code>\Pisymbol{knot3}{51}</code>		<code>\Pisymbol{knot3}{71}</code>		<code>\Pisymbol{knot3}{87}</code>
	<code>\Pisymbol{knot3}{52}</code>		<code>\Pisymbol{knot3}{72}</code>		<code>\Pisymbol{knot3}{88}</code>
	<code>\Pisymbol{knot3}{53}</code>		<code>\Pisymbol{knot3}{73}</code>		<code>\Pisymbol{knot3}{96}</code>
	<code>\Pisymbol{knot3}{58}</code>		<code>\Pisymbol{knot3}{74}</code>		<code>\Pisymbol{knot3}{97}</code>
	<code>\Pisymbol{knot3}{59}</code>		<code>\Pisymbol{knot3}{75}</code>		<code>\Pisymbol{knot3}{98}</code>
	<code>\Pisymbol{knot3}{60}</code>		<code>\Pisymbol{knot3}{76}</code>		<code>\Pisymbol{knot3}{99}</code>
	<code>\Pisymbol{knot3}{61}</code>		<code>\Pisymbol{knot3}{77}</code>		<code>\Pisymbol{knot3}{100}</code>
	<code>\Pisymbol{knot3}{62}</code>		<code>\Pisymbol{knot3}{78}</code>		<code>\Pisymbol{knot3}{101}</code>
	<code>\Pisymbol{knot3}{63}</code>		<code>\Pisymbol{knot3}{79}</code>		<code>\Pisymbol{knot3}{102}</code>
	<code>\Pisymbol{knot3}{64}</code>		<code>\Pisymbol{knot3}{80}</code>		<code>\Pisymbol{knot3}{103}</code>
	<code>\Pisymbol{knot3}{65}</code>		<code>\Pisymbol{knot3}{81}</code>		<code>\Pisymbol{knot3}{104}</code>
	<code>\Pisymbol{knot3}{66}</code>		<code>\Pisymbol{knot3}{82}</code>		<code>\Pisymbol{knot3}{105}</code>

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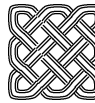
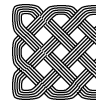
	<code>\Pisymbol{knot3}{67}</code>		<code>\Pisymbol{knot3}{83}</code>		
	<code>\Pisymbol{knot4}{48}</code>		<code>\Pisymbol{knot4}{68}</code>		<code>\Pisymbol{knot4}{84}</code>
	<code>\Pisymbol{knot4}{49}</code>		<code>\Pisymbol{knot4}{69}</code>		<code>\Pisymbol{knot4}{85}</code>
	<code>\Pisymbol{knot4}{50}</code>		<code>\Pisymbol{knot4}{70}</code>		<code>\Pisymbol{knot4}{86}</code>
	<code>\Pisymbol{knot4}{51}</code>		<code>\Pisymbol{knot4}{71}</code>		<code>\Pisymbol{knot4}{87}</code>
	<code>\Pisymbol{knot4}{52}</code>		<code>\Pisymbol{knot4}{72}</code>		<code>\Pisymbol{knot4}{88}</code>
	<code>\Pisymbol{knot4}{53}</code>		<code>\Pisymbol{knot4}{73}</code>		<code>\Pisymbol{knot4}{96}</code>
	<code>\Pisymbol{knot4}{58}</code>		<code>\Pisymbol{knot4}{74}</code>		<code>\Pisymbol{knot4}{97}</code>
	<code>\Pisymbol{knot4}{59}</code>		<code>\Pisymbol{knot4}{75}</code>		<code>\Pisymbol{knot4}{98}</code>
	<code>\Pisymbol{knot4}{60}</code>		<code>\Pisymbol{knot4}{76}</code>		<code>\Pisymbol{knot4}{99}</code>
	<code>\Pisymbol{knot4}{61}</code>		<code>\Pisymbol{knot4}{77}</code>		<code>\Pisymbol{knot4}{100}</code>
	<code>\Pisymbol{knot4}{62}</code>		<code>\Pisymbol{knot4}{78}</code>		<code>\Pisymbol{knot4}{101}</code>
	<code>\Pisymbol{knot4}{63}</code>		<code>\Pisymbol{knot4}{79}</code>		<code>\Pisymbol{knot4}{102}</code>
	<code>\Pisymbol{knot4}{64}</code>		<code>\Pisymbol{knot4}{80}</code>		<code>\Pisymbol{knot4}{103}</code>
	<code>\Pisymbol{knot4}{65}</code>		<code>\Pisymbol{knot4}{81}</code>		<code>\Pisymbol{knot4}{104}</code>
	<code>\Pisymbol{knot4}{66}</code>		<code>\Pisymbol{knot4}{82}</code>		<code>\Pisymbol{knot4}{105}</code>
	<code>\Pisymbol{knot4}{67}</code>		<code>\Pisymbol{knot4}{83}</code>		
	<code>\Pisymbol{knot5}{48}</code>		<code>\Pisymbol{knot5}{68}</code>		<code>\Pisymbol{knot5}{84}</code>
	<code>\Pisymbol{knot5}{49}</code>		<code>\Pisymbol{knot5}{69}</code>		<code>\Pisymbol{knot5}{85}</code>
	<code>\Pisymbol{knot5}{50}</code>		<code>\Pisymbol{knot5}{70}</code>		<code>\Pisymbol{knot5}{86}</code>
	<code>\Pisymbol{knot5}{51}</code>		<code>\Pisymbol{knot5}{71}</code>		<code>\Pisymbol{knot5}{87}</code>
	<code>\Pisymbol{knot5}{52}</code>		<code>\Pisymbol{knot5}{72}</code>		<code>\Pisymbol{knot5}{88}</code>
	<code>\Pisymbol{knot5}{53}</code>		<code>\Pisymbol{knot5}{73}</code>		<code>\Pisymbol{knot5}{96}</code>
	<code>\Pisymbol{knot5}{58}</code>		<code>\Pisymbol{knot5}{74}</code>		<code>\Pisymbol{knot5}{97}</code>
	<code>\Pisymbol{knot5}{59}</code>		<code>\Pisymbol{knot5}{75}</code>		<code>\Pisymbol{knot5}{98}</code>
	<code>\Pisymbol{knot5}{60}</code>		<code>\Pisymbol{knot5}{76}</code>		<code>\Pisymbol{knot5}{99}</code>
	<code>\Pisymbol{knot5}{61}</code>		<code>\Pisymbol{knot5}{77}</code>		<code>\Pisymbol{knot5}{100}</code>
	<code>\Pisymbol{knot5}{62}</code>		<code>\Pisymbol{knot5}{78}</code>		<code>\Pisymbol{knot5}{101}</code>
	<code>\Pisymbol{knot5}{63}</code>		<code>\Pisymbol{knot5}{79}</code>		<code>\Pisymbol{knot5}{102}</code>
	<code>\Pisymbol{knot5}{64}</code>		<code>\Pisymbol{knot5}{80}</code>		<code>\Pisymbol{knot5}{103}</code>
	<code>\Pisymbol{knot5}{65}</code>		<code>\Pisymbol{knot5}{81}</code>		<code>\Pisymbol{knot5}{104}</code>
	<code>\Pisymbol{knot5}{66}</code>		<code>\Pisymbol{knot5}{82}</code>		<code>\Pisymbol{knot5}{105}</code>
	<code>\Pisymbol{knot5}{67}</code>		<code>\Pisymbol{knot5}{83}</code>		
	<code>\Pisymbol{knot6}{48}</code>		<code>\Pisymbol{knot6}{68}</code>		<code>\Pisymbol{knot6}{84}</code>
	<code>\Pisymbol{knot6}{49}</code>		<code>\Pisymbol{knot6}{69}</code>		<code>\Pisymbol{knot6}{85}</code>
	<code>\Pisymbol{knot6}{50}</code>		<code>\Pisymbol{knot6}{70}</code>		<code>\Pisymbol{knot6}{86}</code>
	<code>\Pisymbol{knot6}{51}</code>		<code>\Pisymbol{knot6}{71}</code>		<code>\Pisymbol{knot6}{87}</code>

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•	\Pisymbol{knot6}{52}		\Pisymbol{knot6}{72}		\Pisymbol{knot6}{88}
	\Pisymbol{knot6}{53}		\Pisymbol{knot6}{73}		\Pisymbol{knot6}{96}
	\Pisymbol{knot6}{58}		\Pisymbol{knot6}{74}		\Pisymbol{knot6}{97}
	\Pisymbol{knot6}{59}		\Pisymbol{knot6}{75}		\Pisymbol{knot6}{98}
	\Pisymbol{knot6}{60}		\Pisymbol{knot6}{76}		\Pisymbol{knot6}{99}
	\Pisymbol{knot6}{61}		\Pisymbol{knot6}{77}		\Pisymbol{knot6}{100}
	\Pisymbol{knot6}{62}		\Pisymbol{knot6}{78}		\Pisymbol{knot6}{101}
	\Pisymbol{knot6}{63}		\Pisymbol{knot6}{79}		\Pisymbol{knot6}{102}
	\Pisymbol{knot6}{64}		\Pisymbol{knot6}{80}		\Pisymbol{knot6}{103}
	\Pisymbol{knot6}{65}		\Pisymbol{knot6}{81}		\Pisymbol{knot6}{104}
	\Pisymbol{knot6}{66}		\Pisymbol{knot6}{82}		\Pisymbol{knot6}{105}
	\Pisymbol{knot6}{67}		\Pisymbol{knot6}{83}		
	\Pisymbol{knot7}{48}		\Pisymbol{knot7}{68}		\Pisymbol{knot7}{84}
	\Pisymbol{knot7}{49}		\Pisymbol{knot7}{69}		\Pisymbol{knot7}{85}
	\Pisymbol{knot7}{50}		\Pisymbol{knot7}{70}		\Pisymbol{knot7}{86}
♦	\Pisymbol{knot7}{51}		\Pisymbol{knot7}{71}		\Pisymbol{knot7}{87}
•	\Pisymbol{knot7}{52}		\Pisymbol{knot7}{72}		\Pisymbol{knot7}{88}
	\Pisymbol{knot7}{53}		\Pisymbol{knot7}{73}		\Pisymbol{knot7}{96}
	\Pisymbol{knot7}{58}		\Pisymbol{knot7}{74}		\Pisymbol{knot7}{97}
	\Pisymbol{knot7}{59}		\Pisymbol{knot7}{75}		\Pisymbol{knot7}{98}
	\Pisymbol{knot7}{60}		\Pisymbol{knot7}{76}		\Pisymbol{knot7}{99}
	\Pisymbol{knot7}{61}		\Pisymbol{knot7}{77}		\Pisymbol{knot7}{100}
	\Pisymbol{knot7}{62}		\Pisymbol{knot7}{78}		\Pisymbol{knot7}{101}
	\Pisymbol{knot7}{63}		\Pisymbol{knot7}{79}		\Pisymbol{knot7}{102}
	\Pisymbol{knot7}{64}		\Pisymbol{knot7}{80}		\Pisymbol{knot7}{103}
	\Pisymbol{knot7}{65}		\Pisymbol{knot7}{81}		\Pisymbol{knot7}{104}
	\Pisymbol{knot7}{66}		\Pisymbol{knot7}{82}		\Pisymbol{knot7}{105}
	\Pisymbol{knot7}{67}		\Pisymbol{knot7}{83}		

The following is an example of a basic knot, using `\usefont{U}{knot<number>}{m}{n}` to change fonts for multiple characters instead of `\Pisymbol` to typeset one character at a time. Note that all of the characters in the knot fonts lie conveniently within the range of printable ASCII characters.

Input	knot1	knot2	knot3	knot4	knot5	knot6	knot7
CDB							
FHG							
@EA							

The `niceframe` package can be used to typeset decorative frames using fonts such as `knot`, especially using characters 48–63 of each font variant.

TABLE 516: dancers Dancing Men

	\Pisymbol{dancers}{0}		\Pisymbol{dancers}{86}		\Pisymbol{dancers}{172}
	\Pisymbol{dancers}{1}		\Pisymbol{dancers}{87}		\Pisymbol{dancers}{173}
	\Pisymbol{dancers}{2}		\Pisymbol{dancers}{88}		\Pisymbol{dancers}{174}
	\Pisymbol{dancers}{3}		\Pisymbol{dancers}{89}		\Pisymbol{dancers}{175}
	\Pisymbol{dancers}{4}		\Pisymbol{dancers}{90}		\Pisymbol{dancers}{176}
	\Pisymbol{dancers}{5}		\Pisymbol{dancers}{91}		\Pisymbol{dancers}{177}
	\Pisymbol{dancers}{6}		\Pisymbol{dancers}{92}		\Pisymbol{dancers}{178}
	\Pisymbol{dancers}{7}		\Pisymbol{dancers}{93}		\Pisymbol{dancers}{179}
	\Pisymbol{dancers}{8}		\Pisymbol{dancers}{94}		\Pisymbol{dancers}{180}
	\Pisymbol{dancers}{9}		\Pisymbol{dancers}{95}		\Pisymbol{dancers}{181}
	\Pisymbol{dancers}{10}		\Pisymbol{dancers}{96}		\Pisymbol{dancers}{182}
	\Pisymbol{dancers}{11}		\Pisymbol{dancers}{97}		\Pisymbol{dancers}{183}
	\Pisymbol{dancers}{12}		\Pisymbol{dancers}{98}		\Pisymbol{dancers}{184}
	\Pisymbol{dancers}{13}		\Pisymbol{dancers}{99}		\Pisymbol{dancers}{185}
	\Pisymbol{dancers}{14}		\Pisymbol{dancers}{100}		\Pisymbol{dancers}{186}
	\Pisymbol{dancers}{15}		\Pisymbol{dancers}{101}		\Pisymbol{dancers}{187}
	\Pisymbol{dancers}{16}		\Pisymbol{dancers}{102}		\Pisymbol{dancers}{188}
	\Pisymbol{dancers}{17}		\Pisymbol{dancers}{103}		\Pisymbol{dancers}{189}
	\Pisymbol{dancers}{18}		\Pisymbol{dancers}{104}		\Pisymbol{dancers}{190}
	\Pisymbol{dancers}{19}		\Pisymbol{dancers}{105}		\Pisymbol{dancers}{191}
	\Pisymbol{dancers}{20}		\Pisymbol{dancers}{106}		\Pisymbol{dancers}{192}
	\Pisymbol{dancers}{21}		\Pisymbol{dancers}{107}		\Pisymbol{dancers}{193}
	\Pisymbol{dancers}{22}		\Pisymbol{dancers}{108}		\Pisymbol{dancers}{194}
	\Pisymbol{dancers}{23}		\Pisymbol{dancers}{109}		\Pisymbol{dancers}{195}
	\Pisymbol{dancers}{24}		\Pisymbol{dancers}{110}		\Pisymbol{dancers}{196}
	\Pisymbol{dancers}{25}		\Pisymbol{dancers}{111}		\Pisymbol{dancers}{197}
	\Pisymbol{dancers}{26}		\Pisymbol{dancers}{112}		\Pisymbol{dancers}{198}
	\Pisymbol{dancers}{27}		\Pisymbol{dancers}{113}		\Pisymbol{dancers}{199}
	\Pisymbol{dancers}{28}		\Pisymbol{dancers}{114}		\Pisymbol{dancers}{200}
	\Pisymbol{dancers}{29}		\Pisymbol{dancers}{115}		\Pisymbol{dancers}{201}
	\Pisymbol{dancers}{30}		\Pisymbol{dancers}{116}		\Pisymbol{dancers}{202}
	\Pisymbol{dancers}{31}		\Pisymbol{dancers}{117}		\Pisymbol{dancers}{203}
	\Pisymbol{dancers}{32}		\Pisymbol{dancers}{118}		\Pisymbol{dancers}{204}
	\Pisymbol{dancers}{33}		\Pisymbol{dancers}{119}		\Pisymbol{dancers}{205}

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 \Pisymbol{dancers}{34}	 \Pisymbol{dancers}{120}	 \Pisymbol{dancers}{206}
 \Pisymbol{dancers}{35}	 \Pisymbol{dancers}{121}	 \Pisymbol{dancers}{207}
 \Pisymbol{dancers}{36}	 \Pisymbol{dancers}{122}	 \Pisymbol{dancers}{208}
 \Pisymbol{dancers}{37}	 \Pisymbol{dancers}{123}	 \Pisymbol{dancers}{209}
 \Pisymbol{dancers}{38}	 \Pisymbol{dancers}{124}	 \Pisymbol{dancers}{210}
 \Pisymbol{dancers}{39}	 \Pisymbol{dancers}{125}	 \Pisymbol{dancers}{211}
 \Pisymbol{dancers}{40}	 \Pisymbol{dancers}{126}	 \Pisymbol{dancers}{212}
 \Pisymbol{dancers}{41}	 \Pisymbol{dancers}{127}	 \Pisymbol{dancers}{213}
 \Pisymbol{dancers}{42}	 \Pisymbol{dancers}{128}	 \Pisymbol{dancers}{214}
 \Pisymbol{dancers}{43}	 \Pisymbol{dancers}{129}	 \Pisymbol{dancers}{215}
 \Pisymbol{dancers}{44}	 \Pisymbol{dancers}{130}	 \Pisymbol{dancers}{216}
 \Pisymbol{dancers}{45}	 \Pisymbol{dancers}{131}	 \Pisymbol{dancers}{217}
 \Pisymbol{dancers}{46}	 \Pisymbol{dancers}{132}	 \Pisymbol{dancers}{218}
 \Pisymbol{dancers}{47}	 \Pisymbol{dancers}{133}	 \Pisymbol{dancers}{219}
 \Pisymbol{dancers}{48}	 \Pisymbol{dancers}{134}	 \Pisymbol{dancers}{220}
 \Pisymbol{dancers}{49}	 \Pisymbol{dancers}{135}	 \Pisymbol{dancers}{221}
 \Pisymbol{dancers}{50}	 \Pisymbol{dancers}{136}	 \Pisymbol{dancers}{222}
 \Pisymbol{dancers}{51}	 \Pisymbol{dancers}{137}	 \Pisymbol{dancers}{223}
 \Pisymbol{dancers}{52}	 \Pisymbol{dancers}{138}	 \Pisymbol{dancers}{224}
 \Pisymbol{dancers}{53}	 \Pisymbol{dancers}{139}	 \Pisymbol{dancers}{225}
 \Pisymbol{dancers}{54}	 \Pisymbol{dancers}{140}	 \Pisymbol{dancers}{226}
 \Pisymbol{dancers}{55}	 \Pisymbol{dancers}{141}	 \Pisymbol{dancers}{227}
 \Pisymbol{dancers}{56}	 \Pisymbol{dancers}{142}	 \Pisymbol{dancers}{228}
 \Pisymbol{dancers}{57}	 \Pisymbol{dancers}{143}	 \Pisymbol{dancers}{229}
 \Pisymbol{dancers}{58}	 \Pisymbol{dancers}{144}	 \Pisymbol{dancers}{230}
 \Pisymbol{dancers}{59}	 \Pisymbol{dancers}{145}	 \Pisymbol{dancers}{231}
 \Pisymbol{dancers}{60}	 \Pisymbol{dancers}{146}	 \Pisymbol{dancers}{232}
 \Pisymbol{dancers}{61}	 \Pisymbol{dancers}{147}	 \Pisymbol{dancers}{233}
 \Pisymbol{dancers}{62}	 \Pisymbol{dancers}{148}	 \Pisymbol{dancers}{234}
 \Pisymbol{dancers}{63}	 \Pisymbol{dancers}{149}	 \Pisymbol{dancers}{235}
 \Pisymbol{dancers}{64}	 \Pisymbol{dancers}{150}	 \Pisymbol{dancers}{236}
 \Pisymbol{dancers}{65}	 \Pisymbol{dancers}{151}	 \Pisymbol{dancers}{237}
 \Pisymbol{dancers}{66}	 \Pisymbol{dancers}{152}	 \Pisymbol{dancers}{238}
 \Pisymbol{dancers}{67}	 \Pisymbol{dancers}{153}	 \Pisymbol{dancers}{239}
 \Pisymbol{dancers}{68}	 \Pisymbol{dancers}{154}	 \Pisymbol{dancers}{240}

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	<code>\Pisymbol{dancers}{69}</code>		<code>\Pisymbol{dancers}{155}</code>		<code>\Pisymbol{dancers}{241}</code>
	<code>\Pisymbol{dancers}{70}</code>		<code>\Pisymbol{dancers}{156}</code>		<code>\Pisymbol{dancers}{242}</code>
	<code>\Pisymbol{dancers}{71}</code>		<code>\Pisymbol{dancers}{157}</code>		<code>\Pisymbol{dancers}{243}</code>
	<code>\Pisymbol{dancers}{72}</code>		<code>\Pisymbol{dancers}{158}</code>		<code>\Pisymbol{dancers}{244}</code>
	<code>\Pisymbol{dancers}{73}</code>		<code>\Pisymbol{dancers}{159}</code>		<code>\Pisymbol{dancers}{245}</code>
	<code>\Pisymbol{dancers}{74}</code>		<code>\Pisymbol{dancers}{160}</code>		<code>\Pisymbol{dancers}{246}</code>
	<code>\Pisymbol{dancers}{75}</code>		<code>\Pisymbol{dancers}{161}</code>		<code>\Pisymbol{dancers}{247}</code>
	<code>\Pisymbol{dancers}{76}</code>		<code>\Pisymbol{dancers}{162}</code>		<code>\Pisymbol{dancers}{248}</code>
	<code>\Pisymbol{dancers}{77}</code>		<code>\Pisymbol{dancers}{163}</code>		<code>\Pisymbol{dancers}{249}</code>
	<code>\Pisymbol{dancers}{78}</code>		<code>\Pisymbol{dancers}{164}</code>		<code>\Pisymbol{dancers}{250}</code>
	<code>\Pisymbol{dancers}{79}</code>		<code>\Pisymbol{dancers}{165}</code>		<code>\Pisymbol{dancers}{251}</code>
	<code>\Pisymbol{dancers}{80}</code>		<code>\Pisymbol{dancers}{166}</code>		<code>\Pisymbol{dancers}{252}</code>
	<code>\Pisymbol{dancers}{81}</code>		<code>\Pisymbol{dancers}{167}</code>		<code>\Pisymbol{dancers}{253}</code>
	<code>\Pisymbol{dancers}{82}</code>		<code>\Pisymbol{dancers}{168}</code>		<code>\Pisymbol{dancers}{254}</code>
	<code>\Pisymbol{dancers}{83}</code>		<code>\Pisymbol{dancers}{169}</code>		<code>\Pisymbol{dancers}{255}</code>
	<code>\Pisymbol{dancers}{84}</code>		<code>\Pisymbol{dancers}{170}</code>		
	<code>\Pisymbol{dancers}{85}</code>		<code>\Pisymbol{dancers}{171}</code>		

Fans of Sherlock Holmes mysteries will recognize these glyphs as forming the substitution cipher featured in Sir Arthur Conan Doyle's *The Adventure of the Dancing Men* (1903).

TABLE 517: semaphor Semaphore Alphabet

	<code>\Pisymbol{smfpr10}{34}</code>		<code>\Pisymbol{smfpr10}{116}</code>		<code>\Pisymbol{smfpr10}{184}</code>
	<code>\Pisymbol{smfpr10}{35}</code>		<code>\Pisymbol{smfpr10}{117}</code>		<code>\Pisymbol{smfpr10}{185}</code>
	<code>\Pisymbol{smfpr10}{36}</code>		<code>\Pisymbol{smfpr10}{118}</code>		<code>\Pisymbol{smfpr10}{186}</code>
	<code>\Pisymbol{smfpr10}{42}</code>		<code>\Pisymbol{smfpr10}{119}</code>		<code>\Pisymbol{smfpr10}{187}</code>
	<code>\Pisymbol{smfpr10}{46}</code>		<code>\Pisymbol{smfpr10}{120}</code>		<code>\Pisymbol{smfpr10}{192}</code>
	<code>\Pisymbol{smfpr10}{48}</code>		<code>\Pisymbol{smfpr10}{121}</code>		<code>\Pisymbol{smfpr10}{193}</code>
	<code>\Pisymbol{smfpr10}{49}</code>		<code>\Pisymbol{smfpr10}{122}</code>		<code>\Pisymbol{smfpr10}{194}</code>
	<code>\Pisymbol{smfpr10}{50}</code>		<code>\Pisymbol{smfpr10}{126}</code>		<code>\Pisymbol{smfpr10}{195}</code>
	<code>\Pisymbol{smfpr10}{51}</code>		<code>\Pisymbol{smfpr10}{128}</code>		<code>\Pisymbol{smfpr10}{196}</code>
	<code>\Pisymbol{smfpr10}{52}</code>		<code>\Pisymbol{smfpr10}{129}</code>		<code>\Pisymbol{smfpr10}{197}</code>
	<code>\Pisymbol{smfpr10}{53}</code>		<code>\Pisymbol{smfpr10}{130}</code>		<code>\Pisymbol{smfpr10}{199}</code>
	<code>\Pisymbol{smfpr10}{54}</code>		<code>\Pisymbol{smfpr10}{131}</code>		<code>\Pisymbol{smfpr10}{200}</code>
	<code>\Pisymbol{smfpr10}{55}</code>		<code>\Pisymbol{smfpr10}{132}</code>		<code>\Pisymbol{smfpr10}{201}</code>
	<code>\Pisymbol{smfpr10}{56}</code>		<code>\Pisymbol{smfpr10}{133}</code>		<code>\Pisymbol{smfpr10}{202}</code>
	<code>\Pisymbol{smfpr10}{57}</code>		<code>\Pisymbol{smfpr10}{134}</code>		<code>\Pisymbol{smfpr10}{203}</code>

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1	\Pisymbol{smfpr10}{65}	2	\Pisymbol{smfpr10}{135}	3	\Pisymbol{smfpr10}{204}
4	\Pisymbol{smfpr10}{66}	5	\Pisymbol{smfpr10}{136}	6	\Pisymbol{smfpr10}{205}
7	\Pisymbol{smfpr10}{67}	8	\Pisymbol{smfpr10}{137}	9	\Pisymbol{smfpr10}{206}
10	\Pisymbol{smfpr10}{68}	11	\Pisymbol{smfpr10}{138}	12	\Pisymbol{smfpr10}{207}
13	\Pisymbol{smfpr10}{69}	14	\Pisymbol{smfpr10}{139}	15	\Pisymbol{smfpr10}{209}
16	\Pisymbol{smfpr10}{70}	17	\Pisymbol{smfpr10}{140}	18	\Pisymbol{smfpr10}{210}
19	\Pisymbol{smfpr10}{71}	20	\Pisymbol{smfpr10}{142}	21	\Pisymbol{smfpr10}{211}
22	\Pisymbol{smfpr10}{72}	23	\Pisymbol{smfpr10}{143}	24	\Pisymbol{smfpr10}{212}
25	\Pisymbol{smfpr10}{73}	26	\Pisymbol{smfpr10}{144}	27	\Pisymbol{smfpr10}{213}
28	\Pisymbol{smfpr10}{74}	29	\Pisymbol{smfpr10}{145}	30	\Pisymbol{smfpr10}{214}
31	\Pisymbol{smfpr10}{75}	32	\Pisymbol{smfpr10}{146}	33	\Pisymbol{smfpr10}{216}
34	\Pisymbol{smfpr10}{76}	35	\Pisymbol{smfpr10}{147}	36	\Pisymbol{smfpr10}{217}
37	\Pisymbol{smfpr10}{77}	38	\Pisymbol{smfpr10}{148}	39	\Pisymbol{smfpr10}{218}
40	\Pisymbol{smfpr10}{78}	41	\Pisymbol{smfpr10}{149}	42	\Pisymbol{smfpr10}{219}
43	\Pisymbol{smfpr10}{79}	44	\Pisymbol{smfpr10}{150}	45	\Pisymbol{smfpr10}{220}
46	\Pisymbol{smfpr10}{80}	47	\Pisymbol{smfpr10}{151}	48	\Pisymbol{smfpr10}{221}
49	\Pisymbol{smfpr10}{81}	50	\Pisymbol{smfpr10}{152}	51	\Pisymbol{smfpr10}{224}
52	\Pisymbol{smfpr10}{82}	53	\Pisymbol{smfpr10}{153}	54	\Pisymbol{smfpr10}{225}
55	\Pisymbol{smfpr10}{83}	56	\Pisymbol{smfpr10}{154}	57	\Pisymbol{smfpr10}{226}
58	\Pisymbol{smfpr10}{84}	59	\Pisymbol{smfpr10}{155}	60	\Pisymbol{smfpr10}{227}
61	\Pisymbol{smfpr10}{85}	62	\Pisymbol{smfpr10}{157}	63	\Pisymbol{smfpr10}{228}
64	\Pisymbol{smfpr10}{86}	65	\Pisymbol{smfpr10}{158}	66	\Pisymbol{smfpr10}{229}
67	\Pisymbol{smfpr10}{87}	68	\Pisymbol{smfpr10}{160}	69	\Pisymbol{smfpr10}{231}
70	\Pisymbol{smfpr10}{88}	71	\Pisymbol{smfpr10}{161}	72	\Pisymbol{smfpr10}{232}
73	\Pisymbol{smfpr10}{89}	74	\Pisymbol{smfpr10}{162}	75	\Pisymbol{smfpr10}{233}
76	\Pisymbol{smfpr10}{90}	77	\Pisymbol{smfpr10}{163}	78	\Pisymbol{smfpr10}{234}
79	\Pisymbol{smfpr10}{97}	80	\Pisymbol{smfpr10}{164}	81	\Pisymbol{smfpr10}{235}
82	\Pisymbol{smfpr10}{98}	82	\Pisymbol{smfpr10}{165}	83	\Pisymbol{smfpr10}{236}
84	\Pisymbol{smfpr10}{99}	83	\Pisymbol{smfpr10}{166}	84	\Pisymbol{smfpr10}{237}
85	\Pisymbol{smfpr10}{100}	84	\Pisymbol{smfpr10}{167}	85	\Pisymbol{smfpr10}{238}
86	\Pisymbol{smfpr10}{101}	85	\Pisymbol{smfpr10}{168}	86	\Pisymbol{smfpr10}{239}
87	\Pisymbol{smfpr10}{102}	86	\Pisymbol{smfpr10}{169}	87	\Pisymbol{smfpr10}{241}
88	\Pisymbol{smfpr10}{103}	87	\Pisymbol{smfpr10}{170}	88	\Pisymbol{smfpr10}{242}
89	\Pisymbol{smfpr10}{104}	88	\Pisymbol{smfpr10}{171}	89	\Pisymbol{smfpr10}{243}
90	\Pisymbol{smfpr10}{105}	89	\Pisymbol{smfpr10}{172}	90	\Pisymbol{smfpr10}{244}
91	\Pisymbol{smfpr10}{106}	90	\Pisymbol{smfpr10}{174}	91	\Pisymbol{smfpr10}{245}
92	\Pisymbol{smfpr10}{107}	91	\Pisymbol{smfpr10}{175}	92	\Pisymbol{smfpr10}{246}
93	\Pisymbol{smfpr10}{108}	92	\Pisymbol{smfpr10}{176}	93	\Pisymbol{smfpr10}{248}
94	\Pisymbol{smfpr10}{109}	93	\Pisymbol{smfpr10}{177}	94	\Pisymbol{smfpr10}{249}
95	\Pisymbol{smfpr10}{110}	94	\Pisymbol{smfpr10}{178}	95	\Pisymbol{smfpr10}{250}
96	\Pisymbol{smfpr10}{111}	95	\Pisymbol{smfpr10}{179}	96	\Pisymbol{smfpr10}{251}
97	\Pisymbol{smfpr10}{112}	96	\Pisymbol{smfpr10}{180}	97	\Pisymbol{smfpr10}{252}
98	\Pisymbol{smfpr10}{113}	97	\Pisymbol{smfpr10}{181}	98	\Pisymbol{smfpr10}{253}
99	\Pisymbol{smfpr10}{114}	98	\Pisymbol{smfpr10}{182}		
100	\Pisymbol{smfpr10}{115}	99	\Pisymbol{smfpr10}{183}		

`semaphor` provides a `semaf.fd` font-definition file. Instead of using `pifont` and `\Pisymbol` to typeset a glyph, a document can select the `semaphor` fonts directly, although this does require putting `\input{semaf.fd}` in the document's preamble. For example, `{\usefont{OT1}{smfp}{m}{n}Hello}` will typeset “𐀀𐀁𐀂𐀃”. This can be useful for typesetting complete messages. Roman, bold, monospace, slanted, and bold+slanted styles are all supported.

In addition, `semaphor` provides three variations of each font: a “person” version (`smfpr10`), which is what is illustrated in the preceding table, a “pillar” version (`smfr10`), which shows the flags on a pillar rather than being held by a person, and an “empty” version (`smfer10`), which shows only the flags and no pillar or person. Contrast these variations of the letter “H”:



TABLE 518: `cryst` Crystallography Symbols

◦	<code>\Pisymbol{cryst}{0}</code>	♠	<code>\Pisymbol{cryst}{63}</code>	↙	<code>\Pisymbol{cryst}{138}</code>
◐	<code>\Pisymbol{cryst}{2}</code>	♠	<code>\Pisymbol{cryst}{64}</code>	↘	<code>\Pisymbol{cryst}{139}</code>
▲	<code>\Pisymbol{cryst}{3}</code>	♠	<code>\Pisymbol{cryst}{65}</code>	▣	<code>\Pisymbol{cryst}{140}</code>
◆	<code>\Pisymbol{cryst}{4}</code>	♠	<code>\Pisymbol{cryst}{66}</code>	⬆	<code>\Pisymbol{cryst}{141}</code>
→	<code>\Pisymbol{cryst}{5}</code>	↖	<code>\Pisymbol{cryst}{75}</code>	↗	<code>\Pisymbol{cryst}{142}</code>
●	<code>\Pisymbol{cryst}{6}</code>	↘	<code>\Pisymbol{cryst}{77}</code>	⬇	<code>\Pisymbol{cryst}{143}</code>
→	<code>\Pisymbol{cryst}{7}</code>	↖	<code>\Pisymbol{cryst}{78}</code>	↙	<code>\Pisymbol{cryst}{145}</code>
→	<code>\Pisymbol{cryst}{8}</code>	↖	<code>\Pisymbol{cryst}{79}</code>	↘	<code>\Pisymbol{cryst}{147}</code>
→	<code>\Pisymbol{cryst}{9}</code>	▣	<code>\Pisymbol{cryst}{80}</code>	↙	<code>\Pisymbol{cryst}{148}</code>
◦	<code>\Pisymbol{cryst}{10}</code>	▣	<code>\Pisymbol{cryst}{81}</code>	↘	<code>\Pisymbol{cryst}{149}</code>
◐	<code>\Pisymbol{cryst}{12}</code>	▣	<code>\Pisymbol{cryst}{82}</code>	↓	<code>\Pisymbol{cryst}{155}</code>
●	<code>\Pisymbol{cryst}{15}</code>	▣	<code>\Pisymbol{cryst}{83}</code>	↓	<code>\Pisymbol{cryst}{157}</code>
◐	<code>\Pisymbol{cryst}{20}</code>	▣	<code>\Pisymbol{cryst}{84}</code>	↓	<code>\Pisymbol{cryst}{158}</code>
◐	<code>\Pisymbol{cryst}{21}</code>	↖	<code>\Pisymbol{cryst}{85}</code>	↓	<code>\Pisymbol{cryst}{159}</code>
◐	<code>\Pisymbol{cryst}{22}</code>	↖	<code>\Pisymbol{cryst}{87}</code>	↖	<code>\Pisymbol{cryst}{175}</code>
◐	<code>\Pisymbol{cryst}{24}</code>	↖	<code>\Pisymbol{cryst}{88}</code>	↖	<code>\Pisymbol{cryst}{177}</code>
↗	<code>\Pisymbol{cryst}{25}</code>	↖	<code>\Pisymbol{cryst}{89}</code>	↖	<code>\Pisymbol{cryst}{178}</code>
↗	<code>\Pisymbol{cryst}{27}</code>	↖	<code>\Pisymbol{cryst}{95}</code>	↖	<code>\Pisymbol{cryst}{179}</code>
↗	<code>\Pisymbol{cryst}{28}</code>	↖	<code>\Pisymbol{cryst}{97}</code>	↖	<code>\Pisymbol{cryst}{185}</code>
↗	<code>\Pisymbol{cryst}{29}</code>	↖	<code>\Pisymbol{cryst}{98}</code>	↖	<code>\Pisymbol{cryst}{187}</code>
▲	<code>\Pisymbol{cryst}{30}</code>	↖	<code>\Pisymbol{cryst}{99}</code>	↖	<code>\Pisymbol{cryst}{188}</code>
▲	<code>\Pisymbol{cryst}{31}</code>	♠	<code>\Pisymbol{cryst}{102}</code>	↖	<code>\Pisymbol{cryst}{189}</code>
▲	<code>\Pisymbol{cryst}{32}</code>	♠	<code>\Pisymbol{cryst}{103}</code>	↖	<code>\Pisymbol{cryst}{195}</code>
↗	<code>\Pisymbol{cryst}{35}</code>	♠	<code>\Pisymbol{cryst}{104}</code>	↖	<code>\Pisymbol{cryst}{197}</code>
◐	<code>\Pisymbol{cryst}{36}</code>	↖	<code>\Pisymbol{cryst}{105}</code>	↖	<code>\Pisymbol{cryst}{198}</code>
↗	<code>\Pisymbol{cryst}{37}</code>	↖	<code>\Pisymbol{cryst}{107}</code>	↖	<code>\Pisymbol{cryst}{199}</code>
↗	<code>\Pisymbol{cryst}{38}</code>	↖	<code>\Pisymbol{cryst}{108}</code>	♠	<code>\Pisymbol{cryst}{202}</code>
↗	<code>\Pisymbol{cryst}{39}</code>	↖	<code>\Pisymbol{cryst}{109}</code>	♠	<code>\Pisymbol{cryst}{203}</code>
◐	<code>\Pisymbol{cryst}{40}</code>	♠	<code>\Pisymbol{cryst}{112}</code>	↗	<code>\Pisymbol{cryst}{204}</code>
◐	<code>\Pisymbol{cryst}{41}</code>	♠	<code>\Pisymbol{cryst}{113}</code>	♠	<code>\Pisymbol{cryst}{210}</code>
◐	<code>\Pisymbol{cryst}{42}</code>	♠	<code>\Pisymbol{cryst}{120}</code>	♠	<code>\Pisymbol{cryst}{212}</code>
◐	<code>\Pisymbol{cryst}{43}</code>	♠	<code>\Pisymbol{cryst}{121}</code>	♠	<code>\Pisymbol{cryst}{213}</code>

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■	\Pisymbol{cryst}{44}	✂	\Pisymbol{cryst}{123}	✂	\Pisymbol{cryst}{220}
↗	\Pisymbol{cryst}{45}	✂	\Pisymbol{cryst}{124}	✂	\Pisymbol{cryst}{221}
↗	\Pisymbol{cryst}{47}	✓	\Pisymbol{cryst}{125}	✂	\Pisymbol{cryst}{223}
↗	\Pisymbol{cryst}{48}	✓	\Pisymbol{cryst}{127}	✂	\Pisymbol{cryst}{224}
↗	\Pisymbol{cryst}{49}	✓	\Pisymbol{cryst}{128}	✂	\Pisymbol{cryst}{230}
⬢	\Pisymbol{cryst}{50}	✓	\Pisymbol{cryst}{129}	✂	\Pisymbol{cryst}{231}
↑	\Pisymbol{cryst}{55}	✂	\Pisymbol{cryst}{130}	✂	\Pisymbol{cryst}{232}
↑	\Pisymbol{cryst}{57}	✂	\Pisymbol{cryst}{131}	✂	\Pisymbol{cryst}{233}
↑	\Pisymbol{cryst}{58}	✂	\Pisymbol{cryst}{132}	✂	\Pisymbol{cryst}{236}
↑	\Pisymbol{cryst}{59}	✂	\Pisymbol{cryst}{133}	✂	\Pisymbol{cryst}{240}
⬢	\Pisymbol{cryst}{60}	✓	\Pisymbol{cryst}{135}	✂	\Pisymbol{cryst}{241}
✂	\Pisymbol{cryst}{61}	✂	\Pisymbol{cryst}{136}	✂	\Pisymbol{cryst}{242}
✂	\Pisymbol{cryst}{62}	✓	\Pisymbol{cryst}{137}	✂	\Pisymbol{cryst}{243}

TABLE 519: dice Dice

▣	\Pisymbol{dice3d}{49}	▣	\Pisymbol{dice3d}{101}	▣	\Pisymbol{dice3d}{111}
▣	\Pisymbol{dice3d}{50}	▣	\Pisymbol{dice3d}{102}	▣	\Pisymbol{dice3d}{112}
▣	\Pisymbol{dice3d}{51}	▣	\Pisymbol{dice3d}{103}	▣	\Pisymbol{dice3d}{113}
▣	\Pisymbol{dice3d}{52}	▣	\Pisymbol{dice3d}{104}	▣	\Pisymbol{dice3d}{114}
▣	\Pisymbol{dice3d}{53}	▣	\Pisymbol{dice3d}{105}	▣	\Pisymbol{dice3d}{115}
▣	\Pisymbol{dice3d}{54}	▣	\Pisymbol{dice3d}{106}	▣	\Pisymbol{dice3d}{116}
▣	\Pisymbol{dice3d}{97}	▣	\Pisymbol{dice3d}{107}	▣	\Pisymbol{dice3d}{117}
▣	\Pisymbol{dice3d}{98}	▣	\Pisymbol{dice3d}{108}	▣	\Pisymbol{dice3d}{118}
▣	\Pisymbol{dice3d}{99}	▣	\Pisymbol{dice3d}{109}	▣	\Pisymbol{dice3d}{119}
▣	\Pisymbol{dice3d}{100}	▣	\Pisymbol{dice3d}{110}	▣	\Pisymbol{dice3d}{120}

dice defines its symbols at a very small design size. The glyphs shown above were scaled up by a factor of four using `\DeclareFontShape{U}{dice3d}{m}{n}{<-> s*[4] dice3d}{}`.

An alternative to using `\Pisymbol` to select a die rotation is to rely on some cleverness in the kerning tables provided by the dice font. The individual digits “1” through “6” each produce the corresponding (2D) die face: `{\usefont{U}{dice3d}{m}{n}2 2 1}` produces “  ”, for example. When followed by a letter “a” through “d”, those pairs are kerned to produce a 3D die rotation with the digit specifying by the top face and the letter specifying one of the four possible front faces, sorted by increasing value. For example, `{\usefont{U}{dice3d}{m}{n}2a 2b 1d}` produces “  ”.

TABLE 520: magic Trading Card Symbols

①	<code>\Pisymbol{magic}{48}</code>	⑥	<code>\Pisymbol{magic}{54}</code>	⌚	<code>\Pisymbol{magic}{82}</code>
②	<code>\Pisymbol{magic}{49}</code>	⑦	<code>\Pisymbol{magic}{55}</code>	⌚	<code>\Pisymbol{magic}{84}</code>
③	<code>\Pisymbol{magic}{50}</code>	⑧	<code>\Pisymbol{magic}{56}</code>	⌚	<code>\Pisymbol{magic}{85}</code>
④	<code>\Pisymbol{magic}{51}</code>	⑨	<code>\Pisymbol{magic}{57}</code>	⌚	<code>\Pisymbol{magic}{87}</code>
⑤	<code>\Pisymbol{magic}{52}</code>	♠	<code>\Pisymbol{magic}{66}</code>	⌚	<code>\Pisymbol{magic}{88}</code>
	<code>\Pisymbol{magic}{53}</code>	♣	<code>\Pisymbol{magic}{71}</code>	⑩	<code>\Pisymbol{magic}{90}</code>

The preceding symbols resemble those from Wizards of the Coast’s *Magic: The Gathering* trading-card game. An alternative to entering symbols numerically using `\Pisymbol` is to switch to the `magic` font with `\usefont{U}{magic}{m}{n}` and employ the following mnemonic characters:

①–⑨	0–9	Circled numerals 0–9
♠	B	Black magic symbol
♣	G	Green magic symbol
⌚	R	Red magic symbol
⌚	T	Tap symbol (tilted “T” in a circle)
⌚	U	Blue magic symbol
⌚	W	White magic symbol
⌚	X	Circled “X” (for mana cost, e.g., Fireball)
⑩	Z	Circled “10” (for mana cost, e.g., Aladdin’s Lamp)

TABLE 521: bartel-chess-fonts Chess Pieces and Chessboard Squares

♔	<code>\Pisymbol{fselch}{0}</code>	♖	<code>\Pisymbol{fselch}{55}</code>	♜	<code>\Pisymbol{fselch}{110}</code>
♚	<code>\Pisymbol{fselch}{1}</code>	♗	<code>\Pisymbol{fselch}{56}</code>	♝	<code>\Pisymbol{fselch}{111}</code>
♛	<code>\Pisymbol{fselch}{2}</code>	♘	<code>\Pisymbol{fselch}{57}</code>	♞	<code>\Pisymbol{fselch}{112}</code>
♙	<code>\Pisymbol{fselch}{3}</code>	♙	<code>\Pisymbol{fselch}{58}</code>	♟	<code>\Pisymbol{fselch}{113}</code>
♞	<code>\Pisymbol{fselch}{4}</code>	♚	<code>\Pisymbol{fselch}{59}</code>	♞	<code>\Pisymbol{fselch}{114}</code>
♜	<code>\Pisymbol{fselch}{5}</code>	♛	<code>\Pisymbol{fselch}{60}</code>	♜	<code>\Pisymbol{fselch}{115}</code>
♝	<code>\Pisymbol{fselch}{6}</code>	♙	<code>\Pisymbol{fselch}{61}</code>	♝	<code>\Pisymbol{fselch}{116}</code>
♞	<code>\Pisymbol{fselch}{7}</code>	♚	<code>\Pisymbol{fselch}{62}</code>	♞	<code>\Pisymbol{fselch}{117}</code>
♟	<code>\Pisymbol{fselch}{8}</code>	♛	<code>\Pisymbol{fselch}{63}</code>	♟	<code>\Pisymbol{fselch}{118}</code>
♠	<code>\Pisymbol{fselch}{9}</code>	♙	<code>\Pisymbol{fselch}{64}</code>	♠	<code>\Pisymbol{fselch}{119}</code>
♞	<code>\Pisymbol{fselch}{10}</code>	♚	<code>\Pisymbol{fselch}{65}</code>	♞	<code>\Pisymbol{fselch}{120}</code>
♜	<code>\Pisymbol{fselch}{11}</code>	♛	<code>\Pisymbol{fselch}{66}</code>	♜	<code>\Pisymbol{fselch}{121}</code>
♝	<code>\Pisymbol{fselch}{12}</code>	♙	<code>\Pisymbol{fselch}{67}</code>	♝	<code>\Pisymbol{fselch}{122}</code>
♞	<code>\Pisymbol{fselch}{13}</code>	♚	<code>\Pisymbol{fselch}{68}</code>	♞	<code>\Pisymbol{fselch}{123}</code>
♟	<code>\Pisymbol{fselch}{14}</code>	♛	<code>\Pisymbol{fselch}{69}</code>	♟	<code>\Pisymbol{fselch}{124}</code>
♠	<code>\Pisymbol{fselch}{15}</code>	♙	<code>\Pisymbol{fselch}{70}</code>	♠	<code>\Pisymbol{fselch}{125}</code>
♞	<code>\Pisymbol{fselch}{16}</code>	♚	<code>\Pisymbol{fselch}{71}</code>	♞	<code>\Pisymbol{fselch}{126}</code>
♜	<code>\Pisymbol{fselch}{17}</code>	♛	<code>\Pisymbol{fselch}{72}</code>	♜	<code>\Pisymbol{fselch}{127}</code>
♝	<code>\Pisymbol{fselch}{18}</code>	♙	<code>\Pisymbol{fselch}{73}</code>	♝	<code>\Pisymbol{fselch}{128}</code>
♞	<code>\Pisymbol{fselch}{19}</code>	♚	<code>\Pisymbol{fselch}{74}</code>	♞	<code>\Pisymbol{fselch}{129}</code>

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	<code>\Pisymbol{fselch}{20}</code>		<code>\Pisymbol{fselch}{75}</code>		<code>\Pisymbol{fselch}{130}</code>
	<code>\Pisymbol{fselch}{21}</code>		<code>\Pisymbol{fselch}{76}</code>		<code>\Pisymbol{fselch}{131}</code>
	<code>\Pisymbol{fselch}{22}</code>		<code>\Pisymbol{fselch}{77}</code>		<code>\Pisymbol{fselch}{132}</code>
	<code>\Pisymbol{fselch}{23}</code>		<code>\Pisymbol{fselch}{78}</code>		<code>\Pisymbol{fselch}{133}</code>
	<code>\Pisymbol{fselch}{24}</code>		<code>\Pisymbol{fselch}{79}</code>		<code>\Pisymbol{fselch}{134}</code>
	<code>\Pisymbol{fselch}{25}</code>		<code>\Pisymbol{fselch}{80}</code>		<code>\Pisymbol{fselch}{135}</code>
	<code>\Pisymbol{fselch}{26}</code>		<code>\Pisymbol{fselch}{81}</code>		<code>\Pisymbol{fselch}{136}</code>
	<code>\Pisymbol{fselch}{27}</code>		<code>\Pisymbol{fselch}{82}</code>		<code>\Pisymbol{fselch}{137}</code>
	<code>\Pisymbol{fselch}{28}</code>		<code>\Pisymbol{fselch}{83}</code>		<code>\Pisymbol{fselch}{138}</code>
	<code>\Pisymbol{fselch}{29}</code>		<code>\Pisymbol{fselch}{84}</code>		<code>\Pisymbol{fselch}{139}</code>
	<code>\Pisymbol{fselch}{30}</code>		<code>\Pisymbol{fselch}{85}</code>		<code>\Pisymbol{fselch}{140}</code>
	<code>\Pisymbol{fselch}{31}</code>		<code>\Pisymbol{fselch}{86}</code>		<code>\Pisymbol{fselch}{141}</code>
	<code>\Pisymbol{fselch}{32}</code>		<code>\Pisymbol{fselch}{87}</code>		<code>\Pisymbol{fselch}{142}</code>
	<code>\Pisymbol{fselch}{33}</code>		<code>\Pisymbol{fselch}{88}</code>		<code>\Pisymbol{fselch}{143}</code>
	<code>\Pisymbol{fselch}{34}</code>		<code>\Pisymbol{fselch}{89}</code>		<code>\Pisymbol{fselch}{144}</code>
	<code>\Pisymbol{fselch}{35}</code>		<code>\Pisymbol{fselch}{90}</code>		<code>\Pisymbol{fselch}{145}</code>
	<code>\Pisymbol{fselch}{36}</code>		<code>\Pisymbol{fselch}{91}</code>		<code>\Pisymbol{fselch}{151}</code>
	<code>\Pisymbol{fselch}{37}</code>		<code>\Pisymbol{fselch}{92}</code>		<code>\Pisymbol{fselch}{157}</code>
	<code>\Pisymbol{fselch}{38}</code>		<code>\Pisymbol{fselch}{93}</code>		<code>\Pisymbol{fselch}{163}</code>
	<code>\Pisymbol{fselch}{39}</code>		<code>\Pisymbol{fselch}{94}</code>		<code>\Pisymbol{fselch}{169}</code>
	<code>\Pisymbol{fselch}{40}</code>		<code>\Pisymbol{fselch}{95}</code>		<code>\Pisymbol{fselch}{175}</code>
	<code>\Pisymbol{fselch}{41}</code>		<code>\Pisymbol{fselch}{96}</code>		<code>\Pisymbol{fselch}{180}</code>
	<code>\Pisymbol{fselch}{42}</code>		<code>\Pisymbol{fselch}{97}</code>		<code>\Pisymbol{fselch}{186}</code>
	<code>\Pisymbol{fselch}{43}</code>		<code>\Pisymbol{fselch}{98}</code>		<code>\Pisymbol{fselch}{192}</code>
	<code>\Pisymbol{fselch}{44}</code>		<code>\Pisymbol{fselch}{99}</code>		<code>\Pisymbol{fselch}{198}</code>
	<code>\Pisymbol{fselch}{45}</code>		<code>\Pisymbol{fselch}{100}</code>		<code>\Pisymbol{fselch}{204}</code>
	<code>\Pisymbol{fselch}{46}</code>		<code>\Pisymbol{fselch}{101}</code>		<code>\Pisymbol{fselch}{210}</code>
	<code>\Pisymbol{fselch}{47}</code>		<code>\Pisymbol{fselch}{102}</code>		<code>\Pisymbol{fselch}{216}</code>
	<code>\Pisymbol{fselch}{48}</code>		<code>\Pisymbol{fselch}{103}</code>		<code>\Pisymbol{fselch}{222}</code>
	<code>\Pisymbol{fselch}{49}</code>		<code>\Pisymbol{fselch}{104}</code>		<code>\Pisymbol{fselch}{228}</code>
	<code>\Pisymbol{fselch}{50}</code>		<code>\Pisymbol{fselch}{105}</code>		<code>\Pisymbol{fselch}{234}</code>
	<code>\Pisymbol{fselch}{51}</code>		<code>\Pisymbol{fselch}{106}</code>		<code>\Pisymbol{fselch}{240}</code>
	<code>\Pisymbol{fselch}{52}</code>		<code>\Pisymbol{fselch}{107}</code>		<code>\Pisymbol{fselch}{246}</code>
	<code>\Pisymbol{fselch}{53}</code>		<code>\Pisymbol{fselch}{108}</code>		
	<code>\Pisymbol{fselch}{54}</code>		<code>\Pisymbol{fselch}{109}</code>		

In addition to the `fselch` font showcased above, `bartel-chess-fonts` also provides a `pkelch` font which includes the same symbol set (minus some of the higher-numbered characters) but drawn in a slightly different style.

`bartel-chess-fonts` provides the `fselch` and `pkelch` fonts in various sizes (optically scaled). See “`LATEX 2ε Font Selection`” [LAT00] for advice on how to expose these sorts of fonts to `LATEX` using `\DeclareFontFamily` and `\DeclareFontShape`.

10 Additional Information

Unlike the previous sections of this document, Section 10 does not contain new symbol tables. Rather, it provides additional help in using the Comprehensive L^AT_EX Symbol List. First, it draws attention to symbol names used by multiple packages. Next, it provides some guidelines for finding symbols and gives some examples regarding how to construct missing symbols out of existing ones. Then, it comments on the spacing surrounding symbols in math mode. After that, it presents an ASCII and Latin 1 quick-reference guide, showing how to enter all of the standard ASCII/Latin 1 symbols in L^AT_EX. And finally, it lists some statistics about this document itself.

10.1 Symbol Name Clashes

Unfortunately, a number of symbol names are not unique; they appear in more than one package. Depending on how the symbols are defined in each package, L^AT_EX will either output an error message or replace an earlier-defined symbol with a later-defined symbol. Table 522 on the following page presents a selection of name clashes that appear in this document.

Using multiple symbols with the same name in the same document—or even merely loading conflicting symbol packages—can be tricky but, as evidenced by the existence of Table 522, not impossible. The general procedure is to load the first package, rename the conflicting symbols, and then load the second package. Examine the L^AT_EX source for this document (`symbols.tex`) for examples of this and other techniques for handling symbol conflicts. Note that `symbols.tex`’s `\savesymbol` and `\restoresymbol` macros have been extracted into the `savesym` package, which can be downloaded from CTAN.

`txfonts` and `pxfonts` redefine a huge number of symbols—essentially, all of the symbols defined by `latexsym`, `textcomp`, the various $\mathcal{MS}$ symbol sets, and L^AT_EX 2_ε itself. Similarly, `mathabx` redefines a vast number of math symbols in an attempt to improve their look. The `txfonts`, `pxfonts`, and `mathabx` conflicts are not listed in Table 522 because they are designed to be compatible with the symbols they replace. Table 523 on page 213 illustrates what “compatible” means in this context.

To use the new `txfonts`/`pxfonts` symbols without altering the document’s main font, merely reset the default font families back to their original values after loading one of those packages:

```
\renewcommand\rmdefault{cmr}
\renewcommand\sfdefault{cmss}
\renewcommand\ttdefault{cmtt}
```

10.2 Resizing symbols

Mathematical symbols listed in this document as “variable-sized” are designed to stretch vertically. Each variable-sized symbol comes in one or more basic sizes plus a variation comprising both stretchable and nonstretchable segments. Table 524 on page 213 presents the symbols `\}` and `\uparrow` in their default size, in their `\big`, `\Big`, `\bigg`, and `\Bigg` sizes, in an even larger size achieved using `\left/`/`\right`, and—for contrast—in a large size achieved by changing the font size using L^AT_EX 2_ε’s `\fontsize` command. Because the symbols shown belong to the Computer Modern family, the `typelcm` package needs to be loaded to support font sizes larger than 24.88 pt.

Note how `\fontsize` makes the symbol wider and thicker. (The `graphicx` package’s `\scalebox` or `\resizebox` commands would produce a similar effect.) Also, the `\fontsize`-enlarged symbol is vertically centered relative to correspondingly large text, unlike the symbols enlarged using `\big` et al. or `\left/`/`\right`, which all use the same math axis regardless of symbol size. However, `\fontsize` is not limited to mathematical delimiters. Also, `\scalebox` and `\resizebox` are more robust to poorly composed symbols (e.g., two symbols made to overlap by backspacing a fixed distance) but do not work with every T_EX backend and will produce jagged symbols when scaling a bitmapped font.

All variable-sized delimiters are defined (by the corresponding `.tfm` file) in terms of up to five segments, as illustrated by Figure 1 on page 213. The top, middle, and bottom segments are of a fixed size. The top-middle and middle-bottom segments (which are constrained to be the same character) are repeated as many times as necessary to achieve the desired height.

10.3 Where can I find the symbol for ...?

If you can’t find some symbol you’re looking for in this document, there are a few possible explanations:

TABLE 522: Symbol Name Clashes

Symbol	L ^A T _E X 2 _ε	$\mathcal{A}$	$\mathcal{M}$	$\mathcal{S}$	stmaryrd	wasysym	mathabx	marvosym	bbding	ifsym	dingbat	wsuipa
<code>\bar{o}</code>				ϕ								θ
<code>\bigtriangledown</code>	∇			∇								
<code>\bigtriangleup</code>	$\triangle$			$\triangle$								
<code>\checkmark</code>		$\checkmark$									$\checkmark$	
<code>\Circle</code>					$\circ$				$\dagger$	$\circ$		
<code>\Cross</code>								$\dagger$	$\dagger$	$\times$		
<code>\ggg</code>		$\ggg$					$\gg$	$\boxtimes$		$\boxtimes$		
<code>\Letter</code>												
<code>\lightning</code>				$\lightning$				$\lightning$		$\lightning$		
<code>\Lightning</code>												
<code>\lll</code>		$\lll$					$\ll$					
<code>\Square</code>					$\square$				$\square$	$\square$		
<code>\Sun</code>							$\odot$	$\odot$		$\odot$		
<code>\TriangleDown</code>									$\blacktriangledown$	$\triangledown$		
<code>\TriangleUp</code>									$\blacktriangleup$	$\triangleup$		

TABLE 523: Example of a Benign Name Clash

Symbol	Default (Computer Modern)	txfonts (Times Roman)
<code>R</code>	$\mathcal{R}$	$\mathbf{R}$
<code>\textrecipe</code>	$\mathcal{R}_{\mathcal{C}}$	$\mathbf{R}$

TABLE 524: Sample resized delimiters

Symbol	Default size	<code>\big</code>	<code>\Big</code>	<code>\bigg</code>	<code>\Bigg</code>	<code>\left/\right</code>	<code>\fontsize</code>
<code>\}</code>	}	}	}	}	}	}	}
<code>\uparrow</code>	↑	↑	↑	↑	↑	↑	↑

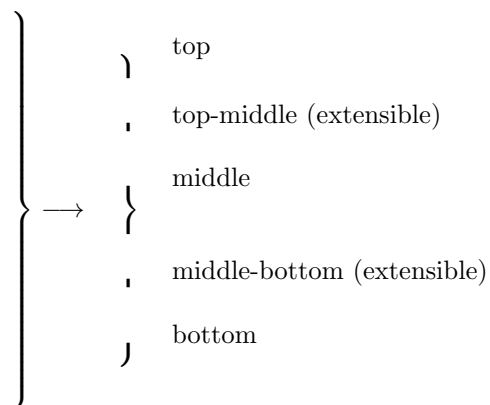


Figure 1: Implementation of variable-sized delimiters

- The symbol isn’t intuitively named. As a few examples, the `ifsym` command to draw dice is “`\Cube`”; a plus sign with a circle around it (“exclusive or” to computer engineers) is “`\oplus`”; and lightning bolts in fonts designed by German speakers may have “blitz” in their names as in the `ulsy` package. The moral of the story is to be creative with synonyms when searching the index.
- The symbol is defined by some package that I overlooked (or deemed unimportant). If there’s some symbol package that you think should be included in the Comprehensive L^AT_EX Symbol List, please send me e-mail at the address listed on the title page.
- The symbol isn’t defined in any package whatsoever.

Even in the last case, all is not lost. Sometimes, a symbol exists in a font, but there is no L^AT_EX binding for it. For example, the PostScript Symbol font contains a “`\J`” symbol, which may be useful for representing a carriage return, but there is no package (as far as I know) for accessing that symbol. To produce an unnamed symbol, you need to switch to the font explicitly with L^AT_EX 2_ε’s low-level font commands [L^AT_EX 00] and use T_EX’s primitive `\char` command [Knu86a] to request a specific character number in the font. For example, one can define a command to typeset a long s (“f”) using character 115 from the Latin Modern fonts in the TS1 font encoding:

```
\newcommand{\textlongss}{\%
  \fontencoding{TS1}\fontfamily{lmr}\selectfont\char115%
}
```

Then, “`\textlongss ucce\textlongss sful`” will produce “fuccesful”—in the current font style (roman, italic, bold, etc.)

In fact, `\char` is not strictly necessary in all cases; the character can often be entered symbolically. For example, the symbol for an impulse train or Tate-Shafarevich group (“III”) is actually an uppercase *sha* in the Cyrillic alphabet. (Cyrillic is supported by the OT2 font encoding, for instance). While a *sha* can be defined numerically as “`{\fontencoding{OT2}\selectfont\char88}`” it may be more intuitive to use the OT2 font encoding’s “SH” ligature: “`{\fontencoding{OT2}\selectfont SH}`”. Another possibility is to use the T2A font encoding’s `\CYRSH` command: “`{\fontencoding{T2A}\selectfont \CYRSH}`”.

For the specific case of the U font encoding, which is used for symbol or “pi” fonts, the `pifont` package defines a convenient `\Pisymbol` command. `\Pisymbol` typesets a specified character (by number) in a specified font family. For example, “`\Pisymbol{psy}{191}`” produces the aforementioned “`\J`” symbol by typesetting character number 191 in the `psy` (PostScript Symbol) font family.

Reflecting and rotating existing symbols

A common request on `comp.text.tex` is for a reversed or rotated version of an existing symbol. As a last resort, these effects can be achieved with the `graphicx` (or `graphics`) package’s `\reflectbox` and `\rotatebox` macros. For example, `\textsuperscript{\reflectbox{?}}` produces an irony mark (“[?]”), and `\rotatebox[origin=c]{180}{\mathfrak{i}}` produces the definite-description operator (“*ɿ*”). As noted by Marc Olschok in a July 2011 post on `comp.text.tex`, Project Gutenberg uses `\reflectbox` to typeset the part (“3”) and whole (“ε”) relations used in Dedekind’s set notation:

```
\newcommand\partof{\mathrel{\raisebox{0.45ex}{\mathfrak{3}}}}
\newcommand\wholeof{\mathrel{\reflectbox{\mathfrak{3}}}}
```

The disadvantage of the `graphicx/graphics` approach is that not every T_EX backend handles graphical transformations.⁵ Far better is to find a suitable font that contains the desired symbol in the correct orientation. For instance, if the `phonetic` package is available, then `\textit{\riota}` will yield a backend-independent “*ɿ*”. Similarly, `tipa`’s `\textreversepsilon` (“*ɿ*”) or `wsuipa`’s `\reversepsilon` (“*ɿ*”) may be used to express the mathematical notion of “such that” in a cleaner manner than with `\reflectbox` or `\rotatebox`.⁶

⁵As an example, Xdvi ignores both `\reflectbox` and `\rotatebox`.

⁶More common symbols for representing “such that” include “*l*”, “*:*”, and “*s.t.*”.

Joining and overlapping existing symbols

Symbols that do not exist in any font can sometimes be fabricated out of existing symbols. The L^AT_EX 2_ε source file `fontdef.dtx` contains a number of such definitions. For example, `\models` (see Table 88 on page 48) is defined in that file with:

```
\def\models{\mathrel|\joinrel=}
```

where `\mathrel` and `\joinrel` are used to control the horizontal spacing. `\def` is the T_EX primitive upon which L^AT_EX’s `\newcommand` is based. See The T_EXbook [Knu86a] for more information on all three of those commands.

With some simple pattern-matching, one can easily define a backward `\models` sign (“ $\models$ ”):

```
\def\ismodeledby{=\joinrel\mathrel|}
```

In general, arrows/harpoons, horizontal lines (“ $=$ ”, “ $-$ ”, “ $\relbar$ ”, and “ $\Relbar$ ”), and the various math-extension characters can be combined creatively with miscellaneous other characters to produce a variety of new symbols. Of course, new symbols can be composed from *any* set of existing characters. For instance, L^AT_EX defines `\hbar` (“ $\hbar$ ”) as a “ $-$ ” character (`\mathchar'26`) followed by a backspace of 9 math units (`\mkern-9mu`), followed by the letter “ h ”:

```
\def\hbar{{\mathchar'26\mkern-9mu h}}
```

We can just as easily define other barred letters:

```
\def\bbar{{\mathchar'26\mkern-9mu b}}
\def\dbar{{\mathchar'26\mkern-12mu d}}
```

(The space after the “ μ ” is optional but is added for clarity.) `\bbar` and `\dbar` define “ $\bar{b}$ ” and “ $\bar{d}$ ”, respectively. Note that `\dbar` requires a greater backward math kern than `\bbar`; a -9μ kern would have produced the less-attractive “ $\bar{d}$ ” glyph.

The `amsmath` package provides `\overset` and `\underset` commands for placing one symbol respectively above or below another. For example, `\overset{G}{\sim}`⁷ produces “ $\overset{G}{\sim}$ ” (sometimes used for “equidecomposable with respect to G ”).

Sometimes an ordinary `tabular` environment can be co-opted into juxtaposing existing symbols into a new symbol. Consider the following definition of `\asterism` (“ $\ast$ ”) from a June 2007 post to `comp.text.tex` by Peter Flynn:

```
\newcommand{\asterism}{\smash{%
\raisebox{-.5ex}{%
\setlength{\tabcolsep}{-.5pt}%
\begin{tabular}{@{}cc@{}}%
\multicolumn{2c*}{\[-2ex\]*&*&}%
\end{tabular}}}}
```

Note how the space between columns (`\tabcolsep`) and rows (`\[-2ex\]`) is made negative to squeeze the asterisks closer together.

There is a T_EX primitive called `\mathaccent` that centers one mathematical symbol atop another. For example, one can define `\dotcup` (“ $\dot{\cup}$ ”)—the composition of a `\cup` and a `\dot`—as follows:

```
\newcommand{\dotcup}{\ensuremath{\mathaccent\dot{\cup}}}
```

The catch is that `\mathaccent` requires the accent to be a “math character”. That is, it must be a character in a math font as opposed to a symbol defined in terms of other symbols. See The T_EXbook [Knu86a] for more information.

Another T_EX primitive that is useful for composing symbols is `\vcenter`. `\vcenter` is conceptually similar to “`\begin{tabular}{l}`” in L^AT_EX but takes a list of vertical material instead of `\-`separated rows. Also, it vertically centers the result on the math axis. (Many operators, such as “ $+$ ” and “ $-$ ” are also vertically centered on the math axis.) Enrico Gregorio posted the following symbol definition to `comp.text.tex` in March 2004 in response to a query about an alternate way to denote equivalence:

⁷L^AT_EX’s `\stackrel` command is similar but is limited to placing a symbol above a binary relation.

```

\newcommand*\threesim{%
  \mathrel{\vcenter{\offinterlineskip
    \hbox{$\sim$}\vskip-.35ex\hbox{$\sim$}\vskip-.35ex\hbox{$\sim$}}}}

```

The `\threesim` symbol, which vertically centers three `\sim` (“~”) symbols with 0.35 x -heights of space between them, is rendered as “≈”. `\offinterlineskip` is a macro that disables implicit interline spacing. Without it, `\threesim` would have a full line of vertical spacing between each `\sim`. Because of `\vcenter`, `\threesim` aligns properly with other math operators: $a \div b \approx c \times d$.

A related L^AT_EX command, borrowed from Plain T_EX, is `\oalign`. `\oalign` vertically overlaps symbols and works both within and outside of math mode. Essentially, it creates a single-column tabular environment with zero vertical distance between rows. However, because it is based directly on T_EX’s `\ialign` primitive, `\oalign` uses T_EX’s tabular syntax instead of L^AT_EX’s (i.e., with `\cr` as the row terminator instead of `\`). The following example of `\oalign`, a macro that defines a standard-state symbol (`\stst`, “⊖”) as a superscripted Plimsoll line (`\barcirc`, “⊖”),⁸ is due to an October 2007 `comp.text.tex` post by Donald Arseneau:

```

\makeatletter
\providecommand\barcirc{\mathpalette\@barred\circ}
\def\@barred#1#2{\oalign{\hfil$#1-$\hfil\cr\hfil$#1#2$\hfil\cr}}
\newcommand\stst{\text{\protect\barcirc}}
\makeatother

```

In the preceding code, note the `\oalign` call’s use of `\hfil` to horizontally center a minus sign (“−”) and a `\circ` (“o”).

As another example of `\oalign`, consider the following code (due to Enrico Gregorio in a June 2007 post to `comp.text.tex`) that overlaps a `\ni` (“⊃”) and two minus signs (“−”) to produce “⊃”, an obscure variation on the infrequently used “3” symbol for “such that” discussed on page 214:

```

\newcommand\suchthat{%
  \mathrel{\oalign{$\ni$\cr\kern-1pt$-$\kern-6.5pt$-$}}

```

The `slashed` package, although originally designed for producing Feynman slashed-character notation, in fact facilitates the production of *arbitrary* overlapped symbols. The default behavior is to overwrite a given character with “/”. For example, `\slashed{D}` produces “ $\not{D}$ ”. However, the `\declareslashed` command provides the flexibility to specify the mathematical context of the composite character (operator, relation, punctuation, etc., as will be discussed in Section 10.4), the overlapping symbol, horizontal and vertical adjustments in symbol-relative units, and the character to be overlapped. Consider, for example, the symbol for reduced quadrupole moment (“ $\not{F}$ ”). This can be declared as follows:

```

\newcommand\rqm{%
  \declareslashed{\text{-}}{0.04}{0}{I}\slashed{I}}

```

`\declareslashed{\cdot}{\cdot}{\cdot}{\cdot}{I}` affects the meaning of all subsequent `\slashed{I}` commands in the same scope. The preceding definition of `\rqm` therefore uses an extra set of curly braces to limit that scope to a single `\slashed{I}`. In addition, `\rqm` uses `amstext`’s `\text` macro (described on page 218) to make `\declareslashed` use a text-mode hyphen (“−”) instead of a math-mode minus sign (“ $\mp$ ”) and to ensure that the hyphen scales properly in size in subscripts and superscripts. See `slashed`’s documentation (located in `slashed.sty` itself) for a detailed usage description of the `\slashed` and `\declareslashed` commands.

Somewhat simpler than `slashed` is the `centernot` package. `centernot` provides a single command, `\centernot`, which, like `\not`, puts a slash over the subsequent mathematical symbol. However, instead of putting the slash at a fixed location, `\centernot` centers the slash over its argument. `\centernot` might be used, for example, to create a “does not imply” symbol:

$$\not\Rightarrow \quad \text{\code{\not\Longrightarrow}}$$

vs.

$$\centernot\Rightarrow \quad \text{\code{\centernot\Longrightarrow}}$$

See the `centernot` documentation for more information.

⁸While `\barcirc` illustrates how to combine symbols using `\oalign`, the `stmaryrd` package’s `\minuso` command (Table 52 on page 29) provides a similar glyph (“⊖”) as a single, indivisible symbol.

Making new symbols work in superscripts and subscripts

To make composite symbols work properly within subscripts and superscripts, you may need to use TeX’s `\mathchoice` primitive. `\mathchoice` evaluates one of four expressions, based on whether the current math style is display, text, script, or scriptscript. (See The TeXbook [Knu86a] for a more complete description.) For example, the following L^AT_EX code—posted to `comp.text.tex` by Torsten Bronger—composes a sub/superscriptable “ $\mathbb{I}$ ” symbol out of `\top` and `\bot` (“ $\top$ ” and “ $\bot$ ”):

```
\def\topbotatom#1{\hbox{\hbox to 0pt{${#1\bot$\hss}${#1\top$}}
\newcommand*\topbot{\mathrel{\mathchoice{\topbotatom\displaystyle}
{\topbotatom\textstyle}
{\topbotatom\scriptstyle}
{\topbotatom\scriptscriptstyle}}}
```

The following is another example that uses `\mathchoice` to construct symbols in different math modes. The code defines a principal value integral symbol, which is an integral sign with a line through it.

```
\def\Xint#1{\mathchoice
{\XXint\displaystyle\textstyle{#1}}%
{\XXint\textstyle\scriptstyle{#1}}%
{\XXint\scriptstyle\scriptscriptstyle{#1}}%
{\XXint\scriptscriptstyle\scriptscriptstyle{#1}}%
\!\int}
\def\XXint#1#2#3{\setbox0=\hbox{${#1}{#2#3}{\int}$}
\vcenter{\hbox{${#2#3$}}\kern-.5\wd0}}
\def\ddashint{\Xint=}
\def\dashint{\Xint-}
```

(The preceding code was taken verbatim from the UK TeX Users’ Group FAQ at <http://www.tex.ac.uk/faq>.) `\dashint` produces a single-dashed integral sign (“ $\int$ ”), while `\ddashint` produces a double-dashed one (“ $\int$ ”). The `\Xint` macro defined above can also be used to generate a wealth of new integrals: “ $\oint$ ” (`\Xint\circlearrowright`), “ $\oint$ ” (`\Xint\circlearrowleft`), “ $\subset$ ” (`\Xint\subset`), “ ∞ ” (`\Xint\infty`), and so forth.

L^AT_EX 2_ε provides a simple wrapper for `\mathchoice` that sometimes helps produce terser symbol definitions. The macro is called `\mathpalette` and it takes two arguments. `\mathpalette` invokes the first argument, passing it one of “`\displaystyle`”, “`\textstyle`”, “`\scriptstyle`”, or “`\scriptscriptstyle`”, followed by the second argument. `\mathpalette` is useful when a symbol macro must know which math style is currently in use (e.g., to set it explicitly within an `\mbox`). Donald Arseneau posted the following `\mathpalette`-based definition of a probabilistic-independence symbol (“ $\perp$ ”) to `comp.text.tex` in June 2000:

```
\newcommand\independent{\protect\mathpalette{\protect\independentT}\perp}
\def\independentT#1#2{\mathrel{\rlap{${#1#2$}}\mkern2mu{#1#2}}}
```

The `\independent` macro uses `\mathpalette` to pass the `\independentT` helper macro both the current math style and the `\perp` symbol. `\independentT` typesets `\perp` in the current math style, moves two math units to the right, and finally typesets a second—overlapping—copy of `\perp`, again in the current math style. `\rlap`, which enables text overlap, is described on the following page.

Some people like their square-root signs with a trailing “hook” (i.e., “ $\sqrt{}$ ”) as this helps visually distinguish expressions like “ $\sqrt{3x}$ ” from those like “ $\sqrt{3}x$ ”. In March 2002, Dan Luecking posted a `\mathpalette`-based definition of a hooked square-root symbol to `comp.text.tex`. This code was subsequently refined by Max Dohse and Scott Pakin into the version shown below, which accepts a root as an optional argument, for consistency with `\sqrt`.

```
\newcommand{\hksqrt}[2][\mathpalette\DHLhksqrt]{#1}{#2\,}%
\def\DHLhksqrt#1#2{\setbox0=\hbox{${#1\sqrt{#2$}}\dimen0=\ht0
\advance\dimen0-0.2\ht0
\setbox2=\hbox{\vrule height\ht0 depth -\dimen0}%
{\box0\lower0.4pt\box2}}
```

Notice how `\hksqrt` uses `\mathpalette` to pass the current math style (`\displaystyle`, `\textstyle`, etc.) to `\DHLhksqrt` as argument #1. `\DHLhksqrt` subsequently uses that style within an `\hbox`. The rest of the code is simply using T_EX primitives to position a hook of height 0.2 times the `\sqrt` height at the right of the `\sqrt`. See The T_EXbook [Knu86a] for more understanding of T_EX “boxes” and “dimens”.

Sometimes, however, `amstext`’s `\text` macro is all that is necessary to make composite symbols appear correctly in subscripts and superscripts, as in the following definitions of `\neswarrow` (“↗”) and `\nwsearrow` (“↖”):⁹

```
\newcommand{\neswarrow}{\mathrel{\text{$\nearrow$\llap{$\swarrow$}}}}
\newcommand{\nwsearrow}{\mathrel{\text{$\nwarrow$\llap{$\searrow$}}}}
```

`\text` resembles L^AT_EX’s `\mbox` command but shrinks its argument appropriately when used within a subscript or superscript. `\llap` (“left overlap”) and its counterpart, `\rlap` (“right overlap”), appear frequently when creating composite characters. `\llap` outputs its argument to the left of the current position, overlapping whatever text is already there. Similarly, `\rlap` overlaps whatever text would normally appear to the right of its argument. For example, “`A\llap{B}`” and “`\rlap{A}B`” each produce “**B**”. However, the result of the former is the width of “A”, and the result of the latter is the width of “B”—`\llap{...}` and `\rlap{...}` take up zero space.

In a June 2002 post to `comp.text.tex`, Donald Arseneau presented a general macro for aligning an arbitrary number of symbols on their horizontal centers and vertical baselines:

```
\makeatletter
\def\moverlay{\mathpalette\mov@rlay}
\def\mov@rlay#1#2{\leavevmode\vtop{%
\baselineskip\z@skip \lineskiplimit-\maxdimen
\ialign{\hfil$#1##$\hfil\cr#2\cr\cr}}
\makeatother
```

The `\makeatletter` and `\makeatother` commands are needed to coerce L^AT_EX into accepting “@” as part of a macro name. `\moverlay` takes a list of symbols separated by `\cr` (T_EX’s equivalent of L^AT_EX’s `\\`). For example, the `\topbot` command defined on the previous page could have been expressed as “`\moverlay{\top\cr\bot}`” and the `\neswarrow` command defined above could have been expressed as “`\moverlay{\nearrow\cr\swarrow}`”.

The basic concept behind `\moverlay`’s implementation is that `\moverlay` typesets the given symbols in a table that utilizes a zero `\baselineskip`. This causes every row to be typeset at the same vertical position. See The T_EXbook [Knu86a] for explanations of the T_EX primitives used by `\moverlay`.

Modifying L^AT_EX-generated symbols

Oftentimes, symbols composed in the L^AT_EX_{2_ε} source code can be modified with minimal effort to produce useful variations. For example, `fontdef.dtx` composes the `\ddots` symbol (see Table 269 on page 110) out of three periods, raised 7 pt., 4 pt., and 1 pt., respectively:

```
\def\ddots{\mathinner{\mkern1mu\raise7\p@
\ vbox{\kern7\p@\hbox{.}}\mkern2mu
\raise4\p@\hbox{.}}\mkern2mu\raise\p@\hbox{.}}\mkern1mu}}
```

`\p@` is a L^AT_EX_{2_ε} shortcut for “pt” or “1.0pt”. The remaining commands are defined in The T_EXbook [Knu86a]. To draw a version of `\ddots` with the dots going along the opposite diagonal, we merely have to reorder the `\raise7\p@`, `\raise4\p@`, and `\raise\p@`:

```
\makeatletter
\def\revddots{\mathinner{\mkern1mu\raise\p@
\ vbox{\kern7\p@\hbox{.}}\mkern2mu
\raise4\p@\hbox{.}}\mkern2mu\raise7\p@\hbox{.}}\mkern1mu}}
\makeatother
```

`\revddots` is essentially identical to the `mathdots` package’s `\iddots` command or the `yhmath` package’s `\adots` command.

⁹Note that if your goal is to typeset commutative diagrams or pushout/pullback diagrams, then you should probably be using X_Y-pic.

Producing complex accents

Accents are a special case of combining existing symbols to make new symbols. While various tables in this document show how to add an accent to an existing symbol, some applications, such as transliterations from non-Latin alphabets, require *multiple* accents per character. For instance, the creator of pdfTeX writes his name as “Hàn Thê Thành”. The `dblaccnt` package enables L^AT_EX to stack accents, as in “H\‘an Th\’{\^e} Th\‘anh” (albeit not in the OT1 font encoding). In addition, the `wsuipa` package defines `\diatop` and `\diaunder` macros for putting one or more diacritics or accents above or below a given character. For example, `\diaunder[{\diatop[\‘|=]}\textsubdot{x}]` produces “ $\dot{x}$ ”. See the `wsuipa` documentation for more information.

The `accents` package facilitates the fabrication of accents in math mode. Its `\accentset` command enables *any* character to be used as an accent. For instance, `\accentset{\star}{f}` produces “ $f^\star$ ” and `\accentset{e}{X}` produces “ X^e ”. `\underaccent` does the same thing, but places the accent beneath the character. This enables constructs like `\underaccent{\tilde}{V}`, which produces “ $\tilde{V}$ ”. `accents` provides other accent-related features as well; see the documentation for more information.

Creating extensible symbols

A relatively simple example of creating extensible symbols stems from a `comp.text.tex` post by Donald Arseneau (June 2003). The following code defines an equals sign that extends as far to the right as possible, just like L^AT_EX’s `\hrulefill` command:

```
\makeatletter
\def\equalsfill{\$ \m@th \mathord=\mkern-7mu
  \cleaders\hbox{\$!\mathord=!\$}\hfill
  \mkern-7mu \mathord=\$}
\makeatother
```

T_EX’s `\cleaders` and `\hfill` primitives are the key to understanding `\equalsfill`’s extensibility. Essentially, `\equalsfill` repeats a box containing “=” plus some negative space until it fills the maximum available horizontal space. `\equalsfill` is intended to be used with L^AT_EX’s `\stackrel` command, which stacks one mathematical expression (slightly reduced in size) atop another. Hence, “`\stackrel{a}{\rightarrow}`” produces “ $\xrightarrow{a}$ ” and “`\stackrel{\text{definition}}{\hbox{\equalsfill}} Y`” produces “ $X \stackrel{\text{definition}}{=} Y$ ”.

If all that needs to extend are horizontal and vertical lines—as opposed to repeated symbols such as the “=” in the previous example—L^AT_EX’s `array` or `tabular` environments may suffice. Consider the following code (due to a February 1999 `comp.text.tex` post by Donald Arseneau and subsequent modifications by Billy Yu and Scott Pakin) for typesetting annuity and life-insurance symbols:

```
\DeclareRobustCommand{\actuarial}[2][0]{%
  \def\arraystretch{0}%
  \setlength\arraycolsep{0.5pt}%
  \setlength\arrayrulewidth{0.5pt}%
  \setbox0=\hbox{\$ \scriptstyle#1#2\$}%
  \begin{array}[b]{*2{@{}>{\scriptstyle}c}}|}
    \cline{2-2}%
    \rule[1.25pt]{0pt}{\ht0}%
    #1 & #2%
  \end{array}%
}
```

Using the preceding definition, one can type, e.g., “`\$a_{\actuarial{n}}\$`” to produce “ $a_{\overline{n}}$ ” and “`\$a_{\actuarial[x]{n}}\$`” to produce “ $a_{x:\overline{n}}$ ”. This is similar in concept to how the `actuarialangle` package defines its `\actuarialangle` command (Table 255).

A more complex example of composing accents is the following definition of extensible `\overbracket`, `\underbracket`, `\overparenthesis`, and `\underparenthesis` symbols, taken from a May 2002 `comp.text.tex` post by Donald Arseneau:

```
\makeatletter
\def\overbracket#1{\mathop{\vbox{\ialign{##\crrc\noalign{\kern3\p@}
```

```

\downbracketfill\crr\noalign{\kern3\p@\nointerlineskip}
$\hfil\displaystyle{#1}\hfil$\crr\}}\limits}
\def\underbracket#1{\mathop{\vtop{\ialign{##\crr
$\hfil\displaystyle{#1}\hfil$\crr\noalign{\kern3\p@\nointerlineskip}
\upbracketfill\crr\noalign{\kern3\p@}}}\}\limits}
\def\overparenthesis#1{\mathop{\vbox{\ialign{##\crr\noalign{\kern3\p@}
\downparenthfill\crr\noalign{\kern3\p@\nointerlineskip}
$\hfil\displaystyle{#1}\hfil$\crr\}}}\limits}
\def\underparenthesis#1{\mathop{\vtop{\ialign{##\crr
$\hfil\displaystyle{#1}\hfil$\crr\noalign{\kern3\p@\nointerlineskip}
\upparenthfill\crr\noalign{\kern3\p@}}}\}\limits}
\def\downparenthfill{$\m@th\braceld\leaders\vrule\hfill\bracerd$}
\def\upparenthfill{$\m@th\bracelu\leaders\vrule\hfill\braceru$}
\def\upbracketfill{$\m@th\makesm@sh{\llap{\vrule\@height3\p@\@width.7\p@}}%
\leaders\vrule\@height.7\p@\hfill
\makesm@sh{\rlap{\vrule\@height3\p@\@width.7\p@}}$}
\def\downbracketfill{$\m@th
\makesm@sh{\llap{\vrule\@height.7\p@\@depth2.3\p@\@width.7\p@}}%
\leaders\vrule\@height.7\p@\hfill
\makesm@sh{\rlap{\vrule\@height.7\p@\@depth2.3\p@\@width.7\p@}}$}
\makeatother

```

Table 525 showcases these accents. The $\text{\TeX}$ book [Knu86a] or another book on $\text{\TeX}$ primitives is indispensable for understanding how the preceding code works. The basic idea is that `\downparenthfill`, `\upparenthfill`, `\downbracketfill`, and `\upbracketfill` do all of the work; they output a left symbol (e.g., `\braceld` [$\lrcorner$] for `\downparenthfill`), a horizontal rule that stretches as wide as possible, and a right symbol (e.g., `\bracerd` [$\rccorner$] for `\downparenthfill`). `\overbracket`, `\underbracket`, `\overparenthesis`, and `\underparenthesis` merely create a table whose width is determined by the given text, thereby constraining the width of the horizontal rules.

TABLE 525: Manually Composed Extensible Accents

$\overbrace{abc}$	<code>\overbracket{abc}</code>	$\overparen{abc}$	<code>\overparenthesis{abc}</code>
$\underbrace{abc}$	<code>\underbracket{abc}</code>	$\underparen{abc}$	<code>\underparenthesis{abc}</code>

Note that the `simplewick` package provides mechanisms for typesetting Wick contractions, which utilize `\overbracket`- and `\underbracket`-like brackets of variable width *and* height (or depth). For example, `"\acontraction{}{A}{B}{C}\acontraction[2ex]{A}{B}{C}{D}\bcontraction{}{A}{BC}{D} ABCD"` produces

$$\overbrace{\underbrace{ABCD}}^{\quad}.$$

See the `simplewick` documentation for more information.

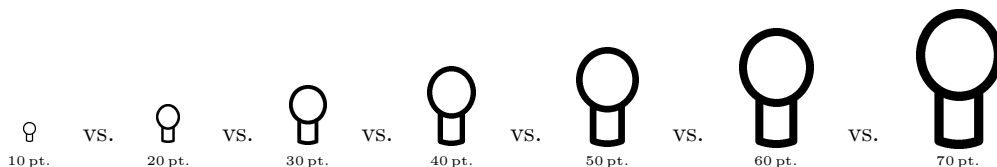
Developing new symbols from scratch

Sometimes it is simply not possible to define a new symbol in terms of existing symbols. Fortunately, most, if not all, $\text{\TeX}$ distributions are shipped with a tool called `METAFONT` which is designed specifically for creating fonts to be used with $\text{\TeX}$. The `METAFONT`book [Knu86b] is the authoritative text on `METAFONT`. If you plan to design your own symbols with `METAFONT`, The `METAFONT`book is essential reading. You may also want to read the freely available `METAFONT` primer located at <http://metafont.tutorial.free.fr/>. The following is an extremely brief tutorial on how to create a new $\text{\LaTeX}$ symbol using `METAFONT`. Its primary purpose is to cover the $\text{\LaTeX}$ -specific operations not mentioned in The `METAFONT`book and to demonstrate that symbol-font creation is not necessarily a difficult task.

Suppose we need a symbol to represent a light bulb (“ $\mathfrak{g}$ ”).¹⁰ The first step is to draw this in `METAFONT`. It is common to separate the font into two files: a size-dependent file, which specifies the design

¹⁰I’m not a very good artist; you’ll have to pretend that “ $\mathfrak{g}$ ” looks like a light bulb.

size and various font-specific parameters that are a function of the design size; and a size-independent file, which draws characters in the given size. Figure 2 shows the METAFONT code for `lightbulb10.mf`. `lightbulb10.mf` specifies various parameters that produce a 10 pt. light bulb then loads `lightbulb.mf`. Ideally, one should produce `lightbulb⟨size⟩.mf` files for a variety of $\langle size \rangle$ s. This is called “optical scaling”. It enables, for example, the lines that make up the light bulb to retain the same thickness at different font sizes, which looks much nicer than the alternative—and default—“mechanical scaling”. When a `lightbulb⟨size⟩.mf` file does not exist for a given size $\langle size \rangle$, the computer mechanically produces a wider, taller, thicker symbol:



```
font_identifier := "LightBulb10";           % Name the font.
font_size 10pt#;                           % Specify the design size.

em# := 10pt#;                             % "M" width is 10 points.
cap# := 7pt#;                             % Capital letter height is 7 points above the baseline.
sb# := 1/4pt#;                             % Leave this much space on the side of each character.
o# := 1/16pt#;                             % Amount that curves overshoot borders.

input lightbulb                           % Load the file that draws the actual glyph.
```

Figure 2: Sample METAFONT size-specific file (`lightbulb10.mf`)

`lightbulb.mf`, shown in Figure 3, draws a light bulb using the parameters defined in `lightbulb10.mf`. Note that the filenames “`lightbulb10.mf`” and “`lightbulb.mf`” do not follow the Berry font-naming scheme [Ber01]; the Berry font-naming scheme is largely irrelevant for symbol fonts, which generally lack bold, italic, small-caps, slanted, and other such variants.

The code in Figures Figure 2 and Figure 3 is heavily commented and should demonstrate some of the basic concepts behind METAFONT usage: declaring variables, defining points, drawing lines and curves, and preparing to debug or fine-tune the output. Again, The METAFONTbook [Knu86b] is the definitive reference on METAFONT programming.

METAFONT can produce “proofs” of fonts—large, labeled versions that showcase the logical structure of each character. In fact, proof mode is METAFONT’s default mode. To produce a proof of `lightbulb10.mf`, issue the following commands at the operating-system prompt:

```
prompt> mf lightbulb10.mf                  ⇐ Produces lightbulb10.2602gf
prompt> gftodvi lightbulb10.2602gf        ⇐ Produces lightbulb10.dvi
```

You can then view `lightbulb10.dvi` with any DVI viewer. The result is shown in Figure 4. Observe how the grid defined with `makegrid` at the bottom of Figure 3 draws vertical lines at positions 0, sb , $w/2$, and $w - sb$ and horizontal lines at positions 0, $-1pt$, y_2 , and h . Similarly, observe how the `penlabels` command labels all of the important coordinates: $z_1, z_2, \dots, z_8$ and z_{67} , which `lightbulb.mf` defines to lie between z_6 and z_7 .

Most, if not all, T_EX distributions include a Plain T_EX file called `testfont.tex` that is useful for testing new fonts in a variety of ways. One useful routine produces a table of all of the characters in the font:

```
prompt> tex testfont
This is TeX, Version 3.14159 (Web2C 7.3.1)
(/usr/share/texmf/tex/plain/base/testfont.tex
Name of the font to test = lightbulb10
Now type a test command (\help for help):)
*\table

*\bye
```

```

mode_setup;                                     % Target a given printer.
define_pixels(em, cap, sb);                     % Convert to device-specific units.
define_corrected_pixels(o);                     % Same, but add a device-specific fudge factor.

%% Define a light bulb at the character position for "A"
%% with width  $\frac{1}{2}em\#$ , height  $cap\#$ , and depth  $1pt\#$ .
beginchar("A",  $\frac{1}{2}em\#$ ,  $cap\#$ ,  $1pt\#$ ); "A light bulb";
  pickup pencircle scaled  $\frac{1}{2}pt$ ;                 % Use a pen with a small, circular tip.

  %% Define the points we need.
  top  $z_1 = (w/2, h + o)$ ;                          %  $z_1$  is at the top of a circle.
  rt  $z_2 = (w + sb + o - x_4, y_4)$ ;                %  $z_2$  is at the same height as  $z_4$  but the opposite side.
  bot  $z_3 = (z_1 - (0, w - sb - o))$ ;                %  $z_3$  is at the bottom of the circle.
  lft  $z_4 = (sb - o, \frac{1}{2}[y_1, y_3])$ ;            %  $z_4$  is on the left of the circle.
  path bulb;                                       % Define a path for the bulb itself.
  bulb =  $z_1 \dots z_2 \dots z_3 \dots z_4 \dots$  cycle; % The bulb is a closed path.

   $z_5 = \text{point } 2 - \frac{1}{3} \text{ of } bulb$ ;                %  $z_5$  lies on the bulb, a little to the right of  $z_3$ .
   $z_6 = (x_5, 0)$ ;                                    %  $z_6$  is at the bottom, directly under  $z_5$ .
   $z_7 = (x_8, 0)$ ;                                    %  $z_7$  is at the bottom, directly under  $z_8$ .
   $z_8 = \text{point } 2 + \frac{1}{3} \text{ of } bulb$ ;                %  $z_8$  lies on the bulb, a little to the left of  $z_3$ .
  bot  $z_{67} = (\frac{1}{2}[x_6, x_7], pen\_bot - o - \frac{1}{8}pt)$ ; %  $z_{67}$  lies halfway between  $z_6$  and  $z_7$  but a jot
lower.

  %% Draw the bulb and the base.
  draw bulb;                                       % Draw the bulb proper.
  draw  $z_5 \dashrightarrow z_6 \dots z_{67} \dots z_7 \dashrightarrow z_8$ ; % Draw the base of the bulb.

  %% Display key positions and points to help us debug.
  makegrid(0, sb,  $w/2$ ,  $w - sb$ )(0,  $-1pt$ ,  $y_2$ ,  $h$ ); % Label "interesting"  $x$  and  $y$  coordinates.
  penlabels(1, 2, 3, 4, 5, 6, 67, 7, 8);           % Label control points for debugging.
endchar;
end

```

Figure 3: Sample METAFONT size-independent file (`lightbulb.mf`)

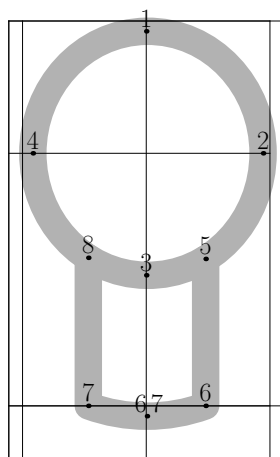


Figure 4: Proof diagram of `lightbulb10.mf`

[1]

Output written on testfont.dvi (1 page, 1516 bytes).

Transcript written on testfont.log.

The resulting table, stored in `testfont.dvi` and illustrated in Figure 5, shows every character in the font. To understand how to read the table, note that the character code for “A”—the only character defined by `lightbulb10.mf`—is 41 in hexadecimal (base 16) and 101 in octal (base 8).

Test of lightbulb10 on March 11, 2003 at 1127									
	'0	'1	'2	'3	'4	'5	'6	'7	
'10x		8							"4x
'11x									
	"8	"9	"A	"B	"C	"D	"E	"F	

Figure 5: Font table produced by `testfont.tex`

The LightBulb10 font is now usable by $\text{\TeX}$. $\text{\LaTeX 2}_{\epsilon}$, however, needs more information before documents can use the font. First, we create a font-description file that tells $\text{\LaTeX 2}_{\epsilon}$ how to map fonts in a given font family and encoding to a particular font in a particular font size. For symbol fonts, this mapping is fairly simple. Symbol fonts almost always use the “U” (“Unknown”) font encoding and frequently occur in only one variant: normal weight and non-italicized. The filename for a font-description file important; it must be of the form “*<encoding><family>.fd*”, where *<encoding>* is the lowercase version of the encoding name (typically “u” for symbol fonts) and *<family>* is the name of the font family. For LightBulb10, let’s call this “bulb”. Figure 6 lists the contents of `ubulb.fd`. The document “ $\text{\LaTeX 2}_{\epsilon}$ Font Selection” [LAT00] describes `\DeclareFontFamily` and `\DeclareFontShape` in detail, but the gist of `ubulb.fd` is first to declare a U-encoded version of the `bulb` font family and then to specify that a $\text{\LaTeX 2}_{\epsilon}$ request for a U-encoded version of `bulb` with a (m)edium font series (as opposed to, e.g., bold) and a (n)ormal font shape (as opposed to, e.g., italic) should translate into a $\text{\TeX}$ request for `lightbulb10.tfm` mechanically scaled to the current font size.

```
\DeclareFontFamily{U}{bulb}{}
\DeclareFontShape{U}{bulb}{m}{n}{<-> lightbulb10}{}

```

Figure 6: $\text{\LaTeX 2}_{\epsilon}$ font-description file (`ubulb.fd`)

The final step is to write a $\text{\LaTeX 2}_{\epsilon}$ style file that defines a name for each symbol in the font. Because we have only one symbol our style file, `lightbulb.sty` (Figure 7), is rather trivial. Note that instead of typesetting “A” we could have had `\lightbulb typeset "\char65"`, `\char"41`, or `\char'101` (respectively, decimal, hexadecimal, and octal character offsets into the font). For a simple, one-character symbol font such as LightBulb10 it would be reasonable to merge `ubulb.fd` into `lightbulb.sty` instead of maintaining two separate files. In either case, a document need only include “`\usepackage{lightbulb}`” to make the `\lightbulb` symbol available.

```
\newcommand{\lightbulb}{\usefont{U}{bulb}{m}{n}A}

```

Figure 7: $\text{\LaTeX 2}_{\epsilon}$ style file (`lightbulb.sty`)

METAFONT normally produces bitmapped fonts. However, it is also possible, with the help of some external tools, to produce PostScript Type 1 fonts. These have the advantages of rendering better in Adobe[®] Acrobat[®] (at least in versions prior to 6.0) and of being more memory-efficient when handled by a PostScript interpreter. See <http://www.tex.ac.uk/cgi-bin/texfaq2html?label=textrace> for pointers to tools that can produce Type 1 fonts from METAFONT.

10.4 Math-mode spacing

Terms such as “binary operators”, “relations”, and “punctuation” in Section 3 primarily regard the surrounding spacing. (See the Short Math Guide for L^AT_EX [Dow00] for a nice exposition on the subject.) To use a symbol for a different purpose, you can use the T_EX commands `\mathord`, `\mathop`, `\mathbin`, `\mathrel`, `\mathopen`, `\mathclose`, and `\mathpunct`. For example, if you want to use `\downarrow` as a variable (an “ordinary” symbol) instead of a delimiter, you can write “`$3 x + \mathord{\downarrow}$`” to get the properly spaced “ $3x + \downarrow$ ” rather than the awkward-looking “ $3x + \downarrow$ ”. Similarly, to create a dotted-union symbol (“ $\dot{\cup}$ ”) that spaces like the ordinary set-union symbol (`\cup`) it must be defined with `\mathbin`, just as `\cup` is. Contrast “`$A \dot{\cup} B$`” (“ $A \dot{\cup} B$ ”) with “`$A \mathbin{\dot{\cup}} B$`” (“ $A \dot{\cup} B$ ”). See The T_EXbook [Knu86a] for the definitive description of math-mode spacing.

The purpose of the “log-like symbols” in Table 181 and Table 182 is to provide the correct amount of spacing around and within multiletter function names. Table 526 contrasts the output of the log-like symbols with various, naïve alternatives. In addition to spacing, the log-like symbols also handle subscripts properly. For example, “`\max_{p \in P}`” produces “ $\max_{p \in P}$ ” in text, but “ $\max$ ” as part of a displayed formula.

TABLE 526: Spacing Around/Within Log-like Symbols

L ^A T _E X expression	Output
<code>\$r \sin \theta\$</code>	$r \sin \theta$ (best)
<code>\$r \sin \theta\$</code>	$r \sin \theta$
<code>\$r \mbox{sin} \theta\$</code>	$r \sin \theta$
<code>\$r \mathrm{sin} \theta\$</code>	$r \sin \theta$

The `amsmath` package makes it straightforward to define new log-like symbols:

```
\DeclareMathOperator{\atan}{atan}
\DeclareMathOperator*{\lcm}{lcm}
```

The difference between `\DeclareMathOperator` and `\DeclareMathOperator*` involves the handling of subscripts. With `\DeclareMathOperator*`, subscripts are written beneath log-like symbols in display style and to the right in text style. This is useful for limit operators (e.g., `\lim`) and functions that tend to map over a set (e.g., `\min`). In contrast, `\DeclareMathOperator` tells T_EX that subscripts should always be displayed to the right of the operator, as is common for functions that take a single parameter (e.g., `\log` and `\cos`). Table 527 contrasts symbols declared with `\DeclareMathOperator` and `\DeclareMathOperator*` in both text style (`$...$`) and display style (`\[...\]`).¹¹

TABLE 527: Defining new log-like symbols

Declaration function	<code>\$\newlogsym_{p \in P}\$</code>	<code>\[\newlogsym_{p \in P} \]</code>
<code>\DeclareMathOperator</code>	$\newlogsym_{p \in P}$	$\newlogsym_{p \in P}$
<code>\DeclareMathOperator*</code>	$\newlogsym_{p \in P}$	$\newlogsym_{p \in P}$

It is common to use a thin space (`\,`) between the words of a multiword operators, as in “`\DeclareMathOperator*{\argmax}{arg\,max}`”. `\liminf`, `\limsup`, and all of the log-like symbols shown in Table 182 utilize this spacing convention.

10.5 Bold mathematical symbols

L^AT_EX does not normally use bold symbols when typesetting mathematics. However, bold symbols are occasionally needed, for example when naming vectors. Any of the approaches described at

¹¹Note that `\displaystyle` can be used to force display style within `$...$` and `\textstyle` can be used to force text style within `\[...\]`.

<http://www.tex.ac.uk/cgi-bin/texfaq2html?label=boldgreek> can be used to produce bold mathematical symbols. Table 528 contrasts the output produced by these various techniques. As the table illustrates, these techniques exhibit variation in their formatting of Latin letters (upright vs. italic), formatting of Greek letters (bold vs. normal), formatting of operators and relations (bold vs. normal), and spacing.

TABLE 528: Producing bold mathematical symbols

Package	Code	Output	
<i>none</i>	<code>\alpha + b = \Gamma \div D</code>	$\alpha + b = \Gamma \div D$	(no bold)
<i>none</i>	<code>\mathbf{\alpha + b = \Gamma \div D}</code>	$\alpha + \mathbf{b} = \mathbf{\Gamma} \div \mathbf{D}$	
<i>none</i>	<code>\boldmath\alpha + b = \Gamma \div D</code>	$\boldsymbol{\alpha} + \boldsymbol{b} = \boldsymbol{\Gamma} \div \boldsymbol{D}$	
<i>amsbsy</i>	<code>\pmb{\alpha + b = \Gamma \div D}</code>	$\boldsymbol{\alpha} + \boldsymbol{b} = \boldsymbol{\Gamma} \div \boldsymbol{D}$	(faked bold)
<i>amsbsy</i>	<code>\boldsymbol{\alpha + b = \Gamma \div D}</code>	$\boldsymbol{\alpha} + \boldsymbol{b} = \boldsymbol{\Gamma} \div \boldsymbol{D}$	
<i>bm</i>	<code>\bm{\alpha + b = \Gamma \div D}</code>	$\boldsymbol{\alpha} + \boldsymbol{b} = \boldsymbol{\Gamma} \div \boldsymbol{D}$	
<i>fixmath</i>	<code>\mathbf{\alpha + b = \Gamma \div D}</code>	$\boldsymbol{\alpha} + \boldsymbol{b} = \boldsymbol{\Gamma} \div \boldsymbol{D}$	

10.6 ASCII and Latin 1 quick reference

Table 529 amalgamates data from various other tables in this document into a convenient reference for $\text{\LaTeX} 2_{\epsilon}$ typesetting of ASCII characters, i.e., the characters available on a typical U.S. computer keyboard. The first two columns list the character's ASCII code in decimal and hexadecimal. The third column shows what the character looks like. The fourth column lists the $\text{\LaTeX} 2_{\epsilon}$ command to typeset the character as a text character. And the fourth column lists the $\text{\LaTeX} 2_{\epsilon}$ command to typeset the character within a `\texttt{...}` command (or, more generally, when `\ttfamily` is in effect).

TABLE 529: $\text{\LaTeX} 2_{\epsilon}$ ASCII Table

Dec	Hex	Char	Body text	\texttt	Dec	Hex	Char	Body text	\texttt
33	21	!	!	!	62	3E	>	\textgreater	>
34	22	"	\textquotedbl	"	63	3F	?	?	?
35	23	#	\#	\#	64	40	@	@	@
36	24	\$	\\$	\\$	65	41	A	A	A
37	25	%	\%	\%	66	42	B	B	B
38	26	&	\&	\&	67	43	C	C	C
39	27	,	,	,	:	:	:	:	:
40	28	(	(	(	90	5A	Z	Z	Z
41	29	)	)	)	91	5B	[	[	[
42	2A	*	*	*	92	5C	\	\textbackslash	\char'\'
43	2B	+	+	+	93	5D	]	]	]
44	2C	,	,	,	94	5E	^	\^{}{}	\^{}{}
45	2D	-	-	-	95	5F	_	_	\char'_
46	2E	.	.	.	96	60	'	'	'
47	2F	/	/	/	97	61	a	a	a
48	30	0	0	0	98	62	b	b	b
49	31	1	1	1	99	63	c	c	c
50	32	2	2	2	:	:	:	:	:
:	:	:	:	:	122	7A	z	z	z
57	39	9	9	9	123	7B	{	\{	\char'\{
58	3A	:	:	:	124	7C		\textbar	
59	3B	;	;	;	125	7D	}	\}	\char'\}
60	3C	<	\textless	<	126	7E	~	\~{}{}	\~{}{}
61	3D	=	=	=					

The following are some additional notes about the contents of Table 529:

- “” is not available in the OT1 font encoding.
- Table 529 shows a close quote for character 39 for consistency with the open quote shown for character 96. A straight quote can be typeset using `\textquotesingle` (cf. Table 46).
- The characters “<”, “>”, and “|” do work as expected in math mode, although they produce, respectively, “l”, “i”, and “—” in text mode when using the OT1 font encoding.¹² The following are some alternatives for typesetting “<”, “>”, and “|”:
 - Specify a document font encoding other than OT1 (as described on page 12).
 - Use the appropriate symbol commands from Table 2 on page 14, viz. `\textless`, `\textgreater`, and `\textbar`.
 - Enter the symbols in math mode instead of text mode, i.e., $\$<\$$, $\$>\$$, and $\$|\$$.

Note that for typesetting metavariables many people prefer `\texttriangle` and `\textrangle` to `\textless` and `\textgreater`; i.e., “*<filename>*” instead of “<*filename*>”.

- Although “/” does not require any special treatment, L^AT_EX additionally defines a `\slash` command which outputs the same glyph but permits a line break afterwards. That is, “increase/decrease” is always typeset as a single entity while “increase\slash{}decrease” may be typeset with “increase/” on one line and “decrease” on the next.
- `\textasciicircum` can be used instead of `\~{}`, and `\textasciitilde` can be used instead of `\tilde{}`. Note that `\textasciitilde` and `\tilde{}` produce raised, diacritic tildes. “Text” (i.e., vertically centered) tildes can be generated with either the math-mode `\sim` command (shown in Table 88 on page 48), which produces a somewhat wide “~”, or the `textcomp` package’s `\texttildelow` (shown in Table 46 on page 27), which produces a vertically centered “~” in most fonts but a baseline-oriented “~” in Computer Modern, `txfonts`, `pxfonts`, and various other fonts originating from the T_EX world. If your goal is to typeset tildes in URLs or Unix filenames, your best bet is to use the `url` package, which has a number of nice features such as proper line-breaking of such names.
- The various `\char` commands within `\texttt` are necessary only in the OT1 font encoding. In other encodings (e.g., T1), commands such as `\{`, `\}`, `\_`, and `\textbackslash` all work properly.
- The code page 437 (IBM PC) version of ASCII characters 1 to 31 can be typeset using the `ascii` package. See Table 326 on page 126.
- To replace “” and “” with the more computer-like (and more visibly distinct) “^” and “_” within a `verbatim` environment, use the `upquote` package. Outside of `verbatim`, you can use `\char18` and `\char13` to get the modified quote characters. (The former is actually a grave accent.)

Similar to Table 529, Table 530 on the next page is an amalgamation of data from other tables in this document. While Table 529 shows how to typeset the 7-bit ASCII character set, Table 530 shows the Latin 1 (Western European) character set, also known as ISO-8859-1.

The following are some additional notes about the contents of Table 530:

- A “(tc)” after a symbol name means that the `textcomp` package must be loaded to access that symbol. A “(T1)” means that the symbol requires the T1 font encoding. The `fontenc` package can change the font encoding document-wide.
- Many of the `\text...` accents can also be produced using the accent commands shown in Table 18 on page 20 plus an empty argument. For instance, `\={}` is essentially the same as `\textasciimacron`.
- The commands in the “L^AT_EX 2_ε” columns work both in body text and within a `\texttt{...}` command (or, more generally, when `\ttfamily` is in effect).

¹²Donald Knuth didn’t think such symbols were important outside of mathematics so he omitted them from his text fonts.

TABLE 530: L^AT_EX 2_ε Latin 1 Table

Dec	Hex	Char	L ^A T _E X 2 _ε	Dec	Hex	Char	L ^A T _E X 2 _ε
161	A1	¡	!‘	209	D1	Ñ	\~{N}
162	A2	¢	\textcent (tc)	210	D2	Ò	\~{O}
163	A3	£	\pounds	211	D3	Ó	\~{O}
164	A4	¤	\textcurrency (tc)	212	D4	Ô	\~{O}
165	A5	¥	\textyen (tc)	213	D5	Õ	\~{O}
166	A6	¦	\textbrokenbar (tc)	214	D6	Ö	\~{O}
167	A7	§	\S	215	D7	×	\texttimes (tc)
168	A8	¨	\textasciidieresis (tc)	216	D8	Ø	\O
169	A9	©	\textcopyright	217	D9	Ù	\~{U}
170	AA	ª	\textordfeminine	218	DA	Ú	\~{U}
171	AB	«	\guillemotleft (T1)	219	DB	Û	\~{U}
172	AC	¬	\textlnot (tc)	220	DC	Ü	\~{U}
173	AD	-	\-	221	DD	Ý	\~{Y}
174	AE	®	\textregistered	222	DE	Þ	\TH (T1)
175	AF	—	\textasciimacron (tc)	223	DF	ß	\ss
176	B0	°	\textdegree (tc)	224	E0	à	\~{a}
177	B1	±	\textpm (tc)	225	E1	á	\~{a}
178	B2	²	\texttwosuperior (tc)	226	E2	â	\~{a}
179	B3	³	\textthreesuperior (tc)	227	E3	ã	\~{a}
180	B4	´	\textasciiacute (tc)	228	E4	ä	\~{a}
181	B5	µ	\textmu (tc)	229	E5	å	\aa
182	B6	¶	\P	230	E6	æ	\ae
183	B7	·	\textperiodcentered	231	E7	ç	\c{c}
184	B8	¸	\c{}	232	E8	è	\~{e}
185	B9	¹	\textonesuperior (tc)	233	E9	é	\~{e}
186	BA	º	\textordmasculine	234	EA	ê	\~{e}
187	BB	»	\guillemotright (T1)	235	EB	ë	\~{e}
188	BC	¼	\textonequarter (tc)	236	EC	ì	\~{i}
189	BD	½	\textonehalf (tc)	237	ED	í	\~{i}
190	BE	¾	\textthreequarters (tc)	238	EE	î	\~{i}
191	BF	¿	?‘	239	EF	ï	\~{i}
192	C0	À	\~{A}	240	F0	ð	\dh (T1)
193	C1	Á	\~{A}	241	F1	ñ	\~{n}
194	C2	Â	\~{A}	242	F2	ò	\~{o}
195	C3	Ã	\~{A}	243	F3	ó	\~{o}
196	C4	Ä	\~{A}	244	F4	ô	\~{o}
197	C5	Å	\AA	245	F5	õ	\~{o}
198	C6	Æ	\AE	246	F6	ö	\~{o}
199	C7	Ç	\c{C}	247	F7	÷	\textdiv (tc)
200	C8	È	\~{E}	248	F8	ø	\o
201	C9	É	\~{E}	249	F9	ù	\~{u}
202	CA	Ê	\~{E}	250	FA	ú	\~{u}
203	CB	Ë	\~{E}	251	FB	û	\~{u}
204	CC	Ì	\~{I}	252	FC	ü	\~{u}
205	CD	Í	\~{I}	253	FD	ý	\~{y}
206	CE	Î	\~{I}	254	FE	þ	\th (T1)
207	CF	Ï	\~{I}	255	FF	ÿ	\~{y}
208	D0	Ð	\DH (T1)				

- The “ℓ” and “\$” glyphs occupy the same slot (36) of the OT1 font encoding, with “ℓ” appearing in italic fonts and “\$” appearing in roman fonts. A problem with L^AT_EX’s default handling of this double-mapping is that “`{\sffamily\slshape\pounds}`” produces “\$”, not “ℓ”. Other font encodings use separate slots for the two characters and are therefore robust to the problem of “ℓ”/“\$” conflicts. Authors who use `\pounds` should select a font encoding other than OT1 (as explained on page 12) or use the `textcomp` package, which redefines `\pounds` to use the TS1 font encoding.
- Character 173, `\-`, is shown as “-” but is actually a discretionary hyphen; it appears only at the end of a line.

Microsoft[®] Windows[®] normally uses a superset of Latin 1 called “Code Page 1252” or “CP1252” for short. CP1252 introduces symbols in the Latin 1 “invalid” range (characters 128–159). Table 531 presents the characters with which CP1252 augments the standard Latin 1 table.

TABLE 531: L^AT_EX 2_ε Code Page 1252 Table

Dec	Hex	Char	L ^A T _E X 2 _ε	Dec	Hex	Char	L ^A T _E X 2 _ε
128	80	€	<code>\texteuro</code> (tc)	145	91	‘	‘
130	82	,	<code>\quotesinglbase</code> (T1)	146	92	’	’
131	83	<i>f</i>	<code>\textit{f}</code>	147	93	“	“
132	84	„	<code>\quotedblbase</code> (T1)	148	94	”	”
133	85	...	<code>\dots</code>	149	95	•	<code>\textbullet</code>
134	86	†	<code>\dag</code>	150	96	—	--
135	87	‡	<code>\ddag</code>	151	97	---	---
136	88	ˆ	<code>\textasciicircum</code>	152	98	˜	<code>\textasciitilde</code>
137	89	‰	<code>\textperthousand</code> (tc)	153	99	™	<code>\texttrademark</code>
138	8A	Š	<code>\v{S}</code>	154	9A	š	<code>\v{s}</code>
139	8B	‹	<code>\guilsinglleft</code> (T1)	155	9B	›	<code>\guilsinglright</code> (T1)
140	8C	Œ	<code>\OE</code>	156	9C	œ	<code>\oe</code>
142	8E	Ž	<code>\v{Z}</code>	158	9E	ž	<code>\v{z}</code>
				159	9F	ÿ	<code>\{"Y}</code>

The following are some additional notes about the contents of Table 531:

- As in Table 530, a “(tc)” after a symbol name means that the `textcomp` package must be loaded to access that symbol. A “(T1)” means that the symbol requires the T1 font encoding. The `fontenc` package can change the font encoding document-wide.
- Not all characters in the 128–159 range are defined.
- Look up “euro signs” in the index for alternatives to `\texteuro`.

While too large to incorporate into this document, a listing of ISO 8879:1986 SGML/XML character entities and their L^AT_EX equivalents is available from <http://www.bitjungle.com/isoent/>. Some of the characters presented there make use of `isoent`, a L^AT_EX 2_ε package (available from the same URL) that fakes some of the missing ISO glyphs using the L^AT_EX `picture` environment.¹³

10.7 Unicode characters

Unicode is a “universal character set”—a standard for encoding (i.e., assigning unique numbers to) the symbols appearing in many of the world’s languages. While ASCII can represent 128 symbols and Latin 1 can represent 256 symbols, Unicode can represent an astonishing 1,114,112 symbols.

Because T_EX and L^AT_EX predate the Unicode standard and Unicode fonts by almost a decade, support for Unicode has had to be added to the base T_EX and L^AT_EX systems. Note first that L^AT_EX distinguishes between *input* encoding—the characters used in the `.tex` file—and *output* encoding—the characters that appear in the generated `.dvi`, `.pdf`, etc. file.

¹³`isoent` is not featured in this document, because it is not available from CTAN and because the faked symbols are not “true” characters; they exist in only one size, regardless of the body text’s font size.

Inputting Unicode characters

To include Unicode characters in a `.tex` file, load the `ucs` package and load the `inputenc` package with the `utf8x` (“UTF-8 extended”) option.¹⁴ These packages enable $\text{\LaTeX}$ to translate UTF-8 sequences to $\text{\LaTeX}$ commands, which are subsequently processed as normal. For example, the UTF-8 text “Copyright © 2017”—“©” is not an ASCII character and therefore cannot be input directly without packages such as `ucs/inputenc`—is converted internally by `inputenc` to “Copyright `\textcopyright` 2017” and therefore typeset as “Copyright © 2017”.

The `ucs/inputenc` combination supports only a tiny subset of Unicode’s million-plus symbols. Additional symbols can be added manually using the `\DeclareUnicodeCharacter` command. `\DeclareUnicodeCharacter` takes two arguments: a Unicode number and a $\text{\LaTeX}$ command to execute when the corresponding Unicode character is encountered in the input. For example, the Unicode character “degree celsius” (“°C”) appears at character position U+2103.¹⁵ However, “°C” is not one of the characters that `ucs` and `inputenc` recognize. The following document shows how to use `\DeclareUnicodeCharacter` to tell $\text{\LaTeX}$ that the “°C” character should be treated as a synonym for `\textcelsius`:

```
\documentclass{article}
\usepackage{ucs}
\usepackage[utf8x]{inputenc}
\usepackage{textcomp}

\DeclareUnicodeCharacter{"2103}{\textcelsius} % Enable direct input of U+2103.

\begin{document}
It was a balmy 21°C.
\end{document}
```

which produces

It was a balmy 21°C.

See the `ucs` documentation for more information and for descriptions of the various options that control `ucs`’s behavior.

Outputting Unicode characters

Orthogonal to the ability to include Unicode characters in a $\text{\LaTeX}$ input file is the ability to include a given Unicode character in the corresponding output file. By far the easiest approach is to use $\text{\XeLaTeX}$ instead of $\text{\pdfLaTeX}$ or ordinary $\text{\LaTeX}$. $\text{\XeLaTeX}$ handles Unicode input and output natively and can utilize system fonts directly without having to expose them via `.tfm`, `.fd`, and other such files. To output a Unicode character, a $\text{\XeLaTeX}$ document can either include that character directly as UTF-8 text or use $\text{\TeX}$ ’s `\char` primitive, which $\text{\XeLaTeX}$ extends to accept numbers larger than 255.

Suppose we want to output the symbols for versicle (“V”) and response (“R”) in a document. The Unicode charts list “versicle” at position U+2123 and “response” at position U+211F. We therefore need to install a font that contains those characters at their proper positions. One such font that is freely available from CTAN is Junicode (`Junicode.ttf`) from the `junicode` package. The `fontspec` package makes it easy for a $\text{\XeLaTeX}$ document to utilize a system font. The following example defines a `\textjuni` command that uses `fontspec` to typeset its argument in Junicode:

```
\documentclass{article}
\usepackage{fontspec}

\newcommand{\textjuni}[1]{\fontspec{Junicode}#1}

\begin{document}
We use ‘‘\textjuni{\char"2123}’’ for a versicle
and ‘‘\textjuni{\char"211F}’’ for a response.
\end{document}
```

¹⁴UTF-8 is the 8-bit Unicode Transformation Format, a popular mechanism for representing Unicode symbol numbers as sequences of one to four bytes.

¹⁵The Unicode convention is to express character positions as “U+*hexadecimal number*”.

which produces

We use “ $\mathcal{V}$ ” for a versicle and “ $\mathcal{R}$ ” for a response.

(Typesetting the entire document in Junicode would be even easier. See the `fontspec` documentation for more information regarding font selection.) Note how the preceding example uses `\char` to specify a Unicode character by number. The double quotes before the number indicate that the number is represented in hexadecimal instead of decimal.

10.8 About this document

History David Carlisle wrote the first version of this document in October, 1994. It originally contained all of the native $\text{\LaTeX}$ symbols (Table 50, Table 72, Table 88, Table 138, Table 181, Table 184, Table 218, Table 219, Table 232, Table 240, Table 294, and a few tables that have since been reorganized) and was designed to be nearly identical to the tables in Chapter 3 of Leslie Lamport’s book [Lam86]. Even the table captions and the order of the symbols within each table matched! The $\mathcal{AMS}$ symbols (Table 51, Table 89, Table 90, Table 141, Table 142, Table 185, Table 194, Table 212, and Table 295) and an initial Math Alphabets table (Table 307) were added thereafter. Later, Alexander Holt provided the `stmaryrd` tables (Table 52, Table 74, Table 91, Table 144, Table 177, and Table 213).

In January, 2001, Scott Pakin took responsibility for maintaining the symbol list and has since implemented a complete overhaul of the document. The result, now called, “The Comprehensive $\text{\LaTeX}$ Symbol List”, includes the following new features:

- the addition of a handful of new math alphabets, dozens of new font tables, and thousands of new symbols
- the categorization of the symbol tables into body-text symbols, mathematical symbols, science and technology symbols, dingbats, ancient languages, and other symbols, to provide a more user-friendly document structure
- an index, table of contents, hyperlinks, and a frequently-requested symbol list, to help users quickly locate symbols
- symbol tables rewritten to list the symbols in alphabetical order
- appendices providing additional information relevant to using symbols in $\text{\LaTeX}$
- tables showing how to typeset all of the characters in the ASCII and Latin 1 font encodings

Furthermore, the internal structure of the document has been completely altered from David Carlisle’s original version. Most of the changes are geared towards making the document easier to extend, modify, and reformat.

Build characteristics Table 532 on the following page lists some of this document’s build characteristics. Most important is the list of packages that $\text{\LaTeX}$ couldn’t find, but that `symbols.tex` otherwise would have been able to take advantage of. Complete, prebuilt versions of this document are available from CTAN (<http://www.ctan.org/> or one of its many mirror sites) in the directory `tex-archive/info/symbols/comprehensive`. Table 533 shows the package date (specified in the `.sty` file with `\ProvidesPackage`) for each package that was used to build this document and that specifies a package date. Packages are not listed in any particular order in either Table 532 or Table 533.

TABLE 532: Document Characteristics

Characteristic	Value
Source file:	<code>symbols.tex</code>
Build date:	January 19, 2017
Symbols documented:	14283
Packages included:	<code>textcomp</code> <code>latexsym</code> <code>amssymb</code> <code>stmaryrd</code> <code>euscript</code> <code>wasysym</code> <code>pifont</code> <code>manfnt</code> <code>bbding</code> <code>undertilde</code> <code>ifsym</code> <code>tipa</code> <code>tipx</code> <code>extraipa</code> <code>wsuipa</code> <code>phonetic</code> <code>ulsy</code> <code>ar</code> <code>metre</code> <code>txfonts</code> <code>mathabx</code> <code>fclfont</code> <code>skak</code> <code>ascii</code> <code>dingbat</code> <code>skull</code> <code>eurosym</code> <code>esvect</code> <code>yfonts</code> <code>yhmath</code> <code>esint</code> <code>mathdots</code> <code>trsym</code> <code>universa</code> <code>upgreek</code> <code>overrightarrow</code> <code>chemarr</code> <code>chemarrow</code> <code>nath</code> <code>trfsigns</code> <code>mathtools</code> <code>phaistos</code> <code>arcs</code> <code>vietnam</code> <code>t4phonet</code> <code>holtpolt</code> <code>semtrans</code> <code>dictsym</code> <code>extarrows</code> <code>protosem</code> <code>harmony</code> <code>hieroglf</code> <code>ccllicenses</code> <code>mathdesign</code> <code>arev</code> <code>MnSymbol</code> <code>fdsymbol</code> <code>boisik</code> <code>cml</code> <code>extpfeil</code> <code>keystroke</code> <code>fge</code> <code>turnstile</code> <code>simpsons</code> <code>epsdice</code> <code>feyn</code> <code>staves</code> <code>igo</code> <code>colonequals</code> <code>shuffle</code> <code>fourier</code> <code>dozenal</code> <code>pmboxdraw</code> <code>pigpen</code> <code>clock</code> <code>teubner</code> <code>linearA</code> <code>linearb</code> <code>cyriot</code> <code>sarabian</code> <code>china2e</code> <code>harpoon</code> <code>steinmetz</code> <code>milstd</code> <code>recycle</code> <code>DotArrow</code> <code>ushort</code> <code>hhcount</code> <code>ogonek</code> <code>combelow</code> <code>musixtex</code> <code>ccicons</code> <code>adfsymbols</code> <code>adorn</code> <code>bigints</code> <code>soyombo</code> <code>tfrupree</code> <code>knitting</code> <code>textgreek</code> <code>begriff</code> <code>frege</code> <code>abraces</code> <code>CountriesOfEurope</code> <code>cookingsymbols</code> <code>prodint</code> <code>epiomec</code> <code>mdwmath</code> <code>rsfso</code> <code>fontawesome</code> <code>stix</code> <code>hands</code> <code>greenpoint</code> <code>nkarta</code> <code>astrosym</code> <code>webomints</code> <code>moonphase</code> <code>dancers</code> <code>semaphor</code> <code>umranda</code> <code>umrandb</code> <code>cryst</code> <code>starfont</code> <code>tikzsymbols</code> <code>dice</code> <code>apl</code> <code>go</code> <code>magic</code> <code>bartel-chess-fonts</code> <code>actuarialangle</code> <code>lilyglyphs</code> <code>knot</code> <code>bclogo</code> <code>bullcntr</code> <code>rubikcube</code> <code>svrsymbols</code> <code>halloweenmath</code> <code>old-arrows</code> <code>allrunes</code> <code>emf</code> <code>esrelation</code> <code>accents</code> <code>nicefrac</code> <code>bm</code> <code>junicode</code> <code>mathrsfs</code> <code>chancery</code> <code>urwchancal</code> <code>calligra</code> <code>bbold</code> <code>mbboard</code> <code>dsfont</code> <code>bbm</code>
Packages omitted:	<i>none</i>

TABLE 533: Package versions used in the preparation of this document

Name	Date	Name	Date	Name	Date
<code>textcomp</code>	2016/06/19	<code>latexsym</code>	1998/08/17	<code>amssymb</code>	2013/01/14
<code>stmaryrd</code>	1994/03/03	<code>euscript</code>	2009/06/22	<code>wasysym</code>	2003/10/30
<code>pifont</code>	2005/04/12	<code>manfnt</code>	1999/07/01	<code>bbding</code>	1999/04/15
<code>undertilde</code>	2000/08/08	<code>ifsym</code>	2000/04/18	<code>tipa</code>	2002/08/08
<code>tipx</code>	2003/01/01	<code>wsuipa</code>	1994/07/16	<code>ar</code>	2012/01/23
<code>metre</code>	2001/12/05	<code>txfonts</code>	2008/01/22	<code>mathabx</code>	2003/07/29
<code>skak</code>	2013/07/18	<code>ascii</code>	2006/05/30	<code>dingbat</code>	2001/04/27
<code>skull</code>	2002/01/23	<code>eurosym</code>	1998/08/06	<code>yfonts</code>	2003/01/08
<code>mathdots</code>	2014/06/11	<code>trsym</code>	2000/06/25	<code>universa</code>	98/08/01
<code>upgreek</code>	2003/02/12	<code>chemarr</code>	2016/05/16	<code>mathtools</code>	2015/11/12
<code>phaistos</code>	2004/04/23	<code>arcs</code>	2004/05/09	<code>t4phonet</code>	2004/06/01
<code>semtrans</code>	1998/02/10	<code>dictsym</code>	2004/07/26	<code>extarrows</code>	2008/05/15
<code>protosem</code>	2005/03/18	<code>harmony</code>	2007/05/04	<code>hieroglf</code>	2015/06/02
<code>ccllicenses</code>	2005/05/20	<code>MnSymbol</code>	2007/01/21	<code>fdsymbol</code>	2011/11/01
<code>boisik</code>	2009/08/21	<code>extpfeil</code>	2009/10/31	<code>keystroke</code>	2010/04/23
<code>fge</code>	2015/05/19	<code>turnstile</code>	2007/06/23	<code>epsdice</code>	2007/02/15
<code>feyn</code>	2009/10/08	<code>colonequals</code>	2016/05/16	<code>shuffle</code>	2008/10/27
<code>dozenal</code>	2015/01/29	<code>pmboxdraw</code>	2016/05/16	<code>pigpen</code>	2008/12/07

(continued on next page)

(continued from previous page)

Name	Date	Name	Date	Name	Date
clock	2001/04/10	teubner	2016/03/31	linearA	2006/03/13
linearb	2005/06/22	cypriot	2009/05/22	sarabian	2005/11/12
china2e	1997/06/01	harpoon	1994/11/02	steinmetz	2009/06/14
milstd	2009/06/25	DotArrow	2007/02/12	ushort	2001/06/13
hhcount	1995/03/31	ogonek	95/07/17	combelow	2010/05/02
musixtex	2001/07/08	ccicons	2013/04/16	adorn	2010/07/25
bigints	2010/02/15	soyombo	1996/09/01	tfruppee	2010/12/15
knitting	2010/08/29	textgreek	2011/10/09	frege	2012/08/04
abraces	2012/08/24	CountriesOfEurope	2012/04/18	cookingsymbols	2014/12/28
epiomec	2003/11/05	mdwmath	1996/04/11	fontawesome	2016/05/15
stix	2015/04/17	starfont	2010/09/29	tikzsymbols	2016/12/26
bclogo	2016/01/10	bullcntr	2007/04/02	rubikcube	2015/09/25
svrsymbols	2016/04/08	halloweenmath	2017/01/06	emf	2016/09/09
accents	2006/05/12	nicefrac	1998/08/04	bm	2016/07/07
calligra	2012/04/10				

10.9 Copyright and license

The Comprehensive L^AT_EX Symbol List
Copyright © 2017, Scott Pakin

This work may be distributed and/or modified under the conditions of the L^AT_EX Project Public License, either version 1.3c of this license or (at your option) any later version. The latest version of this license is in

<http://www.latex-project.org/lppl.txt>

and version 1.3c or later is part of all distributions of L^AT_EX version 2006/05/20 or later.

This work has the LPPL maintenance status “maintained”.

The current maintainer of this work is Scott Pakin.

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If you're having trouble locating a symbol, try looking under "T" for "`\text{...}`". Many text-mode commands begin with that prefix. Also, accents are shown over/under a gray box (e.g., "" for "`\``").

Symbols					
\ " (")	20	\ = {=} (≡)	20	\ AC (~)	121
\ # (#)	14, 225	\ = {} (^)	226	\ ac (~)	55
\ \$ (\$)	14, 15, 225	()	99	\ acararc	23
\ % (%)	15	()	97	\ acbar	23
\ & (&)	14, 34, 225	()	100	accents	20–25, 102–107, 110, 154, 219–220
\ ' (')	20	()	48, 96, 98, 101	acute (´)	20–24, 102
\ (()	96	()	99	any character as	219
\ ((.	97	()	99	arc (⌒)	20–23, 104–106
\ (((.	100	()	99	breve (˘)	20–24, 102
) ())	96	/ (/)	99	caron (ˇ)	20, 24, 102, 106
) ())	97	[([.	99	cedilla (¸)	20
) ())	100	\ _	15	circumflex (̂)	20–22, 102, 104, 105
* (*)	30	\ _ (-)	14, 226	comma-below (̣)	24
\ ,	224	\ { {	14, 15, 96	Cyrillic breve (҃)	20
\ - (-)	227, 228	\ { {	226	Cyrillic flex (҆)	20
\ . (.)	20	\ } }	14, 15, 96	Cyrillic umlaut (҈)	20
/ (/)	96	\ } }	226	diæresis (¨)	20, 23, 24, 102, 120
/ (/)	97	] (])	99	dot (· or •)	20–22, 102
/ (/)	100	\ ' (')	20	double acute (˝)	20, 24
\ : (:)	112	\ ~ (˜)	20	double grave (˘)	20
\ ; (;)	112	\ ~{} (^)	14, 226	extensible	104–107, 110, 219–220
< (<)	97			grave (̀)	20–24, 102
< (<)	100	A		háček	see accents, caron
\ ? (?)	112	A (A)	151	hook (◌̤)	20
[([.	96	\ A (A)	151	Hungarian umlaut	see accents, double acute
[([.	97	a (esvect package option)	106	inverted breve (̑)	20
[([.	100	\ a (a)	151	kroužek	see accents, ring
\ \	216	\ a (x)	176	macron (¯)	20, 23–25, 102, 104, 106
] (])	96	a (f)	151	multiple per character	21– 22, 219
] (])	97	\ AA (Å)	15	ogonek (◌̛)	20–24
] (])	100	\ aa (å)	15	ring (◌̥)	20–22, 24, 102, 103
\ ^ (ˆ)	20	\ AAaleph (ℵ)	142	Romanian comma-belo acc- cent	see accents, comma-below
\ ~{} (^)	14, 226	\ AAayin (ע)	142	trema	see accents, diæresis
\ ()	96	\ ABeth (בּ)	142	umlaut	see accents, diæresis
\ ()	96, 98	\ AAcheth (ח)	142	accents (package)	102, 219, 231, 232
\ ()	20	\ AAdaleth (דּ)	142	\ accentset	219
		\ AAhe (הּ)	142	accidentals	see musical symbols
		\ AAhelmet (אֶלֶף)	142	accordion notation	157
		\ AAheth (ה)	142	\ accordionBayanBass (Б)	157
		\ AAkaph (כּ)	142	\ accordionDiscant (D)	157
		\ AAlamed (ל)	142	\ accordionFreeBass (F)	157
		\ Aleph (א)	142		
		\ Aape (פּ)	142		
		\ AAqoph (ק)	142		
		\ Aresh (ר)	142		
		\ Asade (ס)	142		
		\ Ayin (ע)	142		
		\ Ayod (צ)	142		
		\ AB (I)	125		
		\ Abeth (אָ)	142		
		abracas (package)	107, 231, 232		
		absolute value	see \lvert and \rvert		
		abzüglich	see \textdiscount		

234

<code>\accordionOldEE</code> () ... 157	<code>\adfarrowne4</code> () 130	<code>\adfbullet{20}</code> () 135
<code>\accordionPull</code> () 157	<code>\adfarrowne5</code> () 130	<code>\adfbullet{21}</code> () 135
<code>\accordionPush</code> () 157	<code>\adfarrowne6</code> () 130	<code>\adfbullet{22}</code> () 135
<code>\accordionStdBass</code> () 157	<code>\adfarrownw1</code> () 130	<code>\adfbullet{23}</code> () 135
<code>\accurrent</code> () 117	<code>\adfarrownw2</code> () 130	<code>\adfbullet{24}</code> () 135
<code>\Acht</code> () 154	<code>\adfarrownw3</code> () 130	<code>\adfbullet{25}</code> () 135
<code>\AchtBL</code> () 154	<code>\adfarrownw4</code> () 130	<code>\adfbullet{26}</code> () 135
<code>\AchtBR</code> () 154	<code>\adfarrownw5</code> () 130	<code>\adfbullet{27}</code> () 140
<code>\acidfree</code> () 114	<code>\adfarrownw6</code> () 130	<code>\adfbullet{28}</code> () 140
<code>\ACK</code> () 126	<code>\adfarrows1</code> () 130	<code>\adfbullet{29}</code> () 140
<code>\acontraction</code> 220	<code>\adfarrows2</code> () 130	<code>\adfbullet{30}</code> () 140
<code>\AcPa</code> () 154	<code>\adfarrows3</code> () 130	<code>\adfbullet{31}</code> () 140
<code>\actuarial</code> () 219	<code>\adfarrows4</code> () 130	<code>\adfbullet{32}</code> () 140
<code>actuarial symbols</code> .. 107, 219	<code>\adfarrows5</code> () 130	<code>\adfbullet{33}</code> () 140
<code>actuarialangle</code> (package) . 107, 219, 231	<code>\adfarrows6</code> () 130	<code>\adfbullet{34}</code> () 140
<code>\actuarialangle</code> 219	<code>\adfarrowse1</code> () 130	<code>\adfbullet{41}</code> () 140
<code>\actuarialangle</code> () ... 107	<code>\adfarrowse2</code> () 130	<code>\adfbullet{42}</code> () 140
<code>\acute</code> () 103	<code>\adfarrowse3</code> () 130	<code>\adfbullet{43}</code> () 140
<code>\acute</code> () 102	<code>\adfarrowse4</code> () 130	<code>\adfbullet{44}</code> () 140
<code>acute</code> () <i>see</i> accents	<code>\adfarrowse5</code> () 130	<code>\adfbullet{45}</code> () 140
<code>\acutus</code> () 23	<code>\adfarrowse6</code> () 130	<code>\adfbullet{46}</code> () 140
<code>\acwcirclearrow</code> () ... 82	<code>\adfarrowsw1</code> () 130	<code>\adfbullet{47}</code> () 140
<code>\acwcirclearrowdown</code> () 76	<code>\adfarrowsw2</code> () 130	<code>\adfbullet{48}</code> () 140
<code>\acwcirclearrowleft</code> () 76	<code>\adfarrowsw3</code> () 130	<code>\adfbullet{49}</code> () 140
<code>\acwcirclearrowright</code> () 76	<code>\adfarrowsw4</code> () 130	<code>\adfbullet{50}</code> () 140
<code>\acwcirclearrowup</code> () . 76	<code>\adfarrowsw5</code> () 130	<code>\adfbullet{51}</code> () 140
<code>\acwgapcirclearrow</code> () 77	<code>\adfarrowsw6</code> () 130	<code>\adfbullet{52}</code> () 140
<code>\acwgapcirclearrow</code> () 82	<code>\adfarroww1</code> () 130	<code>\adfclosedflourishleft</code> () 141
<code>\acwleftarcarrow</code> () ... 76	<code>\adfarroww2</code> () 130	<code>\adfclosedflourishright</code> () 141
<code>\acwleftarcarrow</code> () ... 82	<code>\adfarroww3</code> () 130	<code>\adfdiamond</code> () 141
<code>\acwnearcarrow</code> () 76	<code>\adfarroww4</code> () 130	<code>\adfdoubleflourishleft</code> () 141
<code>\acwnwarcarrow</code> () 76	<code>\adfarroww5</code> () 130	<code>\adfdoubleflourishright</code> () 141
<code>\acwopencirclearrow</code> () 77	<code>\adfast{1}</code> () 135	<code>\adfdoublesharppflourishleft</code> () 141
<code>\acwopencirclearrow</code> () 83, 137	<code>\adfast{2}</code> () 135	<code>\adfdoublesharppflourishright</code> () 141
<code>\acwoverarcarrow</code> () .. 76	<code>\adfast{3}</code> () 135	<code>\adfdownhalfleafleft</code> () 136
<code>\acwoverarcarrow</code> () .. 82	<code>\adfast{4}</code> () 135	<code>\adfdownhalfleafright</code> () .. 136
<code>\acwrightarcarrow</code> () .. 76	<code>\adfast{5}</code> () 135	<code>\adfflatdownhalfleafleft</code> () 136
<code>\acwsearcarrow</code> () 76	<code>\adfast{6}</code> () 135	<code>\adfflatdownhalfleafright</code> () 136
<code>\acwswarccarrow</code> () 76	<code>\adfast{7}</code> () 135	<code>\adfflatleafleft</code> () .. 136
<code>\acwunderarcarrow</code> () . 76	<code>\adfast{8}</code> () 135	<code>\adfflatleafoutlineleft</code> () 136
<code>\acwunderarcarrow</code> () . 82	<code>\adfast{9}</code> () 135	<code>\adfflatleafoutlineleft</code> () 136
<code>\Adaeth</code> () 142	<code>\adfast{10}</code> () 135	<code>\adfflatleafoutright</code> () 136
<code>adeles</code> () <i>see</i> alphabets, math	<code>\adfbullet</code> () 141	<code>\adfflatleafright</code> () . 136
<code>\adfarrow</code> 130	<code>\adfbullet{1}</code> () 135	<code>\adfflatleafsolidleft</code> () 136
<code>\adfarrowe1</code> () 130	<code>\adfbullet{2}</code> () 135	<code>\adfflatleafsolidright</code> () 136
<code>\adfarrowe2</code> () 130	<code>\adfbullet{3}</code> () 135	
<code>\adfarrowe3</code> () 130	<code>\adfbullet{4}</code> () 133	
<code>\adfarrowe4</code> () 130	<code>\adfbullet{5}</code> () 133	
<code>\adfarrowe5</code> () 130	<code>\adfbullet{6}</code> () 133	
<code>\adfarrowe6</code> () 130	<code>\adfbullet{7}</code> () 133	
<code>\adfarrown1</code> () 130	<code>\adfbullet{8}</code> () 133	
<code>\adfarrown2</code> () 130	<code>\adfbullet{9}</code> () 133	
<code>\adfarrown3</code> () 130	<code>\adfbullet{10}</code> () 133	
<code>\adfarrown4</code> () 130	<code>\adfbullet{11}</code> () 135	
<code>\adfarrown5</code> () 130	<code>\adfbullet{12}</code> () 135	
<code>\adfarrown6</code> () 130	<code>\adfbullet{13}</code> () 135	
<code>\adfarrowne1</code> () 130	<code>\adfbullet{14}</code> () 135	
<code>\adfarrowne2</code> () 130	<code>\adfbullet{15}</code> () 135	
<code>\adfarrowne3</code> () 130	<code>\adfbullet{16}</code> () 135	
	<code>\adfbullet{17}</code> () 135	
	<code>\adfbullet{18}</code> () 135	
	<code>\adfbullet{19}</code> () 135	

`\adfflourishleft` (↪) .. 141
`\adfflourishlefthdouble`
 (↪) 141
`\adfflourishright` (↩) .. 141
`\adfflourishrighthdouble`
 (↩) 141
`\adfflowerleft` (⚡) ... 136
`\adfflowerright` (⚡) .. 136
`\adffee` (f) 141
`\adfhalfarrowleft` (↔) .. 130
`\adfhalfarrowleftsolid` (↔)
 130
`\adfhalfarrowright` (↔) .. 130
`\adfhalfarrowrightsolid` (↔)
 130
`\adfhalfleafleft` (↔) .. 136
`\adfhalfleafright` (↔) .. 136
`\adfhalfleftarrow` (↔) .. 131
`\adfhalfleftarrowhead` (↔) ..
 131
`\adfhalfrightarrow` (↔) .. 131
`\adfhalfrightarrowhead` (↔) ..
 131
`\adfhangingflatleafleft` (↔)
 136
`\adfhangingflatleafright`
 (↔) 136
`\adfhangingleafleft` (↔) 136
`\adfhangingleafright` (↔) 136
`\adflowerleft` (↔) 136
`\adflowerright` (↔) 136
`\adleftarrowhead` (↔) .. 131
`\adopenflourishleft` (↪) ..
 141
`\adopenflourishright` (↩)
 141
`adorn` (package) 131, 135, 136,
 141, 231, 232
`\adfoutlineleafleft` (↔) 136
`\adfoutlineleafright` (↔) ..
 136
`\adfrightharrowhead` (↔) .. 131
`\adfS` (S) 141
`\adfsharpflourishleft` (↪) ..
 141
`\adfsharpflourishright` (↩)
 141
`\adfsickleflourishleft` (↪)
 141
`\adfsickleflourishright`
 (↩) 141
`\adfsingleflourishleft` (↪)
 141
`\adfsingleflourishright`
 (↩) 141
`\adfsmallhangingleafleft`
 (↔) 136
`\adfsmallhangingleafright`
 (↔) 136
`\adfsmallleafleft` (↔) .. 136
`\adfsmallleafright` (↔) .. 136
`\adfsolidleafleft` (↔) .. 136
`\adfsolidleafright` (↔) .. 136

`\adfsquare` (□) 141
`adfsymbols` (package) 130, 133,
 135, 140, 231
`\adftripleflourishleft`
 (↪) 141
`\adftripleflourishright`
 (↩) 141
`\adfwavesleft` (↪) 141
`\adfwavesright` (↩) 141
`adjoint` (†) *see* `\dag`
`\Admetos` (Ψ) 124
`Adobe Acrobat` 223
`\adots` (· ·) 112, 218
`\adots` (· ·) 111
`\adots` (· ·) 112
`\adsorbate` (Δ) 128
`\adsorbent` (⚡) 128
`advancing` *see* `\textadvancing`
`\AE` (Æ) 15
`\ae` (æ) 15
`\aeolicbii` (oo) 177
`\aeolicbiii` (ooo) 177
`\aeolicbiv` (U) 177
`\agem0` (U) 115
`\Agimel` (↪) 142
`\Ahe` (Ψ) 142
`\Ahelmet` (Σ) 142
`\Aheth` (π) 142
`\ain` (i) 24
`\Air` (Δ) 124
`\Akaph` (U) 142
`\Alad` (J) 102
`\alad` (J) 102
`\Alamed` (ℓ) 142
`\Alas` (J) 102
`\alas` (J) 102
`\Albania` (i) 181
`\aldine` (S) 136
`\aldineleft` (S) 136
`\aldineright` (S) 136
`\aldinesmall` (S) 136
`\aleph` (ℵ) 92, 115
`\aleph` (ℵ) 92
`\aleph` (ℵ) 92
`\aleph` (ℵ) 93
`\Alif` (ʾ) 20
`\allabreve` (P) 153
`allrunes` (package) .. 151, 231
`\Alpha` (A) 90
`\alpha` (α) 90
`alphabets` 119
 African 16
 Cypriot 147
 Cyrillic 214
 Greek 15, 90, 91, 120, 148
 Hebrew 92, 93, 120
 hieroglyphic 143
 Linear A 143
 Linear B 146
 math 119
 phonetic 17–20

proto-Semitic 142
 South Arabian 148
 Vietnamese 16
`\alphaup` (α) 91
 alpine symbols 171
`\Alt` (Alt) 125
 alternative denial *see* `\uparrow`
and |
`\AltGr` (AltGr) 125
`\altoclef` (P) 153
`\AM` (α) 125
`\amalg` (II) 29
`\amalg` (II) 31
`\amalg` (U) 30
`\amalg` (II) 33
`\Amem` (M) 142
`\Amor` (P) 124
 ampersand *see* `\&`
`AMS` (package) 12, 15, 29, 39,
 48, 49, 60, 62, 67, 70, 85,
 89, 90, 92, 93, 95, 96, 102,
 104, 107, 111, 114, 115,
 120, 211, 212, 230
`amsbsy` (package) 225
`amsfonts` (package) .. 115, 119
`amsmath` (package) 12, 89, 102,
 215, 224
`amssymb` (package) . 12, 102,
 115, 119, 148, 231
`amstext` (package) .. 216, 218
`\Anacclasis` (÷) 176
`\anacclasis` (÷) 176
`\anceps` (Y) 177
`\ancepsdbrevis` (X) 177
`\anchor` (A) 183
`\anchor` (A) 141
 ancient-language symbols 142–
 151
and *see* `\wedge`
 AND gates 126
`\ANDd` (D) 126
`\ANDl` (D) 126
`\Andorra` (A) 181
`\ANDr` (D) 126
`\ANDu` (D) 126
`\angdnr` (Z) 115
`\angl` (M) 107
`\angle` (Z) 114
`\angle` (Z) 115
`\angle` (Z) 114
`\angle` (Z) 114
`\angle` (Z) 114
`\angle` (Z) 115
`\angle` (Z) 115
 angle notation 122

angles	113–116, 118, 124	<code>\APLrightarrowbox</code> ($\boxrightarrow$)	124	<code>\arrownot</code> ($\nrightarrow$)	88
<code>\angles</code> ($\sphericalangle$)	115	<code>\APLstar</code> ($\star$)	124	<code>\ArrowOver</code> ($\overrightarrow{}$)	25
<code>\AngleSign</code> ($\sphericalangle$)	113	<code>\APLup</code> (Δ)	124	<code>\arrowOver</code> ($\overrightarrow{}$)	25
<code>\angleubar</code> ($\anglebar$)	115	<code>\APLuparrowbox</code> ($\boxuparrow$)	124	arrows	70–72,
<code>\angln</code> ($\overline{\angle}$)	107	<code>\APLvert</code> ($\Uparrow$)	124	76, 80–85, 104–109, 124,	
Anglo-Frisian runes	151	<code>\Apollon</code> ($\Uparrow$)	124	125, 130, 131, 142, 147,	
<code>\anglr</code> ($\overline{\angle}$)	107	apostrophia	<i>see</i> <code>musixgre</code>	170, 181, 186–189, 191–	
<code>\Angstrom</code> ($\text{\AA}$)	94	<code>\apprge</code> ($\gtrsim$)	63	192, 207–208, 214	
Ångström unit		<code>\apprle</code> ($\lesssim$)	63	diagonal, for reducing	
math mode <i>see</i> <code>\mathring</code>		<code>\approx</code> ($\approx$)	48	subexpressions	104
text mode	<i>see</i> <code>\AA</code>	<code>\approx</code> ($\approx$)	53	dotted	109
<code>\Angud</code> ($\angle$)	102	<code>\approx</code> ($\approx$)	50	double-headed, diagonal .	
<code>\angud</code> ($\angle$)	102	<code>\approx</code> ($\approx$)	56		218
angular minutes	<i>see</i> <code>\prime</code>	<code>\approxcolon</code> ($\approx:$)	59	extensible	104–109
angular seconds	<i>see</i> <code>\second</code>	<code>\approxcoloncolon</code> ($\approx::$)	59	fletched	85, 130
<code>\Angus</code> ($\angle$)	102	<code>\approxeq</code> ($\approx$)	48	negated	70, 71, 73, 77
<code>\angus</code> ($\angle$)	102	<code>\approxeq</code> ($\approx$)	55	arrows (boisik package option) .	
animals	142, 143, 147	<code>\approxeq</code> ($\approx$)	53		81
<code>\Ankh</code> ($\dagger$)	170	<code>\approxeq</code> ($\approx$)	50	<code>\Arrowvert</code> ($\Uparrow$)	96
<code>\Annoey</code> ($\ominus$)	184	<code>\approxeq</code> ($\approx$)	56	<code>\Arrowvert</code> ($\Uparrow$)	97
<code>\annuity</code> ($\boxminus$)	103	<code>\approxeq</code> ($\approx$)	56	<code>\Arrowvert</code> ($\Uparrow$)	99
annuity symbols	107, 219	<code>\approxeq</code> ($\approx$)	56	<code>\arrowvert</code> ($\Uparrow$)	96
<code>\Antidiple</code> ($\lessgtr$)	176	<code>\approxident</code> ($\approx$)	53	<code>\arrowvert</code> ($\Uparrow$)	97
<code>\antidiple</code> ($\lessgtr$)	176	<code>\approxident</code> ($\approx$)	56	<code>\arrowvert</code> ($\Uparrow$)	99
<code>\Antidiple*</code> ($\lessgtr$)	176	<code>\Aqoph</code> (∞)	142	<code>\arrowvert</code> ($\Uparrow$)	97
<code>\antidiple*</code> ($\lessgtr$)	176	<code>\Aquarius</code> ($\text{\textcircled{A}}$)	122	<code>\arrowvert</code> ($\Uparrow$)	99
<code>\antilabe</code> ($::$)	112	<code>\Aquarius</code> ($\text{\textcircled{A}}$)	124	<code>\arrowvert</code> ($\Uparrow$)	99
<code>\antimuon</code> (μ^+)	128	<code>\aquarius</code> ($\text{\textcircled{A}}$)	122	Arseneau, Donald	216–219
<code>\antineutrino</code> ($\bar{\nu}$)	128	<code>\AR</code> ($\mathcal{R}$)	121	<code>\artfamily</code>	151
<code>\antineutron</code> ($\bar{n}$)	128	ar (package)	121, 231	articulations	<i>see</i> musical
<code>\antiproton</code> (p^-)	128	<code>\arafamily</code>	151	symbols	
<code>\antiquark</code> ($\bar{q}$)	128	arc ($\mathring{A}$)	<i>see</i> accents	<code>\Asade</code> (∇)	142
<code>\antiquarkb</code> ($\bar{b}$)	128	<code>\arccos</code> (<code>arccos</code>)	89	<code>\Asamekh</code> ($\diamond$)	142
<code>\antiquarkc</code> ($\bar{c}$)	128	<code>\arceq</code> ($\doteq$)	55	<code>\ASC</code> ($\text{\textcircled{A}}$)	124
<code>\antiquarkd</code> ($\bar{d}$)	128	<code>\arceq</code> ($\doteq$)	53, 88	ASCII	12, 15, 126, 202, 211,
<code>\antiquarks</code> ($\bar{s}$)	128	<code>\arceq</code> ($\doteq$)	56	225–226, 228–230	
<code>\antiquarkt</code> ($\bar{t}$)	128	<code>\arcfamily</code>	151	table	225
<code>\antiquarku</code> ($\bar{u}$)	128	arcminutes	<i>see</i> <code>\prime</code>	ascii (package)	126, 226, 231
<code>\Antisigma</code> ($\supset$)	176	arcs (package)	23, 231	<code>\ascnode</code> ($\mathcal{S}$)	122
<code>\antisigma</code> ($\supset$)	176	<code>\arcsin</code> (<code>arcsin</code>)	89	<code>\Ashin</code> (ω)	142
<code>\Anun</code> ($\sim$)	142	<code>\arctan</code> (<code>arctan</code>)	89	aspect ratio	121
<code>\anyon</code> ($\mathcal{A}$)	128	<code>\Aresh</code> ($\mathcal{R}$)	142	<code>\Assert</code> ($\Vdash$)	53
<code>\aoverbrace</code> ($\overbrace{}$)	107	arev (package)	131–134, 141,	<code>\assert</code> ($\vdash$)	53
<code>\Ape</code> ($\mathbb{A}$)	142	152, 183, 231		<code>\assert</code> ($\vdash$)	56
APL		<code>\arg</code> (<code>arg</code>)	89	<code>\assumption</code> ($\star$)	128
symbols	56–57	<code>\Aries</code> ($\Uparrow$)	123	<code>\ast</code> ($*$)	30
apl (package)	125, 231	<code>\Aries</code> ($\Uparrow$)	122	<code>\ast</code> ($*$)	29
APL symbols	124, 125	<code>\Aries</code> ($\Uparrow$)	124	<code>\ast</code> ($*$)	32
<code>\APLbox</code> ($\boxplus$)	124	<code>\Aries</code> ($\Uparrow$)	122	<code>\ast</code> ($*$)	31
<code>\APLboxquestion</code> ($\boxplus$)	124	<code>\aries</code> ($\Uparrow$)	122	<code>\ast</code> ($*$)	30
<code>\APLboxupcaret</code> ($\boxplus$)	124	<code>\arlfamily</code>	151	<code>\ast</code> ($*$)	33
<code>\APLcirc</code> ($\text{\textcircled{A}}$)	124	<code>\armfamily</code>	151	<code>\asteq</code> ($\doteq$)	56
<code>\APLcomment</code> ($\text{\textcircled{A}}$)	124	<code>\arnfamily</code>	151	<code>\asteraccent</code> ($\text{\textcircled{A}}$)	103
<code>\APLdown</code> (∇)	124	<code>\ArrowBoldDownRight</code> ($\blacktriangledown$)	130	<code>\Asteriscus</code> ($\text{\textcircled{A}}$)	176
<code>\APLdownarrowbox</code> ($\boxdownarrow$)	124	<code>\ArrowBoldRightCircled</code> ($\text{\textcircled{A}}$)	130	<code>\asteriscus</code> ($\text{\textcircled{A}}$)	176
<code>\APLinput</code> ($\boxplus$)	124		130	<code>\Asterisk</code> ($*$)	30
<code>\APLinv</code> ($\boxplus$)	124	<code>\ArrowBoldRightShort</code> ($\blacktriangleright$)	130	<code>\Asterisk</code> ($*$)	135
<code>\APLleftarrowbox</code> ($\boxleftarrow$)	124	<code>\ArrowBoldRightStrobe</code> ($\text{\textcircled{A}}$)	130	<code>\asterisk</code> ($*$)	30
<code>\APLllog</code> ($\otimes$)	124		130	<code>\AsteriskBold</code> ($\text{\textcircled{A}}$)	135
<code>\APLminus</code> ($\ominus$)	124	<code>\ArrowBoldUpRight</code> ($\blacktriangledown$)	130	<code>\AsteriskCenterOpen</code> ($\text{\textcircled{A}}$)	135
<code>\APLnot</code> ($\boxplus$)	124	<code>\arrowbullet</code> ($\blacktriangleright$)	131	<code>\AsteriskRoundedEnds</code> ($\text{\textcircled{A}}$)	135
<code>\APLnotbackslash</code> ($\nrightarrow$)	124	<code>\Arrownot</code> ($\nrightarrow$)	88		
<code>\APLnotslash</code> ($\nrightarrow$)	124				

asterisks 30, 135
`\AsteriskThin` ($\ast$) 135
`\AsteriskThinCenterOpen` ($\ast$)
..... 135
`\asterism` ($\ast$) 215
asteroids 124
astrological symbols . 122–124,
193–195
astronomical symbols 122–124,
179, 193–195
`\astrosun` ($\odot$) 123
`\astrosun` ($\odot$) 122
astrosym (package) .. 193, 231
asymmetric braces 107
`\asymp` ($\asymp$) 48
`\asymp` ($\asymp$) 53, 88
`\asymp` ($\asymp$) 87
`\asymp` ($\asymp$) 56
`\atan` (atan) 224
`\ataribox` ($\boxtimes$) 169
`\Atav` (+) 142
`\Ateth` (8) 142
`\AtForty` ($\text{\textcircled{4}}$) 170
`\AtNinetyFive` ($\text{\textcircled{5}}$) 170
`\atom` ($\ast$) 128
atomic math objects . 89, 224
`\AtSixty` ($\text{\textcircled{6}}$) 170
`\aunderbrace` ($\underbrace{}$) 107
`\Austria` ($\text{\textcircled{A}}$) 181
`\autoleftarrow` ($\leftarrow$) 108
`\autoleftrightarrows`
($\longleftrightarrow$) 108
`\autorightarrow` ($\longrightarrow$) 108
`\autorightleftarrows`
($\longleftrightarrow$) 108
`\Autumntree` ($\text{\textcircled{A}}$) 184
`\Avav` ($\text{\textcircled{A}}$) 142
average 28
`\awint` ($\int$) 44
`\awint` ($\int$) 45
`\awintsl` ($\int$) 46
`\awintup` ($\int$) 46
`\Ayn` ($\text{\textcircled{A}}$) 20
`\Ayod` ($\text{\textcircled{A}}$) 142
`\Azayin` (=) 142

B

`B` ($\text{\textcircled{B}}$) 151
`\B` 16
`\B` ($\text{\textcircled{B}}$) 176
`b` (esvect package option) . 106
`\b` ($\text{\textcircled{B}}$) 20
`\b` ($\text{\textcircled{B}}$) 176
`b` ($\text{\textcircled{B}}$) 151
`\Ba` ($\text{\textcircled{B}}$) 146
babel (package) 15, 90, 91, 148
`\babygamma` ($\text{\textcircled{B}}$) 19
`\backapprox` ($\approx$) 50

`\backapprox` ($\approx$) 50
`\Backblech` ($\text{\textcircled{B}}$) 184
`\backcong` ($\cong$) 53
`\backcong` ($\cong$) 50
`\backcong` ($\cong$) 56
`\backdprime` ($\text{\textcircled{B}}$) 114
`\backepsilon` (ϵ) 48
`\backepsilon` (ϵ) 117
`\backepsilon` (ϵ) 92
`\backeqsim` ($\approx$) 50
`\backneg` ($\neg$) 116
`\backneg` ($\neg$) 116
`\backprime` ($\text{\textcircled{B}}$) 115
`\backprime` ($\text{\textcircled{B}}$) 117
`\backprime` ($\text{\textcircled{B}}$) 116
`\backprime` ($\text{\textcircled{B}}$) 116
`\backprime` ($\text{\textcircled{B}}$) 114
`\backpropto` ($\propto$) 53
`\backsim` ($\sim$) 48
`\backsim` ($\sim$) 55
`\backsim` ($\sim$) 53
`\backsim` ($\sim$) 50
`\backsim` ($\sim$) 56
`\backsimeq` ($\approx$) 48
`\backsimeq` ($\approx$) 55
`\backsimeq` ($\approx$) 53
`\backsimeq` ($\approx$) 50
`\backsimeq` ($\approx$) 56
`\backsimneqq` ($\approx$) 54
`\backslash` ($\backslash$) 96, 115
`\backslash` ($\backslash$) 98
`\backslash` ($\backslash$) 97
`\backslash` ($\backslash$) 117
`\backslash` ($\backslash$) 99
`\backslash` ($\backslash$) 30
`\backtriplesim` ($\approx$) 50
`\backtrprime` ($\text{\textcircled{B}}$) 114
`\backturn` ($\text{\textcircled{B}}$) 153
`\bagmember` ($\in$) 55
`\bagmember` ($\in$) 56
`\Baii` ($\text{\textcircled{B}}$) 146
`\Baiii` ($\text{\textcircled{B}}$) 146
`\bakingplate` ($\text{\textcircled{B}}$) 184
`\ballotcheck` ($\checkmark$) 134
`\ballotx` ($\text{\textcircled{B}}$) 134
banana brackets
see \llparentthesis and
`\rrparentthesis`
`\banceps` ($\text{\textcircled{B}}$) 177
`\bar` ($\bar$) 103
`\bar` ($\bar$) 102
`\bar` ($\bar$) 151
`\barb` ($\bar$) 19
`\barbbrevis` ($\text{\textcircled{B}}$) 177
`\barbrevis` ($\text{\textcircled{B}}$) 177
`\barcap` ($\bar$) 33
`\barcirc` ($\text{\textcircled{B}}$) 216
`\barcup` ($\bar$) 33

`\bard` ($\text{\textcircled{B}}$) 19
`\bardownharpoonleft` ($\text{\textcircled{B}}$) 84
`\bardownharpoonright` ($\text{\textcircled{B}}$) 84
`\bari` ($\text{\textcircled{B}}$) 19
`\barin` ($\text{\textcircled{B}}$) 93
`\barj` ($\text{\textcircled{B}}$) 19
`\barl` ($\text{\textcircled{B}}$) 19
`\barlambda` ($\text{\textcircled{B}}$) 19
`\barleftarrow` ($\text{\textcircled{B}}$) 80
`\barleftarrow` ($\text{\textcircled{B}}$) 82
`\barleftarrowrightarrowbar`
($\text{\textcircled{B}}$) 80
`\barleftarrowrightarrowbar`
($\text{\textcircled{B}}$) 82
`\barleftharpoon` ($\text{\textcircled{B}}$) 72
`\barleftharpoondown` ($\text{\textcircled{B}}$) 84
`\barleftharpoonup` ($\text{\textcircled{B}}$) 84
`\baro` (ϕ) 29
`\baro` (ϕ vs. θ) 212
`\baro` (ϕ) 32
`\baro` (θ) 19
`\BarOver` ($\text{\textcircled{B}}$) 25
`\barOver` ($\text{\textcircled{B}}$) 25
`\barovernorthwestarrow` ($\text{\textcircled{B}}$)
..... 80
`\barovernorthwestarrow` ($\text{\textcircled{B}}$)
..... 137
`\barp` ($\text{\textcircled{B}}$) 19
barred letters 215
`\barrightarrowdiamond` ($\text{\textcircled{B}}$) 82
`\barrightharpoon` ($\text{\textcircled{B}}$) 72
`\barrightharpoondown` ($\text{\textcircled{B}}$) 84
`\barrightharpoonup` ($\text{\textcircled{B}}$) 84
`\barsci` ($\text{\textcircled{B}}$) 19
`\barscu` ($\text{\textcircled{B}}$) 19
`\Bart` ($\text{\textcircled{B}}$) 177
bartel-chess-fonts (package) 209,
210, 231
`\baru` ($\text{\textcircled{B}}$) 19
`\baruparrow` ($\text{\textcircled{B}}$) 82
`\barupharpoonleft` ($\text{\textcircled{B}}$) 84
`\barupharpoonright` ($\text{\textcircled{B}}$) 84
`\Barv` ($\text{\textcircled{B}}$) 53
`\Barv` ($\text{\textcircled{B}}$) 56
`\barV` ($\text{\textcircled{B}}$) 53
`\barV` ($\text{\textcircled{B}}$) 56
`\barvee` ($\text{\textcircled{B}}$) 33
`\barwedge` ($\text{\textcircled{B}}$) 30
`\barwedge` ($\text{\textcircled{B}}$) 29
`\barwedge` ($\text{\textcircled{B}}$) 32
`\barwedge` ($\text{\textcircled{B}}$) 31
`\barwedge` ($\text{\textcircled{B}}$) 33
base twelve
numerals 113
tally markers 173
`\BasicTree` 184
`\bassclef` ($\text{\textcircled{B}}$) 153
`\Bat` ($\text{\textcircled{B}}$) 170

<code>\Bau</code> ()	146	<code>\bccrayon</code> ()	185	<code>\bcnote</code> ()	185
<code>\baucircle</code> ()	140	<code>\bccube</code> ()	185	<code>\bcnucleaire</code> ()	185
<code>\bauforms</code> ()	170	<code>\bcdallemagne</code> ()	185	<code>\bcocetaedre</code> ()	185
<code>\bauhead</code> ()	170	<code>\bcdanger</code> ()	185	<code>\bcoeil</code> ()	185
<code>\bausquare</code> ()	140	<code>\bcdautriche</code> ()	185	<code>\bcontraction</code>	220
<code>\bautriangle</code> ()	140	<code>\bcdbelgique</code> ()	185	<code>\bcorne</code> ()	186
<code>\BB</code> ()	176	<code>\bcdbulgarie</code> ()	185	<code>\bcours</code> ()	186
<code>\Bb</code> ()	176	<code>\bcdfrance</code> ()	185	<code>\bcoutil</code> ()	186
<code>\bb</code> ()	176	<code>\bcditalie</code> ()	185	<code>\bcpanchant</code> ()	185
<code>\bba</code> ()	176	<code>\bcdluxembourg</code> ()	185	<code>\bcpeaceandlove</code> ()	185
<code>\bbalpha</code> (α)	120	<code>\bcdodecaedre</code> ()	185	<code>\bcpluie</code> ()	185
<code>\bbar</code> ($\bar{b}$)	215	<code>\bcdpaysbas</code> ()	186	<code>\bcplume</code> ()	185
<code>\bbb</code> ()	176	<code>\bcdz</code> ()	186	<code>\bcpoisson</code> ()	185
<code>\bbbbeta</code> (β)	120	<code>\bceclaircie</code> ()	186	<code>\bcquestion</code> ()	185
<code>\Bbbk</code> ($\mathbb{k}$)	93	<code>\bcetoile</code> ()	185	<code>\bcrecyclage</code> ()	185
<code>\Bbbk</code> ($\mathbb{k}$)	94	<code>\bcfemme</code> ()	185	<code>\bcrosevents</code> ()	185
<code>\Bbbk</code> ($\mathbb{k}$)	94	<code>\bcfeujaune</code> ()	185	<code>\bcsmbh</code> ()	185
<code>\Bbbsum</code> ($\mathbb{\Sigma}$)	45	<code>\bcfeurouge</code> ()	185	<code>\bcsmmh</code> ()	185
<code>bbding</code> (package)	130–133, 135, 139, 141, 212, 231	<code>\bcfeutricolore</code> ()	185	<code>\bcsoleil</code> ()	185
<code>\bbdollar</code> ($\mathbb{\$}$)	120	<code>\bcfleur</code> ()	185	<code>\bcspadesuit</code> ()	185
<code>\bbetter</code> ($\mathbb{\bar{b}}$)	174	<code>\bchomme</code> ()	185	<code>\bcstop</code> ()	185
<code>\bbeuro</code> ($\mathbb{\text{€}}$)	120	<code>\bchorloge</code> ()	185	<code>\bctakecare</code> ()	185
<code>\bbfinalnun</code> ($\mathbb{\text{¶}}$)	120	<code>\bcicosaedre</code> ()	185	<code>\bctetraedre</code> ()	185
<code>\bbgamma</code> ($\mathbb{\gamma}$)	120	<code>\bcinfo</code> ()	185	<code>\bctrefle</code> ()	185
<code>bbgreek</code> (mathbbol package option)	120	<code>\bcinterdit</code> ()	185	<code>\bctrombone</code> ()	185
<code>\BBm</code> ()	176	<code>\bclampe</code> ()	185	<code>\bcvaletcoeur</code> ()	185
<code>\Bbm</code> ()	176	<code>bclogo</code> (package)	185, 186, 231, 232	<code>\bcvelo</code> ()	185
<code>\bBm</code> ()	176	<code>\bcloupe</code> ()	185	<code>\bcyin</code> ()	186
<code>bbm</code> (package)	119, 231	<code>\bcneige</code> ()	185	<code>\Bda</code> ($\mathbb{\text{†}}$)	146
<code>\bbm</code> ()	176			<code>\Bde</code> ($\mathbb{\text{X}}$)	146
<code>\bbmb</code> ()	176			<code>\bdecisive</code> ($\mathbb{\text{+}}$)	174
<code>\bbmx</code> ()	176			<code>\Bdi</code> ($\mathbb{\text{†}}$)	146
<code>\bbnabla</code> ($\mathbb{\nabla}$)	120			<code>\bdleftarrow</code> ($\mathbb{\text{↵}}$)	76
<code>bbold</code> (package)	119, 231			<code>\bdnearrow</code> ($\mathbb{\text{↗}}$)	76
<code>\bbpe</code> ($\mathbb{\text{⌂}}$)	120			<code>\bdnwarrow</code> ($\mathbb{\text{↖}}$)	76
<code>\bbqof</code> ($\mathbb{\text{¶}}$)	120			<code>\Bdo</code> ($\mathbb{\text{†}}$)	146
<code>\bbrevis</code> ()	177				
<code>\bbrktbrk</code> ($\mathbb{\text{⌋}}$)	117				
<code>\bbslash</code> ($\mathbb{\text{↗}}$)	29				
<code>\bbslash</code> ($\mathbb{\text{↖}}$)	32				
<code>\bbyod</code> ($\mathbb{\text{ü}}$)	120				
<code>\bcattention</code> ()	185				
<code>\bcbombe</code> ()	185				
<code>\bcbook</code> ()	185				
<code>\bccalendrier</code> ()	185				
<code>\bccle</code> ()	185				
<code>\bcclefa</code> ()	185				
<code>\bcclesol</code> ()	185				
<code>\bccoeur</code> ()	185				

<code>\bdoverarcarrow</code> ($\curvearrowright$)	76	<code>\bigblacktriangleup</code> ($\blacktriangleup$)	137	<code>\bigdoublecurlywedge</code> ($\bigwedge$)	43
<code>\bdrightarcarrow</code> ($\curvearrowleft$)	76	<code>\bigbosonloop</code> ($\bigcirc$)	128	<code>\bigdoublevee</code> ($\bigvee$)	44
<code>\bdsearcarrow</code> ($\curvearrowright$)	76	<code>\bigbosonloopA</code> ($\bigcirc$)	128	<code>\bigdoublevee</code> ($\bigvee$)	43
<code>\bdswarcarrow</code> ($\curvearrowleft$)	76	<code>\bigbosonloopW</code> ($\bigcirc$)	128	<code>\bigdoublewedge</code> ($\bigwedge$)	44
<code>\Bdu</code> ($\mathbb{D}$)	146	<code>\bigbot</code> ($\perp$)	117	<code>\bigdoublewedge</code> ($\bigwedge$)	43
<code>\bdunderarcarrow</code> ($\curvearrowright$)	76	<code>\bigbox</code> ($\square$)	39	<code>\Bigg</code>	211, 213
<code>\Bdwe</code> ($\mathbb{D}$)	146	<code>\bigboxasterisk</code> ($\boxtimes$)	40	<code>\bigg</code>	211, 213
<code>\Bdwo</code> ($\mathbb{D}$)	146	<code>\bigboxbackslash</code> ($\boxbackslash$)	40	<code>\biggassumption</code> ($\star$)	128
<code>\Be</code> ($\mathbb{A}$)	146	<code>\bigboxbackslash</code> ($\boxbackslash$)	40	<code>\BigHBar</code> ($\overline{\hspace{.1cm}}$)	139
<code>\Beam</code> ($\equiv$)	127	<code>\bigboxbot</code> ($\boxminus$)	40	<code>\bigint</code> ($\int$)	42
<code>\Bearing</code> (Δ)	127	<code>\bigboxcirc</code> ($\boxcirc$)	40	<code>\biginterleave</code> ($\mathbb{I}$)	39
<code>\because</code> ($\because$)	48, 111	<code>\bigboxcoasterisk</code> ($\boxtimes$)	40	<code>\biginterleave</code> ($\mathbb{I}$)	117
<code>\because</code> ($\because$)	55	<code>\bigboxdiv</code> ($\boxdiv$)	40	<code>bigints</code> (package)	42, 231, 232
<code>\because</code> ($\because$)	111	<code>\bigboxdot</code> ($\boxdot$)	40	<code>\bigints</code> ($\int$)	42
<code>\because</code> ($\because$)	111	<code>\bigboxleft</code> ($\boxleftarrow$)	40	<code>\bigintss</code> ($\int$)	42
<code>\because</code> ($\because$)	112	<code>\bigboxminus</code> ($\boxminus$)	40	<code>\bigintsss</code> ($\int$)	42
<code>\Bed</code> ($\mathbb{B}$)	185	<code>\bigboxplus</code> ($\boxplus$)	40	<code>\bigintssss</code> ($\int$)	42
<code>begriff</code> (package)	112, 231	<code>\bigboxright</code> ($\boxrightarrow$)	40	<code>\biginvamp</code> ($\mathbb{A}$)	48
<code>Begriffsschrift</code> symbols	112, 113	<code>\bigboxslash</code> ($\boxslash$)	40	<code>\BigLowerDiamond</code> ($\blacklozenge$)	139
<code>\BEL</code> ($\bullet$)	126	<code>\bigboxtimes</code> ($\boxtimes$)	40	<code>\bignplus</code> ($\circ$)	39
<code>\Belarus</code> ($\bullet$)	181	<code>\bigboxtop</code> ($\boxtop$)	40	<code>\bigoast</code> ($\otimes$)	44
<code>\Belgium</code> ($\bullet$)	181	<code>\bigboxtriangleup</code> ($\boxtriangleup$)	40	<code>\bigoast</code> ($\otimes$)	43
<code>\bell</code> ($\bullet$)	169	<code>\bigboxvoid</code> ($\square$)	40	<code>\bigasterisk</code> ($\otimes$)	40
<code>\benzenr</code> ($\odot$)	137	<code>\bigcap</code> ($\cap$)	39	<code>\bigbackslash</code> ($\oslash$)	40
<code>Berry, Karl</code>	233	<code>\bigcap</code> ($\cap$)	43	<code>\bigbackslash</code> ($\oslash$)	43
<code>\Beta</code> ($\mathbb{B}$)	90	<code>\bigcap</code> ($\cap$)	43	<code>\bigobot</code> ($\oplus$)	40
<code>\beta</code> (β)	90	<code>\bigcapdot</code> ($\cap\!\cdot$)	43	<code>\bigocirc</code> ($\odot$)	40
<code>\beta</code> (β)	91	<code>\bigcapdot</code> ($\cap$)	43	<code>\bigocirc</code> ($\odot$)	43
<code>\beth</code> ($\beth$)	92	<code>\bigcapplus</code> ($\cap+$)	44	<code>\bigocoasterisk</code> ($\otimes$)	40
<code>\beth</code> ($\beth$)	92	<code>\bigcapplus</code> ($\cap$)	43	<code>\bigodiv</code> ($\div$)	40
<code>\beth</code> ($\beth$)	92	<code>\bigcirc</code> ($\circ$)	29	<code>\bigodot</code> ($\odot$)	39
<code>\beth</code> ($\beth$)	92	<code>\bigcirc</code> ($\circ$)	137	<code>\bigodot</code> ($\odot$)	44
<code>\beth</code> ($\beth$)	93	<code>\bigcirc</code> ($\circ$)	136	<code>\bigodot</code> ($\odot$)	43
<code>better</code>	<i>see</i> <code>\triangleleft</code>	<code>\bigcirc</code> ($\circ$)	138	<code>\bigodot</code> ($\odot$)	45
<code>\betteris</code> ($\triangleleft$)	174	<code>\BigCircle</code> ($\bigcirc$)	139	<code>\bigoint</code> ($\oint$)	42
<code>\between</code> ($\emptyset$)	50	<code>\BigCircle</code> ($\bigcirc$)	139	<code>\bigoints</code> ($\oint$)	42
<code>\between</code> ($\emptyset$)	48	<code>\bigcircle</code> ($\bigcirc$)	43	<code>\bigointss</code> ($\oint$)	42
<code>\between</code> ($\emptyset$)	55	<code>\bigcoast</code> ($\ast$)	30	<code>\bigointsss</code> ($\oint$)	42
<code>\between</code> ($\emptyset$)	53	<code>\bigcomplementtop</code> ($\complement$)	40	<code>\bigointssss</code> ($\oint$)	42
<code>\between</code> ($\emptyset$)	50	<code>\BigCross</code> ($\times$)	139	<code>\bigoleft</code> ($\oplus$)	40
<code>\between</code> ($\emptyset$)	56	<code>\bigcup</code> ($\cup$)	39	<code>\bigominus</code> ($\ominus$)	40
<code>\BGassert</code> ($\vdash$)	112	<code>\bigcup</code> ($\cup$)	44	<code>\bigominus</code> ($\ominus$)	43
<code>\BGconditional</code> ($\vdash$)	112	<code>\bigcup</code> ($\cup$)	43	<code>\bigoplus</code> ($\oplus$)	39
<code>\BGcontent</code> ($\cdot$)	112	<code>\bigcup</code> ($\cup$)	45	<code>\bigoplus</code> ($\oplus$)	44
<code>\BGnot</code> ($\neg$)	112	<code>\bigcupdot</code> ($\cup\!\cdot$)	44	<code>\bigoplus</code> ($\oplus$)	43
<code>\BGquant</code> ($\neg$)	112	<code>\bigcupdot</code> ($\cup$)	43	<code>\bigoplus</code> ($\oplus$)	45
<code>\Bi</code> ($\mathbb{B}$)	146	<code>\bigcupdot</code> ($\cup$)	45	<code>\bigoright</code> ($\oplus$)	40
<code>\bibridge</code> ($\mathbb{B}$)	22	<code>\bigcupplus</code> ($\cup+$)	44	<code>\bigoslash</code> ($\oslash$)	40
<code>biconditional</code>	<i>see</i> <code>\leftrightarrow</code>	<code>\bigcupplus</code> ($\cup$)	43	<code>\bigoslash</code> ($\oslash$)	43
<code>\Bicycle</code> ($\mathbb{B}$)	170	<code>\bigcurlyvee</code> ($\vee$)	40	<code>\bigostar</code> ($\otimes$)	43
<code>\Big</code>	211, 213	<code>\bigcurlyvee</code> ($\vee$)	39	<code>\bigotimes</code> ($\otimes$)	39
<code>\big</code>	211, 213	<code>\bigcurlyvee</code> ($\vee$)	44	<code>\bigotimes</code> ($\otimes$)	44
<code>big O</code> ($\mathcal{O}$)	<i>see</i> alphabets, math	<code>\bigcurlyvee</code> ($\vee$)	43	<code>\bigotimes</code> ($\otimes$)	43
<code>\Bigassumption</code> ($\star$)	128	<code>\bigcurlyveedot</code> ($\vee$)	43	<code>\bigotimes</code> ($\otimes$)	44
<code>\bigassumption</code> ($\star$)	128	<code>\bigcurlywedge</code> ($\wedge$)	40	<code>\bigotimes</code> ($\otimes$)	43
<code>\bigast</code> ($\ast$)	30	<code>\bigcurlywedge</code> ($\wedge$)	39	<code>\bigotimes</code> ($\otimes$)	44
<code>\bigblacktriangledown</code> ($\blacktriangledown$)	137	<code>\bigcurlywedge</code> ($\wedge$)	44	<code>\bigotimes</code> ($\otimes$)	43
		<code>\bigcurlywedge</code> ($\wedge$)	43		
		<code>\bigcurlywedgedot</code> ($\wedge$)	43		
		<code>\BigDiamondshape</code> ($\blacklozenge$)	139		
		<code>\bigdoublecurlyvee</code> ($\bigvee$)	43		

<code>\bigotimes</code> ($\otimes$)	45	<code>\bigtriangleup</code> ($\triangle$)	39	<code>\blackcircledownarrow</code> ($\blacktriangledown$)	137
<code>\bigoplus</code> ($\oplus$)	40	<code>\bigtriangleup</code> ($\triangle$ vs. Δ)	212	<code>\blackcircledrightrightarrow</code> ($\blacktriangleright$)	137
<code>\bigotriangleright</code> ($\otriangleright$)	43	<code>\bigtriangleup</code> ($\triangle$)	12, 29	<code>\blackcircledtwodots</code> ($\blacktriangleright$)	137
<code>\bigtriangleup</code> ($\triangle$)	40	<code>\bigtriangleup</code> ($\triangle$)	69, 137	<code>\blackcircledupward</code> ($\blacktriangleup$)	137
<code>\bigoverline</code> ($\overline{}$)	43	<code>\bigtriangleup</code> ($\triangle$)	68	<code>\blackcircledupwardwhite</code> ($\blacktriangleup$)	137
<code>\bigovoid</code> ($\bigcirc$)	40	<code>\bigtriangleup</code> ($\triangle$)	137, 138	<code>\blackdiamond</code> ($\blacklozenge$)	30
<code>\bigparallel</code> ($\parallel$)	39	<code>\biguplus</code> ($\uplus$)	39	<code>\blackdiamond</code> ($\blacklozenge$)	36
<code>\bigparr</code> ($\P$)	48	<code>\biguplus</code> ($\uplus$)	44	<code>\blackdiamonddownarrow</code> ($\blacklozenge$)	137
<code>\bigplus</code> ($+$)	40	<code>\biguplus</code> ($\uplus$)	43	<code>\BlackEmptySquare</code> ($\square$)	175
<code>\bigplus</code> ($+$)	44	<code>\biguplus</code> ($\uplus$)	45	<code>\blackhourglass</code> ($\blacklozenge$)	37
<code>\bigplus</code> ($+$)	43	<code>\bigvarstar</code> ($\star$)	30	<code>\blackinwhitediamond</code> ($\blacklozenge$)	137
<code>\bigpumpkin</code> ($\text{\textcircled{\tiny{P}}}$)	37	<code>\BigVBar</code> ($\bigvee$)	139	<code>\blackinwhitesquare</code> ($\blacksquare$)	137
<code>\BigRightDiamond</code> ($\blacklozenge$)	139	<code>\bigvee</code> ($\bigvee$)	39	<code>\BlackKingOnBlack</code> ($\text{\textcircled{\tiny{K}}}$)	175
<code>\bigslopedvee</code> ($\vee$)	33	<code>\bigvee</code> ($\bigvee$)	44	<code>\BlackKingOnWhite</code> ($\text{\textcircled{\tiny{K}}}$)	175
<code>\bigslopedwedge</code> ($\wedge$)	33	<code>\bigvee</code> ($\bigvee$)	43	<code>\BlackKnightOnBlack</code> ($\text{\textcircled{\tiny{N}}}$)	175
<code>\bigsqcap</code> ($\sqcap$)	40	<code>\bigvee</code> ($\bigvee$)	45	<code>\BlackKnightOnWhite</code> ($\text{\textcircled{\tiny{N}}}$)	175
<code>\bigsqcap</code> ($\sqcap$)	39	<code>\bigvee</code> ($\bigvee$)	44	<code>\blacklefthalfcircle</code> ($\blacklozenge$)	137
<code>\bigsqcap</code> ($\sqcap$)	44	<code>\bigvee</code> ($\bigvee$)	43	<code>\blacklozenge</code> ($\blacklozenge$)	115
<code>\bigsqcap</code> ($\sqcap$)	43	<code>\bigwedge</code> ($\bigwedge$)	39	<code>\blacklozenge</code> ($\blacklozenge$)	36, 137
<code>\bigsqcap</code> ($\sqcap$)	45	<code>\bigwedge</code> ($\bigwedge$)	44	<code>\blacklozenge</code> ($\blacklozenge$)	137
<code>\bigsqcapdot</code> ($\sqcap$)	44	<code>\bigwedge</code> ($\bigwedge$)	43	<code>\blacklozenge</code> ($\blacklozenge$)	136
<code>\bigsqcapdot</code> ($\sqcap$)	43	<code>\bigwedge</code> ($\bigwedge$)	45	<code>\blacklozenge</code> ($\blacklozenge$)	137, 138
<code>\bigsqcapplus</code> ($\sqcap$)	41	<code>\bigwedgedot</code> ($\bigwedge$)	44	<code>\BlackPawnOnBlack</code> ($\text{\textcircled{\tiny{P}}}$)	175
<code>\bigsqcapplus</code> ($\sqcap$)	44	<code>\bigwedgedot</code> ($\bigwedge$)	43	<code>\BlackPawnOnWhite</code> ($\text{\textcircled{\tiny{P}}}$)	175
<code>\bigsqcapplus</code> ($\sqcap$)	43	<code>\bigwedgedot</code> ($\bigwedge$)	43	<code>\blackpointerleft</code> ($\blacklozenge$)	137
<code>\bigsqcup</code> ($\sqcup$)	39	<code>\bigwhitestar</code> ($\star$)	137	<code>\blackpointerright</code> ($\blacklozenge$)	137
<code>\bigsqcup</code> ($\sqcup$)	43	<code>\bigwith</code> ($\&$)	48	<code>\BlackQueenOnBlack</code> ($\text{\textcircled{\tiny{Q}}}$)	175
<code>\bigsqcup</code> ($\sqcup$)	43	<code>\binampersand</code> ($\&$)	29	<code>\BlackQueenOnWhite</code> ($\text{\textcircled{\tiny{Q}}}$)	175
<code>\bigsqcup</code> ($\sqcup$)	45	<code>\binampersand</code> ($\&$)	32	<code>\blackrighthalfcircle</code> ($\blacklozenge$)	137
<code>\bigsqcupdot</code> ($\sqcup$)	43	binary operators	29–37	<code>\BlackRookOnBlack</code> ($\text{\textcircled{\tiny{R}}}$)	175
<code>\bigsqcupdot</code> ($\sqcup$)	43	binary relations	48–51, 53, 55–67, 86–88	<code>\BlackRookOnWhite</code> ($\text{\textcircled{\tiny{R}}}$)	175
<code>\bigsqcupplus</code> ($\sqcup$)	41	negated	49, 50, 52–55, 57	<code>\blacksmiley</code> ($\text{\textcircled{\tiny{S}}}$)	117
<code>\bigsqcupplus</code> ($\sqcup$)	44	<code>\bindnasrepma</code> ($\text{\textcircled{\tiny{B}}}$)	29	<code>\blacksmiley</code> ($\text{\textcircled{\tiny{S}}}$)	169
<code>\bigsqcupplus</code> ($\sqcup$)	43	<code>\bindnasrepma</code> ($\text{\textcircled{\tiny{B}}}$)	32	<code>\blacksquare</code> ($\blacksquare$)	115
<code>\BigSquare</code> ($\square$)	139	<code>\Biohazard</code> ($\text{\textcircled{\tiny{B}}}$)	127	<code>\blacksquare</code> ($\blacksquare$)	36, 137
<code>\bigsquplus</code> ($\sqcup$)	40	<code>\biohazard</code> ($\text{\textcircled{\tiny{B}}}$)	183	<code>\blacksquare</code> ($\blacksquare$)	35
<code>\bigstar</code> ($\star$)	30	biological symbols	127	<code>\blacksquare</code> ($\blacksquare$)	138
<code>\bigstar</code> ($\star$)	115	birds	143	<code>\blackstone</code>	175
<code>\bigstar</code> ($\star$)	137	bishop	175, 209–210	<code>\blacktriangle</code> ($\blacktriangle$)	115
<code>\bigstar</code> ($\star$)	137	<code>\bishoppair</code> ($\text{\textcircled{\tiny{B}}}$)	174	<code>\blacktriangle</code> ($\blacktriangle$)	36, 137
<code>\bigstar</code> ($\star$)	136	<code>\Bja</code> ($\text{\textcircled{\tiny{B}}}$)	146	<code>\blacktriangle</code> ($\blacktriangle$)	36, 69
<code>\bigstar</code> ($\star$)	137	<code>\Bje</code> ($\text{\textcircled{\tiny{B}}}$)	146		
<code>\bigtalloblong</code> ($\text{\textcircled{\tiny{B}}}$)	45	<code>\Bjo</code> ($\text{\textcircled{\tiny{B}}}$)	146		
<code>\bigtimes</code> ($\times$)	40	<code>\Bju</code> ($\text{\textcircled{\tiny{B}}}$)	146		
<code>\bigtimes</code> ($\times$)	44	<code>\Bka</code> ($\text{\textcircled{\tiny{B}}}$)	146		
<code>\bigtimes</code> ($\times$)	43	<code>\Bke</code> ($\text{\textcircled{\tiny{B}}}$)	146		
<code>\bigtimes</code> ($\times$)	45	<code>\Bki</code> ($\text{\textcircled{\tiny{B}}}$)	146		
<code>\bigtop</code> ($\top$)	117	<code>\Bko</code> ($\text{\textcircled{\tiny{B}}}$)	146		
<code>\BigTriangleDown</code> (∇)	139	<code>\Bku</code> ($\text{\textcircled{\tiny{B}}}$)	146		
<code>\bigtriangledown</code> (∇)	39	<code>\BL</code> ($\backslash$)	125		
<code>\bigtriangledown</code> (∇ vs. ∇)	212	<code>\black</code>	176		
<code>\bigtriangledown</code> (∇)	29	<code>\BlackBishopOnBlack</code> ($\text{\textcircled{\tiny{B}}}$)	175		
<code>\bigtriangledown</code> (∇)	69, 137	<code>\BlackBishopOnWhite</code> ($\text{\textcircled{\tiny{B}}}$)	175		
<code>\bigtriangledown</code> (∇)	68	blackboard bold <i>see</i> alphabets, math			
<code>\bigtriangledown</code> (∇)	137, 138	<code>\blackbowtie</code> ($\text{\textcircled{\tiny{B}}}$)	32		
<code>\BigTriangleLeft</code> ($\triangleleft$)	139				
<code>\bigtriangleleft</code> ($\triangleleft$)	137				
<code>\BigTriangleRight</code> ($\triangleright$)	139				
<code>\BigTriangleUp</code> ($\triangleup$)	139				

<code>\blacktriangle</code> ($\blacktriangle$)	68	<code>\BNdccc</code> ($\overset{\circ}{\circ}\overset{\circ}{\circ}\overset{\circ}{\circ}$)	146	<code>\botdoteq</code> ($\equiv$)	50
<code>\blacktriangle</code> ($\blacktriangle$)	138	<code>\Bne</code> (∇)	146	<code>\botsemicircle</code> ($\cup$)	138
<code>\blacktriangledown</code> ($\blacktriangledown$)	34	<code>\Bni</code> (∇)	146	<code>\bottle</code> (bottle)	184
<code>\blacktriangledown</code> ($\blacktriangledown$)	115	<code>\Bni</code> (∇)	146	<code>\Bottomheat</code> ($\square$)	183
<code>\blacktriangledown</code> ($\blacktriangledown$)	36,	<code>\BNii</code> (∇)	146	<code>\Bouquet</code> (Bouquet)	170
137		<code>\BNiii</code> (∇)	146	<code>\bowl</code> ($\cup$)	184
<code>\blacktriangledown</code> ($\blacktriangledown$)	36,	<code>\BNiv</code> (∇)	146	<code>\Bowtie</code> ($\boxtimes$)	169
69		<code>\BNix</code> (∇)	146	<code>\bowtie</code> ($\boxtimes$)	48
<code>\blacktriangledown</code> ($\blacktriangledown$)	68	<code>\BNl</code> (∇)	146	<code>\bowtie</code> ($\boxtimes$)	32
<code>\blacktriangledown</code> ($\blacktriangledown$)	138	<code>\BNlx</code> (∇)	146	<code>\bowtie</code> ($\boxtimes$)	32, 53
<code>\blacktriangleleft</code> ($\blacktriangleleft$)	34	<code>\BNlxx</code> (∇)	146	<code>\bowtie</code> ($\boxtimes$)	30, 31
<code>\blacktriangleleft</code> ($\blacktriangleleft$)	67	<code>\BNlxxx</code> (∇)	146	<code>\bowtie</code> ($\boxtimes$)	56
<code>\blacktriangleleft</code> ($\blacktriangleleft$)	36	<code>\BNm</code> (∇)	146	<code>\Box</code> ($\square$)	115
<code>\blacktriangleleft</code> ($\blacktriangleleft$)	36,	<code>\Bno</code> (∇)	146	<code>\Box</code> ($\square$)	115
69		<code>\bNot</code> ($\neq$)	56	<code>\Box</code> ($\square$)	36
<code>\blacktriangleleft</code> ($\blacktriangleleft$)	68	<code>\Bnu</code> (∇)	146	<code>\Box</code> ($\square$)	35
<code>\blacktriangleleft</code> ($\blacktriangleleft$)	138	<code>\BNv</code> (∇)	146	<code>\Box</code> ($\square$)	138
<code>\blacktriangleright</code> ($\blacktriangleright$)	34	<code>\BNvi</code> (∇)	146	box-drawing symbols	178
<code>\blacktriangleright</code> ($\blacktriangleright$)	67	<code>\BNvii</code> (∇)	146	<code>\boxast</code> ($\boxtimes$)	29
<code>\blacktriangleright</code> ($\blacktriangleright$)	36	<code>\BNviii</code> (∇)	146	<code>\boxast</code> ($\boxtimes$)	36
<code>\blacktriangleright</code> ($\blacktriangleright$)	36,	<code>\Bnwa</code> (∇)	146	<code>\boxast</code> ($\boxtimes$)	37
69		<code>\BNx</code> (∇)	146	<code>\boxasterisk</code> ($\boxtimes$)	34
<code>\blacktriangleright</code> ($\blacktriangleright$)	68	<code>\BNxc</code> (∇)	146	<code>\boxbackslash</code> ($\boxtimes$)	34
<code>\blacktriangleright</code> ($\blacktriangleright$)	138	<code>\BNxl</code> (∇)	146	<code>\boxbackslash</code> ($\boxtimes$)	35
<code>\blacktriangleup</code> ($\blacktriangleup$)	34	<code>\BNxx</code> (∇)	146	<code>\boxbackslash</code> ($\boxtimes$)	35
<code>\blackwhitespoon</code> ($\blackspadesuit$)	87	<code>\BNxxx</code> (∇)	146	<code>\boxbar</code> ($\boxtimes$)	29
blank	see <code>\textblank</code>	<code>\Bo</code> (∇)	146	<code>\boxbar</code> ($\boxtimes$)	36
<code>\Bleech</code> ($\triangle$)	170	body-text symbols	14–27	<code>\boxbar</code> ($\boxtimes$)	36
<code>\blender</code> (blender)	184	boisik (package)	32, 36, 44,	<code>\boxbot</code> ($\boxtimes$)	34
<code>\blitza</code> (blitza)	88	55, 61, 66, 69, 80, 81, 92,		<code>\boxbot</code> ($\boxtimes$)	36
<code>\blitza</code> (blitza)	28	94, 95, 103, 114, 117, 137,		<code>\boxbox</code> ($\boxtimes$)	29
<code>\blitzb</code> (blitzb)	88	140, 148, 152, 231		<code>\boxbox</code> ($\boxtimes$)	36
<code>\blitzc</code> (blitzc)	88	bold symbols	224–225	<code>\boxbox</code> ($\boxtimes$)	35
<code>\blitzd</code> (blitzd)	88	<code>\boldmath</code>	225	<code>\boxbox</code> ($\boxtimes$)	35
<code>\blitze</code> (blitze)	88	<code>\boldsymbol</code>	225	<code>\boxbox</code> ($\boxtimes$)	35
<code>\blkhorzoval</code> ($\bullet$)	138	<code>\BOLogo</code> (BOLogo)	170	<code>\boxbox</code> ($\boxtimes$)	35
<code>\blkvertoval</code> ($\bullet$)	138	<code>\BOLogoL</code> (BOLogoL)	170	<code>\boxbox</code> ($\boxtimes$)	35
block-element symbols	178	<code>\BOLogoP</code> (BOLogoP)	170	<code>\boxbox</code> ($\boxtimes$)	35
<code>\Bm</code> (∇)	176	bomb	185–186	<code>\boxbox</code> ($\boxtimes$)	35
bm (package)	225, 231, 232	<code>\bomb</code> (bomb)	170	<code>\boxbox</code> ($\boxtimes$)	35
<code>\bm</code>	225	<code>\bond</code> (bond)	129	<code>\boxbox</code> ($\boxtimes$)	35
<code>\bm</code> (∇)	176	Boolean domain ($\mathbb{B}$)	see	<code>\boxbox</code> ($\boxtimes$)	35
<code>\Bma</code> (∇)	146	alphabets, math		<code>\boxbox</code> ($\boxtimes$)	35
<code>\Bme</code> (∇)	146	Boolean logic gates	126	<code>\boxbox</code> ($\boxtimes$)	35
<code>\Bmesonminus</code> (B^-)	129	boondox (emf package option)	122	<code>\boxbox</code> ($\boxtimes$)	35
<code>\Bmesonnull</code> (B^0)	129	borders	196–202	<code>\boxbox</code> ($\boxtimes$)	35
<code>\Bmesonplus</code> (B^+)	129	born	see <code>\textborn</code>	<code>\boxbox</code> ($\boxtimes$)	35
<code>\Bmi</code> (∇)	146	<code>\boseDistrib</code> (boseDistrib)	129	<code>\boxbox</code> ($\boxtimes$)	35
<code>\Bmo</code> (∇)	146	<code>\Bosnia</code> (Bosnia)	181	<code>\boxbox</code> ($\boxtimes$)	35
<code>\bmod</code>	89	<code>\boson</code> (boson)	129	<code>\boxbox</code> ($\boxtimes$)	35
<code>\Bmu</code> (∇)	146	bosons	128	<code>\boxbox</code> ($\boxtimes$)	35
<code>\Bna</code> (∇)	146	<code>\Bot</code> (∇)	95	<code>\boxbox</code> ($\boxtimes$)	35
<code>\BNc</code> (∇)	146	<code>\bot</code> (∇)	28, 93, 217	<code>\boxbox</code> ($\boxtimes$)	35
<code>\BNcc</code> (∇)	146	<code>\bot</code> (∇)	94	<code>\boxbox</code> ($\boxtimes$)	35
<code>\BNccc</code> (∇)	146	<code>\bot</code> (∇)	93	<code>\boxbox</code> ($\boxtimes$)	35
<code>\BNcd</code> (∇)	146	<code>\bot</code> (∇)	94	<code>\boxbox</code> ($\boxtimes$)	35
<code>\BNcm</code> (∇)	146	<code>\botborder</code> (∇)	176	<code>\boxbox</code> ($\boxtimes$)	35
<code>\BNd</code> (∇)	146			<code>\boxbox</code> ($\boxtimes$)	35
<code>\BNdc</code> (∇)	146			<code>\boxbox</code> ($\boxtimes$)	35
<code>\BNdcc</code> (∇)	146			<code>\boxbox</code> ($\boxtimes$)	35

<code>\boxleft</code> ($\boxleft$)	36	<code>\BPhorse</code> ($\mathcal{B}$)	147	<code>\Break</code> ($\text{\texttt{Break}}$)	125
<code>\boxminus</code> ($\boxminus$)	34	<code>\Bpi</code> ($\mathcal{B}$)	146	<code>\breve</code> ($\text{\texttt{breve}}$)	103
<code>\boxminus</code> ($\boxminus$)	29	<code>\BPman</code> ($\mathcal{B}$)	147	<code>\breve</code> ($\text{\texttt{breve}}$)	102
<code>\boxminus</code> ($\boxminus$)	36	<code>\BPnanny</code> ($\mathcal{B}$)	147	<code>\breve</code> ($\text{\texttt{breve}}$)	23
<code>\boxminus</code> ($\boxminus$)	35	<code>\Bpo</code> ($\mathcal{B}$)	146	<code>breve</code> ($\text{\texttt{breve}}$)	<i>see accents</i>
<code>\boxminus</code> ($\boxminus$)	35	<code>\BPolive</code> ($\mathcal{B}$)	147	<code>\brevis</code> ($\mathcal{B}$)	177
<code>\boxminus</code> ($\boxminus$)	37	<code>\BPox</code> ($\mathcal{B}$)	147	<code>\Bri</code> ($\mathcal{B}$)	146
<code>\boxonbox</code> ($\boxonbox$)	138	<code>\BPpig</code> ($\mathcal{B}$)	147	<code>\Bro</code> ($\mathcal{B}$)	146
<code>\boxplus</code> ($\boxplus$)	34	<code>\BPpram</code> ($\mathcal{B}$)	147	<code>\Broii</code> ($\mathcal{B}$)	146
<code>\boxplus</code> ($\boxplus$)	29	<code>\BPsheep</code> ($\mathcal{B}$)	147	<code>\brokenvert</code> ($\mathcal{B}$)	169
<code>\boxplus</code> ($\boxplus$)	36	<code>\BPsoy</code> ($\mathcal{B}$)	147	Bronger, Torsten	217
<code>\boxplus</code> ($\boxplus$)	35	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\Bru</code> ($\mathcal{B}$)	146
<code>\boxplus</code> ($\boxplus$)	35	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\BS</code> ($\mathcal{B}$)	126
<code>\boxplus</code> ($\boxplus$)	37	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\BSa</code> ($\mathcal{B}$)	146
<code>\boxRight</code> ($\boxRight$)	71	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\Bse</code> ($\mathcal{B}$)	146
<code>\boxright</code> ($\boxright$)	34	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\BSEfree</code> ($\mathcal{B}$)	127
<code>\boxright</code> ($\boxright$)	71	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\Bsi</code> ($\mathcal{B}$)	146
<code>\boxright</code> ($\boxright$)	36	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\bsimilarleftarrow</code> ($\mathcal{B}$)	82
<code>\boxslash</code> ($\boxslash$)	34	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\bsimilarrrightarrow</code> ($\mathcal{B}$)	82
<code>\boxslash</code> ($\boxslash$)	29	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\Bso</code> ($\mathcal{B}$)	146
<code>\boxslash</code> ($\boxslash$)	36	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\bsolhsb</code> ($\mathcal{B}$)	62
<code>\boxslash</code> ($\boxslash$)	35	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\Bspace</code> ($\mathcal{B}$)	125
<code>\boxslash</code> ($\boxslash$)	35	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\Bsu</code> ($\mathcal{B}$)	146
<code>\boxtimes</code> ($\boxtimes$)	34	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\Bswa</code> ($\mathcal{B}$)	146
<code>\boxtimes</code> ($\boxtimes$)	29	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\Bswi</code> ($\mathcal{B}$)	146
<code>\boxtimes</code> ($\boxtimes$)	36	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\Bta</code> ($\mathcal{B}$)	146
<code>\boxtimes</code> ($\boxtimes$)	35	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\Btaii</code> ($\mathcal{B}$)	146
<code>\boxtimes</code> ($\boxtimes$)	35	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\Bte</code> ($\mathcal{B}$)	146
<code>\boxtimes</code> ($\boxtimes$)	37	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\Bti</code> ($\mathcal{B}$)	146
<code>\boxtop</code> ($\boxtop$)	34	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\btimes</code> ($\mathcal{B}$)	32
<code>\boxtop</code> ($\boxtop$)	36	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\btimes</code> ($\mathcal{B}$)	33
<code>\boxtriangle</code> ($\boxtriangle$)	36	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\Bto</code> ($\mathcal{B}$)	146
<code>\boxtriangleup</code> ($\boxtriangleup$)	34	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\Btu</code> ($\mathcal{B}$)	146
<code>\boxvert</code> ($\boxvert$)	35	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\Btwe</code> ($\mathcal{B}$)	147
<code>\boxvert</code> ($\boxvert$)	35	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\Btwo</code> ($\mathcal{B}$)	146
<code>\boxvoid</code> ($\boxvoid$)	34	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\Bu</code> ($\mathcal{B}$)	146
<code>\boy</code> ($\mathcal{B}$)	123	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\BUFd</code> ($\mathcal{B}$)	126
<code>\Bpa</code> ($\mathcal{B}$)	146	<code>\BPspow</code> ($\mathcal{B}$)	147	buffers	126
<code>\Bpaili</code> ($\mathcal{B}$)	146	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\BUFl</code> ($\mathcal{B}$)	126
<code>\BPamphora</code> ($\mathcal{B}$)	147	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\BUFr</code> ($\mathcal{B}$)	126
<code>\BParrow</code> ($\mathcal{B}$)	147	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\BUFu</code> ($\mathcal{B}$)	126
<code>\BPbarley</code> ($\mathcal{B}$)	147	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\BUi</code> ($\mathcal{B}$)	147
<code>\BPbilly</code> ($\mathcal{B}$)	147	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\BUii</code> ($\mathcal{B}$)	147
<code>\BPboar</code> ($\mathcal{B}$)	147	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\BUiii</code> ($\mathcal{B}$)	147
<code>\BPbronze</code> ($\mathcal{B}$)	147	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\BUiv</code> ($\mathcal{B}$)	147
<code>\BPbull</code> ($\mathcal{B}$)	147	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\BUix</code> ($\mathcal{B}$)	147
<code>\BPcauldroni</code> ($\mathcal{B}$)	147	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\Bulgaria</code> ($\mathcal{B}$)	182
<code>\BPcauldronii</code> ($\mathcal{B}$)	147	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\bullcntr</code> (package)	173, 231, 232
<code>\BPchariot</code> ($\mathcal{B}$)	147	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\bullcntr{<1>}</code> ($\mathcal{B}$)	173
<code>\BPchassis</code> ($\mathcal{B}$)	147	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\bullcntr{<2>}</code> ($\mathcal{B}$)	173
<code>\BPcloth</code> ($\mathcal{B}$)	147	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\bullcntr{<3>}</code> ($\mathcal{B}$)	173
<code>\BPcow</code> ($\mathcal{B}$)	147	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\bullcntr{<4>}</code> ($\mathcal{B}$)	173
<code>\BPcup</code> ($\mathcal{B}$)	147	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\bullcntr{<5>}</code> ($\mathcal{B}$)	173
<code>\Bpe</code> ($\mathcal{B}$)	146	<code>\BPspow</code> ($\mathcal{B}$)	147	<code>\bullcntr{<6>}</code> ($\mathcal{B}$)	173
<code>\BPewe</code> ($\mathcal{B}$)	147	<code>\BPspow</code> ($\mathcal{B}$)	147		
<code>\BPfoal</code> ($\mathcal{B}$)	147	<code>\BPspow</code> ($\mathcal{B}$)	147		
<code>\BPgoat</code> ($\mathcal{B}$)	147	<code>\BPspow</code> ($\mathcal{B}$)	147		
<code>\BPgoblet</code> ($\mathcal{B}$)	147	<code>\BPspow</code> ($\mathcal{B}$)	147		
<code>\BPgold</code> ($\mathcal{B}$)	147	<code>\BPspow</code> ($\mathcal{B}$)	147		

$\backslash\text{bullcntr}\{7\}$ (•••) 173
 $\backslash\text{bullcntr}\{8\}$ (••••) 173
 $\backslash\text{bullcntr}\{9\}$ (•••••) 173
 bullenum (package) 173
 bullenum 173
 $\backslash\text{bullet}$ (•) 29
 $\backslash\text{bullet}$ (•) 36
 $\backslash\text{bullet}$ (•) 30
 $\backslash\text{bullet}$ (•) 37
 bullseye . *see* $\backslash\text{textbullseye}$
 $\backslash\text{bullseye}$ (⊙) 138
 $\backslash\text{Bumpedeq}$ (⇄) 50
 $\backslash\text{Bumpedeq}$ (⇄) 50
 $\backslash\text{Bumpeq}$ (≈) 48
 $\backslash\text{Bumpeq}$ (≈) 55
 $\backslash\text{Bumpeq}$ (≈) 53
 $\backslash\text{Bumpeq}$ (≈) 51
 $\backslash\text{Bumpeq}$ (≈) 56
 $\backslash\text{bumpeq}$ (≈) 48
 $\backslash\text{bumpeq}$ (≈) 55
 $\backslash\text{bumpeq}$ (≈) 53
 $\backslash\text{bumpeq}$ (≈) 50
 $\backslash\text{bumpeq}$ (≈) 56
 $\backslash\text{bumpeq}$ (≈) 53
 $\backslash\text{bumpeq}$ (≈) 56
 $\backslash\text{bupperhand}$ (☞) 174


 $\backslash\text{Burns}$ (☞) 177
 $\backslash\text{BusWidth}$ (↗) 126
 $\backslash\text{BUv}$ (♂) 147
 $\backslash\text{BUvi}$ (♂) 147
 $\backslash\text{BUvii}$ (♂) 147
 $\backslash\text{BUviii}$ (♂) 147
 $\backslash\text{BUx}$ (♂) 147
 $\backslash\text{BUxi}$ (♂) 147
 $\backslash\text{BUxii}$ (♂) 147
 $\backslash\text{Bwa}$ (♂) 146
 $\backslash\text{Bwe}$ (♂) 146
 $\backslash\text{Bwi}$ (♂) 146
 $\backslash\text{Bwo}$ (♂) 146
 $\backslash\text{BX}$ (♂) 125
 $\backslash\text{Bza}$ (♂) 146
 $\backslash\text{Bze}$ (♂) 146
 $\backslash\text{Bzo}$ (♂) 146

C

$\backslash\text{C}$ (♂) 20
 $\backslash\text{C}$ (♂) 176
 c (esvect package option) . 106
 $\backslash\text{c}$ (♂) 20, 227
 $\backslash\text{c}$ (♂) 176
 $\backslash\text{Ca}$ (♂) 147
 $\backslash\text{caesura}$ (♂) 153

 cal (emf package option) . 122
 calligra (package) 119, 231, 232
 calligra (emf package option) .
 122
 Calligra (font) 119

calrsfs (package) 119
 $\backslash\text{CAN}$ (♂) 126
 cancel (package) 104
 $\backslash\text{Cancer}$ (♂) 122
 $\backslash\text{Cancer}$ (♂) 124
 $\backslash\text{cancer}$ (♂) 122
 $\backslash\text{Candle}$ (♂) 185
 $\backslash\text{candra}$ (♂) 103
 $\backslash\text{Cap}$ (♂) 29
 $\backslash\text{Cap}$ (♂) 32
 $\backslash\text{Cap}$ (♂) 32
 $\backslash\text{Cap}$ (♂) 31
 $\backslash\text{Cap}$ (♂) 33
 $\backslash\text{cap}$ (♂) 30
 $\backslash\text{cap}$ (♂) 29
 $\backslash\text{cap}$ (♂) 32
 $\backslash\text{cap}$ (♂) 31
 $\backslash\text{cap}$ (♂) 30
 $\backslash\text{cap}$ (♂) 33
 $\backslash\text{capbarcup}$ (♂) 33
 $\backslash\text{capdot}$ (♂) 31
 $\backslash\text{capdot}$ (♂) 30
 $\backslash\text{capdot}$ (♂) 33
 $\backslash\text{capovercup}$ (♂) 33
 $\backslash\text{capplus}$ (♂) 31
 $\backslash\text{capplus}$ (♂) 30
 $\backslash\text{Capricorn}$ (♂) 122
 $\backslash\text{Capricorn}$ (♂) 124
 $\backslash\text{capricornus}$ (♂) 122
 $\backslash\text{capturesymbol}$ (♂) 174
 $\backslash\text{capwedge}$ (♂) 33
 card suits . 140, 141, 185–186
 cardinality *see* $\backslash\text{aleph}$
 care of (c/o) 117
 caret *see* $\backslash\text{^}$
 $\backslash\text{caretinsert}$ (♂) 117
 Carlisle, David 1, 230
 caron (♂) *see* accents
 carriage return 214
 carriage return 125, 126, 141,
 214
 $\backslash\text{carriagereturn}$ (♂) 80
 $\backslash\text{carriagereturn}$ (♂) 82
 $\backslash\text{carriagereturn}$ (♂) 141
 Cartesian product *see* $\backslash\text{times}$
 castle 175, 209–210
 $\backslash\text{castlingchar}$ (♂) 174
 $\backslash\text{castlinghyphen}$ (♂) 174
 $\backslash\text{Cat}$ (♂) 184
 $\backslash\text{catal}$ (♂) 177
 $\backslash\text{Catalexis}$ (♂) 176
 $\backslash\text{catalexis}$ (♂) 176
 catamorphism
see $\backslash\text{llparenthesis}$ and
 $\backslash\text{rrparenthesis}$
 $\backslash\text{CB}$ (♂) 125
 $\backslash\text{cb}$ (♂) 24
 $\backslash\text{Cc}$ (♂) 176
 $\backslash\text{cc}$ (♂) 27
 $\backslash\text{cc}$ (♂) 176
 $\backslash\text{ccAttribution}$ (♂) 27
 $\backslash\text{ccby}$ (♂) 27
 $\backslash\text{ccbyncnd}$ (♂) 27

$\backslash\text{Ccc}$ (♂) 176
 $\backslash\text{ccCopy}$ (♂) 27
 ccicons (package) 27, 231, 232
 ccllicenses (package) . . 27, 231
 $\backslash\text{ccLogo}$ (♂) 27
 $\backslash\text{ccnc}$ (♂) 27
 $\backslash\text{ccnd}$ (♂) 27
 $\backslash\text{ccNoDerivatives}$ (♂) . . 27
 $\backslash\text{ccNonCommercial}$ (♂) . . 27
 $\backslash\text{ccNonCommercialEU}$ (♂) . 27
 $\backslash\text{ccNonCommercialJP}$ (♂) . 27
 $\backslash\text{ccPublicDomain}$ (♂) . . 27
 $\backslash\text{ccRemix}$ (♂) 27
 $\backslash\text{ccsa}$ (♂) 27
 $\backslash\text{ccSampling}$ (♂) 27
 $\backslash\text{ccShare}$ (♂) 27
 $\backslash\text{ccShareAlike}$ (♂) 27
 $\backslash\text{ccwundercurvearrow}$ (♂) 82
 $\backslash\text{ccZero}$ (♂) 27
 $\backslash\text{cdot}$ (♂) 29, 215
 $\backslash\text{cdot}$ (♂) 32
 $\backslash\text{cdot}$ (♂) 31, 111
 $\backslash\text{cdot}$ (♂) 111
 $\backslash\text{cdot}$ (♂) 30, 111
 $\backslash\text{cdot}$ (♂) 112
 $\backslash\text{cdotp}$ (♂) 110
 $\backslash\text{cdotp}$ (♂) 111
 $\backslash\text{cdotp}$ (♂) 111
 $\backslash\text{cdotp}$ (♂) 112
 $\backslash\text{cdots}$ (♂) 110
 $\backslash\text{cdots}$ (♂) 111
 $\backslash\text{cdots}$ (♂) 112
 $\backslash\text{CE}$ (♂) 125
 $\backslash\text{Ce}$ (♂) 147
 Cedi *see* $\backslash\text{textcolonmonetary}$
 cedilla (♂) *see* accents
 celestial bodies 122–124, 179,
 193–195
 $\backslash\text{celsius}$ (♂) 121
 $\backslash\text{Celtcross}$ (♂) 170
 Celtic knots 199–202
 $\backslash\text{cent}$ (♂) 25
 $\backslash\text{centerdot}$ (♂) 30
 $\backslash\text{centerdot}$ (♂) 31
 $\backslash\text{centerdot}$ (♂) 29
 $\backslash\text{centerdot}$ (♂) 32
 $\backslash\text{centerdot}$ (♂) 112
 centernot (package) 216
 $\backslash\text{centernot}$ 216
 centigrade . *see* $\backslash\text{textcelsius}$
 $\backslash\text{centre}$ (♂) 174
 cents *see* $\backslash\text{textcent}$
 $\backslash\text{Ceres}$ (♂) 124
 $\backslash\text{CEsign}$ (♂) 127
 $\backslash\text{Cga}$ (♂) 147
 $\backslash\text{Chair}$ (♂) 185
 chancery (package) 231
 $\backslash\text{changenotsign}$ 50
 $\backslash\text{char}$ 214, 223, 226, 229, 230
 Charter (font) 25, 47
 $\backslash\text{check}$ (♂) 103
 $\backslash\text{check}$ (♂) 102

check marks	15, 116–117, 133, 134, 141, 169, 170, 186– 189, 212
\checked (✓)	169
\CheckBox (☑)	134
\Checkedbox (☑)	134
\Checkmark (✓)	133
\checkmark (✓)	15
\checkmark (✓)	141
\checkmark (✓)	117
\checkmark (✓)	11
\checkmark (✓)	116
\checkmark (✓)	117
\checkmark (✓ vs. ✓)	212
\CheckmarkBold (✓)	133
\checksymbol (+)	174
chemarr (package)	108, 231
chemarrow (package)	85, 108, 231
\chemarrow (→)	85
Chen, Raymond	233
chess symbols	174, 175, 209–210
\chesscomment (RR)	174
\chessetc (ll)	174
\chesssee (—)	174
chevrons	131
\Chi (X)	90
\chi (χ)	90
ChemA2e (package)	26, 89, 120, 179, 180
china2e (package)	119, 231, 232
\Chiron (♄)	124
\chiup (χ)	91
chorus (emf package option)	122
\Ci (X)	147
cipher symbols	179
\cirbot (ı)	56
\circ (o)	29, 117, 216
\circ (o)	36
\circ (o)	30
\circ (o)	138
\circeq (≐)	50
\circeq (≐)	48
\circeq (≐)	55
\circeq (≐)	53
\circeq (≐)	51
\circeq (≐)	56
\CIRCLE (●)	136
\Circle (○)	136
\Circle (○)	139
\Circle (○ vs. ○)	212
\circleftarrowleft (↶)	71
\circleftarrowleft (↶)	70
\circleftarrowleft (↶)	80
\circleftarrowleft (↶)	77
\circleftarrowleft (↶)	73
\circleftarrowleft (↶)	82, 83
\circrightarrowright (↷)	71
\circrightarrowright (↷)	70
\circrightarrowright (↷)	80
\circrightarrowright (↷)	77

\circlearrowright ($\curvearrowright$) .	73
\circlearrowright ($\cup$)	82, 83
\circlebottomhalfblack ($\ominus$)	138
circled numerals	134, 175, 176, 209
\CircledA ($\text{\AA}$)	170
\circledast ($\otimes$)	29
\circledast ($\otimes$)	36
\circledast ($\otimes$)	36
\circledast ($\otimes$)	35
\circledast ($\otimes$)	37
\circledbar ($\oplus$)	30
\circledbslash ($\oslash$)	30
\circledbullet ($\odot$)	138
\circledcirc ($\odot$)	29
\circledcirc ($\odot$)	36
\circledcirc ($\odot$)	36
\circledcirc ($\odot$)	35
\circledcirc ($\odot$)	37
\circleddash ($\ominus$)	29
\circleddash ($\ominus$)	36
\circleddash ($\ominus$)	36
\circleddash ($\ominus$)	35
\circleddash ($\ominus$)	37
\circleddot see \odot	
\circleddotleft ($\leftarrow\odot$) ..	71
\circleddotright ($\odot\rightarrow$) ..	71
\CircledEq ($\equiv$)	55
\circledequal (Θ)	36
\circledequal (Θ)	37
\circledgtr ()	49
\circledless $\frac{f}{f}$	49
\circledminus $\frac{f}{f}$	see \ominus
\circleddotleft see \circleddotleft	
\circleddotright see \circleddotright	
\circleddownarrow ($\Downarrow$) ...	138
\circledparallel ($\parallel$) ..	37
\circledplus ... see \oplus	
\circledR ($\text{\textregistered}$)	15, 93
\circledR ($\text{\textregistered}$)	94
\circledrightdot ($\odot$) ..	138
\circledS ($\text{\textcircled{S}}$)	93
\circledS ($\text{\textcircled{S}}$)	94
\circledslash . see \oslash	
\circledstar ($\star$)	138
\circledtimes . see \otimes	
\circledtwodots ($\odot$) ...	138
\circledvee ($\vee$)	30
\circledvert ($\Uparrow$)	36
\circledvert ($\Updownarrow$)	37
\circledwedge ($\oslash$)	30
\circledwhitebullet ($\odot$)	138
\circlehbar ($\ominus$)	37
\circleleft ($\leftarrow\circ$)	71
\circlelefthalfblack ($\bullet$)	138
\circlellquad ($\oplus$)	138
\circlelrquad ($\oplus$)	138
\circleonleftarrow ($\Leftarrow$) ..	82
\circleonrightarrow ($\Rightarrow$) ..	82
\cycleright ($\rightarrow\circ$)	71

\circlelefthalfblack ()	.
.....	138
circles	124, 136–141, 175, 176, 181, 191–192, 197, 207–208
\CircleShadow ()	 139
\CircleSolid ()	 139
\circletophalfblack ()	138
\circleulquad ()	 138
\circleurquad ()	 138
\circleurquadblack ()	. 138
\circlevertfill ()	... 138
\Circepipe ()	 127
\cirplus ()	 30
\cirplus ()	 32
\Circsteel ()	 127
circumflex ()	... see accents
\circumflexus ()	 23
\cirE ()	 138
\cirfint ()	 45
\cirfintsl ()	 46
\cirfintup ()	 46
\cirmid ()	 87
\cirmid ()	 56
\cirscl ()	 138
\Cja ()	 147
\Cjo ()	 147
\Cka ()	 147
\Cke ()	 147
\Cki ()	 147
\Cko ()	 147
\Cku ()	 147
\Cla ()	 147
\Cle ()	 147
\CleaningA ()	 170
\CleaningF ()	 170
\CleaningFF ()	 170
\CleaningP ()	 170
\CleaningPP ()	 170
\clefC ()	 156
\clefCInline	 156
\clefF ()	 156
\clefFInline	 156
\clefG ()	 156
\clefGInline	 156
clefts	153, 154, 156, 161, 185–186
\Cli ()	 147
\clickb ()	 19
\clickc ()	 19
\clickt ()	 19
\Clo (+)	 147
clock (package)	. 172, 231, 232
\clock ()	 169
\clock ()	 172
clock symbols	169–172, 185–186
\ClockFramefalse	 172

<code>\ClockFrameTrue</code>	172	<code>\colon (:)</code>	111	Computer Modern (font)	85,
<code>\ClockLogo</code> ()	170	<code>\Colonapprox ()</code>	49	211, 213, 226	
<code>\ClockStyle</code>	172	<code>\Colonapprox ()</code>	57	computer symbols	186–189
<code>\clocktime</code>	172	<code>\Colonapprox ()</code>	59	<code>\ComputerMouse</code> ()	125
<code>\closedcurlyvee (∨)</code>	31	<code>\Colonapprox ()</code>	57	<code>\concavediamond (◊)</code>	37
<code>\closedcurlywedge (⋈)</code>	31	<code>\colonapprox ()</code>	49	<code>\concavediamondtickleft (◊◀)</code>	
<code>\closedequal (≡)</code>	51	<code>\coloncolon (:)</code>	59		37
<code>\closedniomega (ω)</code>	19	<code>\coloncolonapprox (::≈)</code>	59	<code>\concavediamondtickright</code>	
<code>\closedprec (⋈)</code>	51	<code>\coloncolonequals (::=)</code>	59	(◊)	37
<code>\closedreveysilon (⋈)</code>	19	<code>\coloncolonminus (::−)</code>	59	<code>\Conclusion (⇒)</code>	113
<code>\closedsucc (⋈)</code>	51	<code>\coloncolonsim (::~)</code>	59	<code>\conductivity (⊗)</code>	129
<code>\closedvarcap (⊓)</code>	33	<code>\Coloneq ()</code>	49	<code>\cong (≅)</code>	48
<code>\closedvarcup (⊔)</code>	33	<code>\Coloneq ()</code>	57	<code>\cong (≅)</code>	55
<code>\closedvarcupsmashprod (⊔)</code>	33	<code>\Coloneq ()</code>	56	<code>\cong (≅)</code>	53
<code>\closure (⊖)</code>	102	<code>\coloneq ()</code>	28, 50	<code>\cong (≅)</code>	51
<code>\closure (⊖)</code>	53, 88	<code>\coloneq ()</code>	57	<code>\cong (≅)</code>	56
<code>\closure (⊖)</code>	56	<code>\coloneq ()</code>	49	<code>\congdot (≅)</code>	56
<code>\Cloud</code> ()	171	<code>\coloneq ()</code>	53	<code>\Congruent (≡)</code>	113
clouds	37	<code>\coloneq ()</code>	51	congruent	<i>see</i> <code>\equiv</code>
clovers	135	<code>\coloneq ()</code>	56	<code>\conictaper (▷)</code>	117
<code>\Clu</code> ()	147	<code>\Coloneqq ()</code>	49	<code>\conjquant (⋈)</code>	44
clubs	140, 141	<code>\Coloneqq ()</code>	57	<code>\conjquant (⋈)</code>	45
<code>\clubsuit</code> ()	140	<code>\coloneqq ()</code>	57	<code>\Conjunction (⋈)</code>	124
<code>\clubsuit</code> ()	140	<code>\coloneqq ()</code>	28, 49	<code>\conjunction (⋈)</code>	122
<code>\clubsuit</code> ()	140	<code>\coloneqq ()</code>	53	conjunction, logical	<i>see</i> <code>\wedge</code>
<code>\clubsuit</code> ()	140	colonequals (package)	28, 59,	<i>and</i> <code>\&</code>	
<code>\clubsuit</code> ()	141	231		consequence relations	58
<code>\Cma</code> ()	147	<code>\colonequals (:=)</code>	28, 59	contradiction symbols	28, 88
<code>\Cme</code> ()	147	<code>\colonminus (:-)</code>	59	control characters	126
<code>\Cmi</code> ()	147	<code>\Colonsim ()</code>	49	converse implication	<i>see</i>
<code>cmll</code> (package)	28, 34, 48, 59,	<code>\Colonsim ()</code>	57	<code>\leftarrow</code> <i>and</i> <code>\subset</code>	
95, 231		<code>\colonsim ()</code>	59	converse nonimplication	
<code>\Cmo</code> ()	147	<code>\colonsim ()</code>	57		<i>see</i> <code>\leftarrow</code> <i>and</i>
<code>cmr</code> (emf package option)	122	<code>\colonsim ()</code>	49	<code>\nsubset</code>	
<code>\Cmu</code> ()	147	combelow (package)	24, 231,	<code>\convolution (*)</code>	30
<code>\Cna</code> ()	147	232		<code>\convolution (*)</code>	32
<code>\Cne</code> ()	147	combinatorial logic gates	126	<code>\cooker</code> ()	184
<code>\Cni</code> ()	147	comma-below accent ()	<i>see</i>	cooking symbols	183, 184,
<code>\Cno</code> ()	147	accents		186–189	
<code>\Cnu</code> ()	147	<code>\commaminus (÷)</code>	33	cookingsymbols (package)	183,
<code>\CO</code> ()	125	communication symbols	126	231, 232	
<code>\Co</code> ()	147	commutative diagrams	218	<code>\Cooley</code> ()	184
<code>\coAsterisk (*)</code>	30	<code>comp.text.tex</code> (newsgroup)	12,	<code>\Coppa</code> ()	148
<code>\coAsterisk (*)</code>	32	28, 29, 214–219		<code>\coppa</code> ()	148
<code>\coasterisk (*)</code>	30	compass	191–192	<code>\coprod (⊠)</code>	28, 39
<code>\Coda</code> ()	153	<code>\compensation (⊞)</code>	174	<code>\coprod (⊠)</code>	44
<code>\coda</code> ()	153	<code>\complement (C)</code>	93	<code>\coprod (⊠)</code>	43
code page 1252	228	<code>\complement (C)</code>	93	<code>\coprod (⊠)</code>	45
table	228	<code>\complement (C)</code>	94	copyright	14, 15, 26, 27, 227
code page 437	126, 178, 226	<code>\complement (C)</code>	94	<code>\copyright</code> ()	15
<code>\Coffeecup</code> ()	170, 185	<code>\complement (C)</code>	43	<code>\copyright</code> ()	15
<code>\coh</code> ()	59	<code>\complement (C)</code>	94	<code>\corner</code> ()	24
coins, ancient	26	complete shuffle product ()	34	corners, box	178
<code>\Colon (::)</code>	111	<code>\COMPLEX (C)</code>	89	<code>\corona</code> ()	177
<code>\Colon (::)</code>	112	<code>\Complex (C)</code>	89	<code>\coronainv</code> ()	177
<code>\colon</code>	110	complex numbers (C)	<i>see</i>	<code>\Corresponds (≅)</code>	113
<code>\colon (:)</code>	110	alphabets, math		<code>\corresponds (≅)</code>	50
<code>\colon (:)</code>	111	composited accents	20	<code>\corresponds (≅)</code>	55
		Comprehensive T _E X Archive		<code>\cos</code> (cos)	89, 224
		Network	1, 12, 104, 120,	<code>\cosh</code> (cosh)	89
		126, 211, 228–230		<code>\cot</code> (cot)	89
		computer hardware symbols	125	<code>\coth</code> (coth)	89
		computer keys	125	<code>\counterplay</code> ()	174

countries	181	<code>\crotchetRest</code> (♯)	156	<code>\curlyeqprec</code> ($\preccurlyeq$)	55
European	181	<code>\crotchetRestDotted</code> (♯̣)	156	<code>\curlyeqprec</code> ($\preccurlyeq$)	53
<code>\CountriesOfEurope</code> (package) . .	181, 231, 232	<code>\crtilde</code> (♯̃)	22	<code>\curlyeqprec</code> ($\preccurlyeq$)	51
<code>\CountriesOfEurope</code> (font)	183	<code>\Cru</code> (J)	147	<code>\curlyeqprec</code> ($\preccurlyeq$)	56
<code>\CountriesOfEuropeFamily</code>	183	crucifixes	133, 170, 191–192	<code>\curlyeqsucc</code> ($\succcurlyeq$)	50
Courier (font)	25	<code>\Crux</code> (†)	102	<code>\curlyeqsucc</code> ($\succcurlyeq$)	48
<code>\covbond</code> (⊕)	129	<code>\crux</code> (†)	102	<code>\curlyeqsucc</code> ($\succcurlyeq$)	55
CP1252	see code page 1252	cryst (package)	207, 231	<code>\curlyeqsucc</code> ($\succcurlyeq$)	53
CP437	see code page 437	crystallography symbols	207–208	<code>\curlyeqsucc</code> ($\succcurlyeq$)	51
<code>\Cpa</code> (‡)	147	<code>\CS</code> (♯)	125	<code>\curlyeqsucc</code> ($\succcurlyeq$)	56
<code>\Cpe</code> (♯)	147	<code>\Csa</code> (V)	147	<code>\curlyesh</code> (J)	19
<code>\Cpi</code> (♯)	147	<code>\csc</code> (csc)	89	<code>\curlyvee</code> (Y)	30
<code>\Cpo</code> (♯)	147	<code>\Cse</code> (♯)	147	<code>\curlyvee</code> (Y)	29
<code>\Cpu</code> (♯)	147	<code>\cshuffle</code> (♯)	34	<code>\curlyvee</code> (Y)	32
<code>\CR</code> (o)	125, 126	<code>\Csi</code> (♯)	147	<code>\curlyvee</code> (Y)	31
<code>\cr</code>	216	<code>\Cso</code> (♯)	147	<code>\curlyvee</code> (Y)	31
<code>\Cra</code> (♯)	147	<code>\Csu</code> (♯)	147	<code>\curlyvee</code> (Y)	33
<code>\Cre</code> (♯)	147	<code>\csub</code> (a)	62	<code>\curlyveedot</code> (Y)	31
Creative Commons licenses	26, 27	<code>\csube</code> (a)	62	<code>\curlyveedownarrow</code> (Y)	29
crescent (fge package option)	103	<code>\csup</code> (D)	62	<code>\curlyveedownarrow</code> (Y)	80
<code>\crescHairpin</code> (≪)	157	<code>\csupe</code> (D)	62	<code>\curlyveeuparrow</code> (Y)	29
<code>\Cri</code> (♯)	147	<code>\Cta</code> (†)	147	<code>\curlyveeuparrow</code> (Y)	80
<code>\Cro</code> (♯)	147	CTAN	see Comprehensive T _E X	<code>\curlywedge</code> (A)	30
<code>\Croatia</code> (♯)	182	Archive Network		<code>\curlywedge</code> (A)	29
<code>\Cross</code> (†)	170	<code>\Cte</code> (♯)	147	<code>\curlywedge</code> (A)	33
<code>\Cross</code> (†)	133	<code>\Cti</code> (↑)	147	<code>\curlywedgedot</code> (A)	31
<code>\Cross</code> (X)	139	<code>\Cto</code> (F)	147	<code>\curlywedgedownarrow</code> (A)	29
<code>\Cross</code> (X)	139	<code>\Ctrl</code> (Ctrl)	125	<code>\curlywedgedownarrow</code> (Y)	80
<code>\Cross</code> († vs. † vs. X)	212	<code>\Ctu</code> (F)	147	<code>\curlywedgeuparrow</code> (A)	29
<code>\cross</code> (*)	151	<code>\Cu</code> (Y)	147	<code>\curlywedgeuparrow</code> (A)	80
cross ratio	see <code>\textrecipe</code>	<code>\Cube</code> (□.□.□.□.□.□.□.□)	171, 214	<code>\curlyyogh</code> (z)	19
<code>\crossb</code> (b)	19	cube root	see <code>\sqrt</code>	<code>\curlyz</code> (z)	19
<code>\CrossBoldOutline</code> (†)	133	cube rotations	190	<code>\currency</code> (¤)	25
<code>\CrossClowerTips</code> (♯)	133	<code>\Cup</code> (U)	29	currency symbols	25, 26, 117, 120
<code>\crossd</code> (d)	19	<code>\Cup</code> (U)	32	<code>\curvearrowleft</code> (↶)	71
<code>\CrossedBox</code> (X)	134	<code>\Cup</code> (U)	32	<code>\curvearrowleft</code> (↶)	80
<code>\CrossedBox</code> (X)	134	<code>\Cup</code> (U)	31	<code>\curvearrowleft</code> (↶)	71
<code>\Crossedbox</code> (X)	134	<code>\Cup</code> (U)	33	<code>\curvearrowleft</code> (↶)	71
crosses	133, 162–166, 170, 175, 176, 191–192	<code>\cup</code> (U)	29, 215, 224	<code>\curvearrowleft</code> (↶)	70
<code>\crossh</code> (h)	19	<code>\cup</code> (U)	32	<code>\curvearrowleft</code> (↶)	80
<code>\crossing</code> (X)	53	<code>\cup</code> (U)	31	<code>\curvearrowleft</code> (↶)	77
<code>\CrossMaltese</code> (H)	133	<code>\cup</code> (U)	33	<code>\curvearrowleft</code> (↶)	73
<code>\crossnilambda</code> (X)	19	<code>\cupbarcap</code> (U)	33	<code>\curvearrowleft</code> (↶)	82
<code>\CrossOpenShadow</code> (†)	133	<code>\cupdot</code> (u)	31	<code>\curvearrowleft</code> (↶)	82
<code>\CrossOutline</code> (†)	133	<code>\cupdot</code> (u)	31	<code>\curvearrowleft</code> (↶)	71
crotchet	see musical symbols	<code>\cupdot</code> (u)	33	<code>\curvearrowleft</code> (↶)	80
<code>\crotchet</code> (♯)	155	<code>\Cupido</code> (♯)	124	<code>\curvearrowleft</code> (↶)	72
<code>\crotchetDotted</code> (♯̣)	155	<code>\cupleftarrow</code> (u)	32, 80	<code>\curvearrowleft</code> (↶)	72
<code>\crotchetDottedDouble</code> (♯̣̣)	155	<code>\cupleftarrow</code> (u)	33	<code>\curvearrowleft</code> (↶)	72
<code>\crotchetDottedDoubleDown</code> (♯̣̣̣)	155	<code>\cupovercap</code> (U)	33	<code>\curvearrowleft</code> (↶)	72
<code>\crotchetDottedDown</code> (♯̣̣)	155	<code>\cupplus</code> (u)	31, 32	<code>\curvearrowright</code> (↷)	71
<code>\crotchetDown</code> (♯̣)	155	<code>\cupplus</code> (u)	31	<code>\curvearrowright</code> (↷)	70
		<code>\cupvee</code> (u)	33	<code>\curvearrowright</code> (↷)	80
		<code>\curlyc</code> (c)	19	<code>\curvearrowright</code> (↷)	77
		<code>\curlyeqprec</code> ($\preccurlyeq$)	50		
		<code>\curlyeqprec</code> ($\preccurlyeq$)	48		

<code>\curvearrowright</code> ($\curvearrowright$) .. 73	<code>\dagger</code> ($\dagger$) 32	<code>\DavidStar</code> ($\star$) 135
<code>\curvearrowright</code> ($\curvearrowright$) .. 82	<code>\dagger</code> ($\dagger$) 33	<code>\DavidStarSolid</code> ($\star$) .. 135
<code>\curvearrowrightleft</code> ($\curvearrowrightleft$) 72	<code>\dalambert</code> ($\square$) 117	<code>\dBar</code> ($\parallel$) 177
<code>\curvearrowrightminus</code> ($\curvearrowrightminus$) 82	<code>\daleth</code> ($\daleth$) 92	<code>\dbar</code> ($\bar{d}$) 215
<code>\curvearrowsenw</code> ($\curvearrowsenw$) ... 72	<code>\daleth</code> ($\daleth$) 92	<code>\dbend</code> ($\curvearrowright$) 169
<code>\curvearrowswne</code> ($\curvearrowswne$) ... 72	<code>\daleth</code> ($\daleth$) 92	<code>\dbkarow</code> ($\leftrightarrow$) 82, 83
<code>\curvearrowupdown</code> ($\curvearrowupdown$) .. 72	<code>\daleth</code> ($\daleth$) 92	<code>dblacnt</code> (package) 219
<code>\CutLeft</code> ($\times$) 131	<code>\daleth</code> ($\daleth$) 93	<code>\dblcolon</code> ($::$) 57
cutoff subtraction <i>see</i> <code>\dotdiv</code>	dancers (package) ... 203, 231	<code>\DCa</code> ($\blacktriangleleft$) 126
<code>\CutRight</code> ($\times$) 131	dancing men 203–205	<code>\DCb</code> ($\dagger$) 126
<code>\CuttingLine</code> ($\dashrightarrow$) 131	<code>\danger</code> ($\mathbb{Z}$) 117	<code>\DCc</code> ($\mathbb{I}$) 126
<code>\Cwa</code> ($\mathbb{X}$) 147	<code>\danger</code> ($\triangle$) 170	<code>\DCd</code> ($\mathbb{I}$) 126
<code>\cwcirculararrow</code> ($\circlearrowright$) 82	dangerous bend symbols . 169	<code>\dCooley</code> ($\odot$) 184
<code>\cwcirculararrowdown</code> ($\circlearrowdown$) 76	Danish runes <i>see</i> normal runes	<code>\DD</code> ($\ddot{}$) 125, 154
<code>\cwcirculararrowleft</code> ($\circlearrowleft$) 76	<code>\dAnnoey</code> ($\odot$) 184	<code>\ddag</code> ($\ddagger$) 15, 228
<code>\cwcirculararrowright</code> ($\circlearrowright$) 76	<code>\DArrow</code> ($\mathbb{I}$) 125	<code>\ddag</code> ($\ddagger$) 15
<code>\cwcirculararrowup</code> ($\circlearrowup$) .. 76	<code>\dasharrow</code> <i>see</i> <code>\dashrightarrow</code>	<code>\ddagger</code> ($\ddagger$) 29
<code>\Cwe</code> ($\mathbb{I}$) 147	<code>\dasharrow</code> ($\dashrightarrow$) 77	<code>\ddagger</code> ($\ddagger$) 32
<code>\cwgapcirculararrow</code> ($\circlearrowright$) . 77	<code>\dasharrow</code> ($\dashrightarrow$) 83	<code>\ddagger</code> ($\ddagger$) 33
<code>\cwgapcirculararrow</code> ($\circlearrowright$) . 82	<code>\dashcolon</code> ($\dashrightarrow$) 56	<code>\ddashint</code> ($\mathbb{I}$) 217
<code>\Cwi</code> ($\mathbb{X}$) 147	<code>\dasheddownarrow</code> ($\downdownarrows$) ... 72	<code>\Ddashv</code> ($\mathbb{I}$) 53
<code>\cwleftarccarrow</code> ($\leftarrow$) 76	<code>\dashedleftarrow</code> ($\leftarrow$) ... 72	<code>\ddddot</code> ($\mathbb{I}$) 103
<code>\cwnearccarrow</code> ($\nearrow$) 76	<code>\dashednearrow</code> ($\nearrow$) 72	<code>\ddddot</code> ($\mathbb{I}$) 102
<code>\cwnwarccarrow</code> ($\nwarrow$) 76	<code>\dashednwarrow</code> ($\nwarrow$) 72	<code>\ddddot</code> ($\mathbb{I}$) 103
<code>\Cwo</code> ($\mathbb{I}$) 147	<code>\dashedrightarrow</code> ($\rightarrow$) .. 72	<code>\ddddot</code> ($\mathbb{I}$) 102
<code>\cwopencirculararrow</code> ($\circlearrowright$) 77	<code>\dashedsearrow</code> ($\searrow$) 72	<code>\dddtstile</code> ($\mathbb{I}$) 58
<code>\cwopencirculararrow</code> ($\circlearrowright$) 83, 138	<code>\dashedswarrow</code> ($\swarrow$) 72	<code>\ddigamma</code> ($\mathbb{I}$) 148
<code>\cwoverarccarrow</code> ($\overrightarrow$) ... 76	<code>\dasheduparrow</code> ($\uparrow$) 72	<code>\DDohne</code> ($\mathbb{I}$) 154
<code>\cwrightarccarrow</code> ($\rightarrow$) ... 76	<code>\dashint</code> ($\mathbb{I}$) 217	<code>\ddot</code> ($\mathbb{I}$) 103
<code>\cwrightarccarrow</code> ($\rightarrow$) ... 82	<code>\dashleftarrow</code> ($\leftarrow$) 70	<code>\ddot</code> ($\mathbb{I}$) 102
<code>\cwsearccarrow</code> ($\searrow$) 76	<code>\dashleftarrow</code> ($\leftarrow$) 77	<code>\ddotdot</code> ($\mathbb{I}$) 31, 111
<code>\cswarccarrow</code> ($\swarrow$) 76	<code>\dashleftarrow</code> ($\leftarrow$) 73	<code>\ddotdot</code> ($\mathbb{I}$) 31, 111
<code>\cwunderarccarrow</code> ($\underrightarrow$) .. 76	<code>\dashleftarrow</code> ($\leftarrow$) 83	<code>\ddots</code> ($\ddots$) 112
<code>\cwundercurvearrow</code> ($\curvearrowright$) . 82	<code>\dashleftharpoonupdown</code> ($\mathbb{I}$) 84	<code>\ddots</code> ($\ddots$) 110, 218
<code>\Cxa</code> ($\mathbb{I}$) 147	<code>\dashleftrightharpoonup</code> ($\mathbb{I}$) ... 70	<code>\ddots</code> ($\ddots$) 111
<code>\Cxe</code> ($\mathbb{I}$) 147	<code>\dashrightarrow</code> ($\rightarrow$) ... 77	<code>\ddots</code> ($\ddots$) 111
<code>\Cya</code> ($\mathbb{I}$) 147	<code>\dashrightarrow</code> ($\rightarrow$) ... 73	<code>\ddots</code> ($\ddots$) 112
<code>\Cyo</code> ($\mathbb{I}$) 147	<code>\dashrightarrow</code> ($\rightarrow$) ... 83	<code>\ddotseq</code> ($\mathbb{I}$) 56
<code>\cyprfamily</code> 147	<code>\dashrightharpoonupdown</code> ($\mathbb{I}$) 84	<code>\DDownarrow</code> ($\Downarrow$) 82
Cypriot 147	<code>\DashV</code> ($\mathbb{I}$) 50	<code>\DDownarrow</code> ($\Downarrow$) 99
Cypriot (package) 147, 231, 232	<code>\DashV</code> ($\mathbb{I}$) 55	<code>\DDownarrow</code> ($\Downarrow$) 76
<code>\CYRSH</code> (III) 214	<code>\DashV</code> ($\mathbb{I}$) 53	<code>\DDownarrow</code> ($\Downarrow$) 82
<code>\Cza</code> ($\mathbb{I}$) 147	<code>\DashV</code> ($\mathbb{I}$) 56	<code>\DDownarrow</code> ($\Downarrow$) 99
<code>\Czechia</code> ($\mathbb{I}$) 182	<code>\Dashv</code> ($\mathbb{I}$) 50	<code>\ddstile</code> ($\mathbb{I}$) 58
<code>\Czo</code> ($\mathbb{I}$) 147	<code>\Dashv</code> ($\mathbb{I}$) 53	<code>\ddstile</code> ($\mathbb{I}$) 58
	<code>\Dashv</code> ($\mathbb{I}$) 56	<code>\ddtstile</code> ($\mathbb{I}$) 58
	<code>\dashV</code> ($\mathbb{I}$) 55	<code>\ddtstile</code> ($\mathbb{I}$) 58
	<code>\dashV</code> ($\mathbb{I}$) 53	<code>\DE</code> ($\mathbb{I}$) 125
	<code>\dashV</code> ($\mathbb{I}$) 56	<code>\DeclareFontFamily</code> 210, 223
	<code>\dashv</code> ($\mathbb{I}$) 48	<code>\DeclareFontShape</code> . 210, 223
	<code>\dashv</code> ($\mathbb{I}$) 53	<code>\DeclareMathOperator</code> .. 224
	<code>\dashv</code> ($\mathbb{I}$) 51	<code>\DeclareMathOperator*</code> . 224
	<code>\dashv</code> ($\mathbb{I}$) 56	<code>\declareslashed</code> 216
	<code>\DashVDash</code> ($\mathbb{I}$) 56	<code>\DeclareUnicodeCharacter</code> 229
	<code>\dashVdash</code> ($\mathbb{I}$) 56	<code>\decofourleft</code> ($\mathbb{I}$) 136
	<code>\dashVv</code> ($\mathbb{I}$) 50	<code>\decofourright</code> ($\mathbb{I}$) 136
	<code>\dashVv</code> ($\mathbb{I}$) 55	<code>\decoone</code> ($\mathbb{I}$) 136
	<code>\dashVv</code> ($\mathbb{I}$) 53	decorative borders .. 196–202
	database symbols 117	<code>\decosix</code> ($\mathbb{I}$) 136
	<code>\davidstar</code> ($\star$) 135	

<code>\decothreeleft</code> () 136	diæresis () <i>see</i> accents	diamonds 29, 30, 35–37, 71, 115, 136–141, 162–166, 171, 191–192, 207–208
<code>\decothreeleft</code> () 136	<code>\diagdown</code> () 116	<code>\DiamondShadowA</code> () 139
<code>\decotwo</code> () 136	<code>\diagdown</code> () 115	<code>\DiamondShadowB</code> () 139
<code>\decrescHairpin</code> () 157	<code>\diagdown</code> () 117	<code>\DiamondShadowC</code> () 139
Dedekind, Richard 214	<code>\diagdown</code> () 51	<code>\Diamondshape</code> () 139
definite-description operator (γ) 214	<code>\diagdown</code> () 117	<code>\diamondslash</code> () 35
definition symbols 28, 219	<code>\diagonal</code> () 174	<code>\diamondslash</code> () 35
<code>\deg</code> (deg) 89	<code>\diagup</code> () 116	<code>\DiamondSolid</code> () 139
<code>\degree</code> ($\circ$) 116	<code>\diagup</code> () 115	<code>\diamondsuit</code> () 140
<code>\degree</code> ($^\circ$) 121	<code>\diagup</code> () 117	<code>\diamondsuit</code> () 140
degrees <i>see</i> <code>\textdegree</code>	<code>\diagup</code> () 51	<code>\diamondsuit</code> () 140
<code>\DEL</code> (Δ) 126	<code>\diagup</code> () 117	<code>\diamondsuit</code> () 140
<code>\DEL</code> (Δ) 126	<code>\diameter</code> ($\emptyset$) 116	<code>\diamondsuit</code> () 141
<code>\Del</code> () 125	<code>\diameter</code> ($\emptyset$) 28	<code>\diamondtimes</code> () 36
<code>\Del</code> () 125	<code>\diameter</code> ($\emptyset$) 116	<code>\diamondtimes</code> () 35
<code>\Deleatur</code> <i>see</i> <code>\Denarius</code>	<code>\diameter</code> ($\emptyset$) 116	<code>\diamondtimes</code> () 35
delimiters 95–102	<code>\diameter</code> ($\emptyset$) 117	<code>\diamondtopblack</code> () 138
text-mode 101, 102	<code>\diameter</code> ($\emptyset$) 169	<code>\diamondtriangle</code> () 36
variable-sized 96–101	<code>\Diamond</code> ($\diamond$) 115	<code>\diamondvert</code> () 35
wavy-line 97–100	<code>\Diamond</code> ($\diamond$) 115	<code>\diamondvert</code> () 35
<code>\Delta</code> (Δ) 90	<code>\Diamond</code> ($\diamond$) 36	<code>\diatop</code> 24, 219
<code>\delta</code> (δ) 90	<code>\Diamond</code> ($\diamond$) 35	<code>\diaunder</code> 24, 219
<code>\delta</code> (δ) 91	<code>\Diamond</code> ($\diamond$) 138	dice 171, 172, 208, 214
deminutum <i>see</i> <code>musixgre</code>	<code>\diamond</code> ($\diamond$) 29	dice (package) 208, 231
demisemiquaver <i>see</i> musical symbols	<code>\diamond</code> ($\diamond$) 36, 137	<code>\dicei</code> () 172
<code>\demisemiquaver</code> () 155	<code>\diamond</code> ($\diamond$) 36	<code>\diceii</code> () 172
<code>\demisemiquaverDotted</code> () 155	<code>\diamond</code> ($\diamond$) 35	<code>\diceiii</code> () 172
<code>\demisemiquaverDottedDouble</code> () 155	<code>\diamond</code> ($\diamond$) 37, 138	<code>\diceiv</code> () 172
<code>\demisemiquaverDottedDoubleDown</code> () 155	<code>\diamondbackslash</code> () 35	<code>\dicev</code> () 172
<code>\demisemiquaverDottedDown</code> () 155	<code>\diamondbackslash</code> () 35	<code>\dicevi</code> () 172
<code>\demisemiquaverDown</code> () 155	<code>\diamondbar</code> () 36	dictionary symbols 17–20, 177
<code>\Denarius</code> () 25	<code>\Diamondblack</code> () 115	dictsym (package) 177, 231
<code>\denarius</code> () 26	<code>\diamondbotblack</code> () 138	died <i>see</i> <code>\textdied</code>
<code>\Denmark</code> () 182	<code>\diamondbslash</code> () 36	differential, inexact <i>see</i> <code>\dbar</code>
<code>\dental</code> () 22	<code>\diamondcdot</code> () 36	<code>\Digamma</code> ($\mathcal{F}$) 148
<code>\Dep</code> () 153	<code>\diamondcdot</code> () 138	<code>\Digamma</code> ($\mathcal{F}$) 148
derivative, partial <i>see</i> <code>\partial</code>	<code>\diamondcircle</code> () 36	<code>\digamma</code> ($\mathcal{F}$) 90, 148
Descartes's equal sign ($\asymp$) <i>see</i> <code>\rightpropto</code> and <code>\backpropto</code>	<code>\diamondddiamond</code> () 35	<code>\digamma</code> ($\mathcal{F}$) 148
<code>\descnode</code> () 122	<code>\diamondddiamond</code> () 35	<code>\digamma</code> ($\mathcal{F}$) 94
<code>\det</code> (det) 89	<code>\Diamondddot</code> () 115	<code>\digamma</code> ($\mathcal{F}$) 148
<code>\devadvantage</code> () 174	<code>\Diamondddot</code> () 35	<code>\digamma</code> ($\mathcal{F}$) 148
<code>\Dfourier</code> () 59	<code>\DiamondddotLeft</code> () 71	<code>\digamma</code> ($\mathcal{F}$) 148
<code>\Dfourier</code> () 55	<code>\DiamondddotLeft</code> () 71	digital logic gates 126
<code>\dfourier</code> () 59	<code>\DiamondddotRight</code> () 71	digits <i>see</i> numerals
<code>\dfourier</code> () 55	<code>\DiamondddotRight</code> () 71	<code>\dim</code> (dim) 89
<code>\DFT</code> () 109	<code>\Diamondddotright</code> () 71	<code>\ding</code> 16, 130–135, 140, 141
<code>\dft</code> () 109	<code>\diamonddots</code> () 31, 111	<code>\ding{33}</code> () 131
<code>\DH</code> ($\mathbb{D}$) 19	<code>\DiamondLeft</code> () 71	<code>\ding{34}</code> () 131
<code>\DH</code> ($\mathbb{D}$) 15, 227	<code>\Diamondleft</code> () 71	<code>\ding{35}</code> () 131
<code>\dh</code> (δ) 19	<code>\diamondleftarrow</code> () 82	<code>\ding{36}</code> () 131
<code>\dh</code> (δ) 15, 227	<code>\diamondleftarrowbar</code> () 82	<code>\ding{37}</code> () 141
diacritics <i>see</i> accents	<code>\diamondleftblack</code> () 138	<code>\ding{38}</code> () 141
<code>\diaeresis</code> () 23	<code>\diamondminus</code> () 36	<code>\ding{39}</code> () 141
	<code>\diamondminus</code> () 35	<code>\ding{40}</code> () 141
	<code>\diamondminus</code> () 35	<code>\ding{41}</code> () 141
	<code>\diamondop</code> () 36	<code>\ding{42}</code> () 132
	<code>\diamondplus</code> () 36	<code>\ding{43}</code> () 132
	<code>\diamondplus</code> () 35	<code>\ding{44}</code> () 132
	<code>\diamondplus</code> () 35	<code>\ding{45}</code> () 132
	<code>\DiamondRight</code> () 71	<code>\ding{46}</code> () 132
	<code>\Diamondright</code> () 71	<code>\ding{47}</code> () 132
	<code>\diamondrightblack</code> () 138	

<code>\ding{48}</code> ()	132	<code>\ding{111}</code> ()	140	<code>\ding{208}</code> ()	134
<code>\ding{49}</code> ()	132	<code>\ding{112}</code> ()	140	<code>\ding{209}</code> ()	134
<code>\ding{50}</code> ()	132	<code>\ding{113}</code> ()	140	<code>\ding{210}</code> ()	134
<code>\ding{51}</code> ()	134	<code>\ding{114}</code> ()	140	<code>\ding{211}</code> ()	134
<code>\ding{52}</code> ()	134	<code>\ding{115}</code> ()	140	<code>\ding{212}</code> ()	130
<code>\ding{53}</code> ()	134	<code>\ding{116}</code> ()	140	<code>\ding{213}</code> ()	130
<code>\ding{54}</code> ()	134	<code>\ding{117}</code> ()	140	<code>\ding{214}</code> ()	130
<code>\ding{55}</code> ()	134	<code>\ding{118}</code> ()	141	<code>\ding{215}</code> ()	130
<code>\ding{56}</code> ()	134	<code>\ding{119}</code> ()	140	<code>\ding{216}</code> ()	130
<code>\ding{57}</code> ()	133	<code>\ding{120}</code> ()	140	<code>\ding{217}</code> ()	130
<code>\ding{58}</code> ()	133	<code>\ding{121}</code> ()	140	<code>\ding{218}</code> ()	130
<code>\ding{59}</code> ()	133	<code>\ding{122}</code> ()	140	<code>\ding{219}</code> ()	130
<code>\ding{60}</code> ()	133	<code>\ding{123}</code> ()	16	<code>\ding{220}</code> ()	130
<code>\ding{61}</code> ()	133	<code>\ding{124}</code> ()	16	<code>\ding{221}</code> ()	130
<code>\ding{62}</code> ()	133	<code>\ding{125}</code> ()	16	<code>\ding{222}</code> ()	130
<code>\ding{63}</code> ()	133	<code>\ding{126}</code> ()	16	<code>\ding{223}</code> ()	130
<code>\ding{64}</code> ()	133	<code>\ding{161}</code> ()	16	<code>\ding{224}</code> ()	130
<code>\ding{65}</code> ()	135	<code>\ding{162}</code> ()	16	<code>\ding{225}</code> ()	130
<code>\ding{66}</code> ()	135	<code>\ding{163}</code> ()	16	<code>\ding{226}</code> ()	130
<code>\ding{67}</code> ()	135	<code>\ding{164}</code> ()	141	<code>\ding{227}</code> ()	130
<code>\ding{68}</code> ()	135	<code>\ding{165}</code> ()	141	<code>\ding{228}</code> ()	130
<code>\ding{69}</code> ()	135	<code>\ding{166}</code> ()	141	<code>\ding{229}</code> ()	130
<code>\ding{70}</code> ()	135	<code>\ding{167}</code> ()	141	<code>\ding{230}</code> ()	130
<code>\ding{71}</code> ()	135	<code>\ding{168}</code> ()	141	<code>\ding{231}</code> ()	130
<code>\ding{72}</code> ()	135	<code>\ding{169}</code> ()	141	<code>\ding{232}</code> ()	130
<code>\ding{73}</code> ()	135	<code>\ding{170}</code> ()	141	<code>\ding{233}</code> ()	130
<code>\ding{74}</code> ()	135	<code>\ding{171}</code> ()	141	<code>\ding{234}</code> ()	130
<code>\ding{75}</code> ()	135	<code>\ding{172}</code> ()	134	<code>\ding{235}</code> ()	130
<code>\ding{76}</code> ()	135	<code>\ding{173}</code> ()	134	<code>\ding{236}</code> ()	130
<code>\ding{77}</code> ()	135	<code>\ding{174}</code> ()	134	<code>\ding{237}</code> ()	130
<code>\ding{78}</code> ()	135	<code>\ding{175}</code> ()	134	<code>\ding{238}</code> ()	130
<code>\ding{79}</code> ()	135	<code>\ding{176}</code> ()	134	<code>\ding{239}</code> ()	130
<code>\ding{80}</code> ()	135	<code>\ding{177}</code> ()	134	<code>\ding{241}</code> ()	130
<code>\ding{81}</code> ()	135	<code>\ding{178}</code> ()	134	<code>\ding{242}</code> ()	130
<code>\ding{82}</code> ()	135	<code>\ding{179}</code> ()	134	<code>\ding{243}</code> ()	130
<code>\ding{83}</code> ()	135	<code>\ding{180}</code> ()	134	<code>\ding{244}</code> ()	130
<code>\ding{84}</code> ()	135	<code>\ding{181}</code> ()	134	<code>\ding{245}</code> ()	130
<code>\ding{85}</code> ()	135	<code>\ding{182}</code> ()	134	<code>\ding{246}</code> ()	130
<code>\ding{86}</code> ()	135	<code>\ding{183}</code> ()	134	<code>\ding{247}</code> ()	130
<code>\ding{87}</code> ()	135	<code>\ding{184}</code> ()	134	<code>\ding{248}</code> ()	130
<code>\ding{88}</code> ()	135	<code>\ding{185}</code> ()	134	<code>\ding{249}</code> ()	130
<code>\ding{89}</code> ()	135	<code>\ding{186}</code> ()	134	<code>\ding{250}</code> ()	130
<code>\ding{90}</code> ()	135	<code>\ding{187}</code> ()	134	<code>\ding{251}</code> ()	130
<code>\ding{91}</code> ()	135	<code>\ding{188}</code> ()	134	<code>\ding{252}</code> ()	130
<code>\ding{92}</code> ()	135	<code>\ding{189}</code> ()	134	<code>\ding{253}</code> ()	130
<code>\ding{93}</code> ()	135	<code>\ding{190}</code> ()	134	<code>\ding{254}</code> ()	130
<code>\ding{94}</code> ()	135	<code>\ding{191}</code> ()	134	<code>\dingasterisk</code> ()	117
<code>\ding{95}</code> ()	135	<code>\ding{192}</code> ()	134	<code>\dingautolist</code>	134
<code>\ding{96}</code> ()	135	<code>\ding{193}</code> ()	134	<code>\dingbat</code> (package) ...	132, 141,
<code>\ding{97}</code> ()	135	<code>\ding{194}</code> ()	134	199, 212, 231	
<code>\ding{98}</code> ()	135	<code>\ding{195}</code> ()	134	dingbat symbols ...	130–141
<code>\ding{99}</code> ()	135	<code>\ding{196}</code> ()	134	<code>\dInnocey</code> ()	184
<code>\ding{100}</code> ()	135	<code>\ding{197}</code> ()	134	<code>\Diple</code> ()	176
<code>\ding{101}</code> ()	135	<code>\ding{198}</code> ()	134	<code>\diple</code> ()	176
<code>\ding{102}</code> ()	135	<code>\ding{199}</code> ()	134	<code>\Diple*</code> ()	176
<code>\ding{103}</code> ()	135	<code>\ding{200}</code> ()	134	<code>\diple*</code> ()	176
<code>\ding{104}</code> ()	135	<code>\ding{201}</code> ()	134	<code>\dipole</code> ()	129
<code>\ding{105}</code> ()	135	<code>\ding{202}</code> ()	134	Dirac notation	96
<code>\ding{106}</code> ()	135	<code>\ding{203}</code> ()	134	<code>\Direct</code> ()	124
<code>\ding{107}</code> ()	135	<code>\ding{204}</code> ()	134	discount . <i>see</i> <code>\textdiscount</code>	
<code>\ding{108}</code> ()	140	<code>\ding{205}</code> ()	134	discretionary hyphen	228
<code>\ding{109}</code> ()	140	<code>\ding{206}</code> ()	134	<code>\Dish</code> ()	183
<code>\ding{110}</code> ()	140	<code>\ding{207}</code> ()	134	<code>\disin</code> ()	55

$\backslash\text{disin}$ ($\in$)	56	weak . <i>see</i> $\backslash\text{preccurlyeq}$	dotted arrows	109
disjoint union	28	$\backslash\text{Dontwash}$ ($\not\equiv$)	dotted union ($\dot{\cup}$)	224
$\backslash\text{disjquant}$ ($\mathbb{W}$)	44	$\backslash\text{dot}$ ($\dot{}$)	$\backslash\text{dottedcircle}$ ($\odot$)	138
$\backslash\text{disjquant}$ ($\mathbb{V}$)	45	$\backslash\text{dot}$ ($\dot{}$)	$\backslash\text{dottedsquare}$ ($\boxdot$)	138
disjunction	<i>see</i> $\backslash\text{vee}$	$\backslash\text{dot}$ ($\dot{}$)	$\backslash\text{dottedtilde}$ ($\tilde{}$)	22
$\backslash\text{displaystyle}$	217–219, 224	dot accent ($\dot{}$ or $\dot{}$)	$\backslash\text{dottimes}$ ($\times$)	30
ditto marks	<i>see</i> $\backslash\text{textquotedbl}$	dot symbols	$\backslash\text{dottimes}$ ($\times$)	32
$\backslash\text{div}$ ($\div$)	29	DotArrow (package)	$\backslash\text{dottimes}$ ($\times$)	32
$\backslash\text{div}$ ($\div$)	32		$\backslash\text{dottimes}$ ($\times$)	33
$\backslash\text{div}$ ($\div$)	31	232	$\backslash\text{double}$	101
$\backslash\text{div}$ ($\div$)	31	$\backslash\text{dotarrow}$ ($\dot{\rightarrow}$)	double acute ($\ddot{}$)	<i>see</i> accents
$\backslash\text{div}$ ($\div$)	33	$\backslash\text{dotcong}$ ($\dot{\equiv}$)	$\backslash\text{doublebar}$ ($\text{\textcircled{!}}$)	151
$\backslash\text{divdot}$ ($\dot{\div}$)	30	$\backslash\text{dotcup}$ ($\dot{\cup}$)	$\backslash\text{doublebarvee}$ ($\overline{\vee}$)	33
$\backslash\text{divideontimes}$ ($\ast$)	30	$\backslash\text{dotdiv}$ ($\dot{\div}$)	$\backslash\text{doublebarwedge}$ ($\overline{\wedge}$)	30
$\backslash\text{divideontimes}$ ($\ast$)	29	$\backslash\text{Doteq}$	$\backslash\text{doublebarwedge}$ ($\overline{\wedge}$)	29
$\backslash\text{divideontimes}$ ($\ast$)	32	<i>see</i> $\backslash\text{doteqdot}$	$\backslash\text{doublebarwedge}$ ($\overline{\wedge}$)	32
$\backslash\text{divideontimes}$ ($\ast$)	31	$\backslash\text{Doteq}$ ($\dot{=}$)	$\backslash\text{doublebarwedge}$ ($\overline{\wedge}$)	32
$\backslash\text{divideontimes}$ ($\ast$)	33	$\backslash\text{Doteq}$ ($\dot{=}$)	$\backslash\text{doublebarwedge}$ ($\overline{\wedge}$)	33
$\backslash\text{Divides}$ ($\diagup$)	113	$\backslash\text{Doteq}$ ($\dot{=}$)	$\backslash\text{doublecap}$	<i>see</i> $\backslash\text{Cap}$
$\backslash\text{divides}$ ($\mid$)	50	$\backslash\text{doteq}$ ($\dot{=}$)	$\backslash\text{doublecap}$ ($\cap$)	30
$\backslash\text{divides}$ ($\diagup$)	51	$\backslash\text{doteq}$ ($\dot{=}$)	$\backslash\text{doublecap}$ ($\cap$)	32
$\backslash\text{DividesNot}$ ($\nmid$)	113	$\backslash\text{doteq}$ ($\dot{=}$)	$\backslash\text{doublecap}$ ($\cap$)	31
division	29, 104–105, 110	$\backslash\text{doteq}$ ($\dot{=}$)	$\backslash\text{doublecap}$ ($\cap$)	33
long	104–105	$\backslash\text{doteqdot}$ ($\dot{=}$)	$\backslash\text{doublecovebond}$ ($\overleftrightarrow{\cup}$)	129
non-commutative	110	$\backslash\text{doteqdot}$ ($\dot{=}$)	$\backslash\text{doublecross}$ ($\times$)	151
polynomial	104	$\backslash\text{doteqdot}$ ($\dot{=}$)	$\backslash\text{doublecup}$	<i>see</i> $\backslash\text{Cup}$
division times	<i>see</i>	$\backslash\text{doteqdot}$ ($\dot{=}$)	$\backslash\text{doublecup}$ ($\cup$)	30
$\backslash\text{divideontimes}$		$\backslash\text{doteqdot}$ ($\dot{=}$)	$\backslash\text{doublecup}$ ($\cup$)	32
divorced	<i>see</i> $\backslash\text{textdivorced}$	$\backslash\text{doteqdot}$ ($\dot{=}$)	$\backslash\text{doublecup}$ ($\cup$)	31
$\backslash\text{divslash}$ ($\diagup$)	31	$\backslash\text{dotequiv}$ ($\dot{=}$)	$\backslash\text{doublecup}$ ($\cup$)	33
$\backslash\text{DJ}$ ($\text{\textcircled{D}}$)	15	dotless j (j)	$\backslash\text{doublecurlyvee}$ ($\wp$)	31
$\backslash\text{dj}$ ($\text{\textcircled{d}}$)	15	text mode	$\backslash\text{doublecurlywedge}$ ($\mathfrak{M}$)	31
$\backslash\text{DL}$ ($\text{\textcircled{V}}$)	125	math mode	$\backslash\text{doubledot}$ ($\ddot{}$)	151
$\backslash\text{dLaughey}$ ($\text{\textcircled{L}}$)	184	text mode	$\backslash\text{doubleeye}$ ($\ddot{}$)	151
$\backslash\text{dlbari}$ ($\text{\textcircled{i}}$)	19	math mode	$\backslash\text{doublefrown}$ ($\frown$)	87
$\backslash\text{DLE}$ ($\text{\textcircled{L}}$)	126	math mode	$\backslash\text{doublefrown}$ ($\frown$)	87
$\backslash\text{dlsh}$ ($\text{\textcircled{L}}$)	71	math mode	$\backslash\text{doublepawns}$ ($\text{\textcircled{O}}$)	174
$\backslash\text{dlsh}$ ($\text{\textcircled{L}}$)	80	math mode	$\backslash\text{doubleplus}$ ($\dot{+}$)	151
$\backslash\text{DM}$ ($\text{\textcircled{D}}$)	125	math mode	$\backslash\text{doubleplus}$ ($\dot{+}$)	33
$\backslash\text{Dmesonminus}$ (D^-)	129	math mode	$\backslash\text{doublesharp}$ ($\sharp$)	156
$\backslash\text{Dmesonnull}$ (D^0)	129	math mode	$\backslash\text{doublesmile}$ ($\smile$)	87
$\backslash\text{Dmesonplus}$ (D^+)	129	math mode	$\backslash\text{doublesmile}$ ($\smile$)	87
$\backslash\text{dndtstile}$ ($\text{\textcircled{D}}$)	58	math mode	$\backslash\text{doublesqcap}$ ($\sqcap$)	32
$\backslash\text{dNeutrey}$ ($\text{\textcircled{N}}$)	184	math mode	$\backslash\text{doublesqcap}$ ($\sqcap$)	31
$\backslash\text{dNinja}$ ($\text{\textcircled{N}}$)	184	math mode	$\backslash\text{doublesqcup}$ ($\sqcup$)	32
$\backslash\text{dntstile}$ ($\text{\textcircled{D}}$)	58	math mode	$\backslash\text{doublesqcup}$ ($\sqcup$)	30
$\backslash\text{dntstile}$ ($\text{\textcircled{D}}$)	58	math mode	$\backslash\text{doublestar}$ ($\star$)	151
$\backslash\text{dnttstile}$ ($\text{\textcircled{D}}$)	58	math mode	$\backslash\text{doublethumb}$ ($\text{\textcircled{T}}$)	153
$\backslash\text{dNursey}$ ($\text{\textcircled{N}}$)	184	math mode	$\backslash\text{doubletilde}$ ($\tilde{}$)	22
do not enter	<i>see</i> $\backslash\text{noway}$	math mode	$\backslash\text{doublevee}$ ($\vee$)	31, 32
does not divide	<i>see</i> $\backslash\text{nmid}$	math mode	$\backslash\text{doublevee}$ ($\vee$)	30
does not exist	<i>see</i> $\backslash\text{nexists}$	math mode	$\backslash\text{doublewedge}$ ($\mathfrak{M}$)	31, 32
does not imply	216	math mode	$\backslash\text{doublewedge}$ ($\mathfrak{M}$)	30
$\backslash\text{Dohne}$ ($\text{\textcircled{D}}$)	154	math mode	DOWNarrow ($\blacktriangledown$)	169
Dohse, Max	217	math mode	Downarrow ($\Downarrow$)	70, 96
dollar	<i>see</i> $\backslash\text{textdollar}$	math mode	Downarrow ($\Downarrow$)	76
dollar sign	<i>see</i> $\backslash\text{\$}$	math mode	Downarrow ($\Downarrow$)	98
dominance	<i>see</i> $\backslash\text{prec}$	math mode	Downarrow ($\Downarrow$)	72
negative	<i>see</i> $\backslash\text{nprec}$	math mode	Downarrow ($\Downarrow$)	82
negative weak	<i>see</i>	math mode	Downarrow ($\Downarrow$)	100
$\backslash\text{npreccurlyeq}$		math mode	downarrow	224
strict	<i>see</i> $\backslash\text{Prec}$	math mode		

$\Downarrow$	70, 96	$\Downarrowpitchfork$ (Ψ)	86	$\drumclef$ ($\{\!\!\{$)	154
$\downarrow$	98	$\downarrowprop$ ($\Downarrow$)	51	$\drWalley$ ($\{\!\!\{$)	184
$\downarrow$	76	$\downarrowcurvearrowright$ ($\Downarrow$)	77	$\DS$ ($\S$)	154
$\downarrow$	72	$\downarrowcurvearrowright$ ($\Downarrow$)	77	$\Ds$ ($\S$)	154
$\downarrow$	85	$\downarrowcurvearrowright$ ($\Downarrow$)	82	$\ds$ ($\S$)	153
$\downarrow$	100	$\downarrowsquigarrow$ ($\Downarrow$)	77	$\dSadey$ ($\S$)	184
$\downarrow$	82	$\downarrowsquigarrow$ ($\Downarrow$)	72	$\dsaeronautical$ ($\S$)	177
$\downarrow$	82	$\downarrowslice$ ($\Downarrow$)	35	$\dsagricultural$ ($\S$)	177
$\downarrow$	82	$\downarrowspoon$ ($\Downarrow$)	87	$\dsarchitectural$ (Δ)	177
$\downarrow$	76	$\downarrowspoon$ ($\Downarrow$)	86	$\dsbiological$ ($\S$)	177
$\downarrow$	72	$\downt$ (τ)	24	$\DSC$ ($\DSC$)	124
$\downarrow$	53	$\downtherefore$ ($\Downarrow$)	111	$\dschemical$ ($\S$)	177
$\downarrow$	53	$\downtherefore$ ($\Downarrow$)	30, 111	$\dscommercial$ ($\S$)	177
$\downarrow$	76	$\downtouparrow$ ($\Downarrow$)	71	$\dsdtstile$ ($\Downarrow$)	58
$\downarrow$	80	$\downtouparrow$ ($\Downarrow$)	80	$\dSey$ ($\S$)	184
$\downarrow$	87	$\downtriangleleftblack$ ($\Downarrow$)	137	$\dsfont$ (package)	119, 231
$\downbow$ ($\Downarrow$)	153	$\downtriangleleftblack$ ($\Downarrow$)	137	$\ds heraldical$ ($\Downarrow$)	177
$\downbracketfill$	220	$\downtriangleleftblack$ ($\Downarrow$)	137	$\dsjuridical$ ($\Downarrow$)	177
$\downdasharrow$ ($\Downarrow$)	80	$\downuparrows$ ($\Downarrow$)	71	$\dsliterary$ ($\Downarrow$)	177
$\downdasharrow$ ($\Downarrow$)	82	$\downuparrows$ ($\Downarrow$)	76	$\dsmathematical$ ($\Downarrow$)	177
$\downarrow$	71	$\downuparrows$ ($\Downarrow$)	72	$\dsmedical$ ($\Downarrow$)	177
$\downarrow$	70	$\downuparrows$ ($\Downarrow$)	82	$\dSmiley$ ($\Downarrow$)	184
$\downarrow$	80	$\downuparrows$ ($\Downarrow$)	77	$\ds military$ ($\Downarrow$)	177
$\downarrow$	76	$\downupcurvearrowright$ ($\Downarrow$)	72	$\dsol$ ($\Downarrow$)	33
$\downarrow$	72	$\downupharpoons$ ($\Downarrow$)	72	$\ds railways$ ($\Downarrow$)	177
$\downarrow$	82	$\downupharpoons$ ($\Downarrow$)	79	$\dsstile$ ($\Downarrow$)	58
$\downarrow$	72	$\downupharpoons$ ($\Downarrow$)	75	$\ds technical$ ($\Downarrow$)	177
Downes, Michael J.	89, 233	$\downupharpoonsleftright$ ($\Downarrow$)	79	$\dststile$ ($\Downarrow$)	58
$\downfilledspoon$ ($\Downarrow$)	86	$\downupharpoonsleftright$ ($\Downarrow$)	84	$\dsttstile$ ($\Downarrow$)	58
$\downfishtail$ ($\Downarrow$)	56	$\downupharpoonsleftright$ ($\Downarrow$)	77	$\ds sub$ ($\Downarrow$)	37
$\downfootline$ ($\Downarrow$)	51	$\downupsquigarrow$ ($\Downarrow$)	53	$\dstdtstile$ ($\Downarrow$)	58
$\downfree$ ($\Downarrow$)	51	$\downVDash$ ($\Downarrow$)	53	$\dtimes$ ($\Downarrow$)	31, 32
$\downharpoonccw$ ($\Downarrow$)	75	$\downVdash$ ($\Downarrow$)	51	$\dtimes$ ($\Downarrow$)	33
$\downharpooncw$ ($\Downarrow$)	75	$\downvDash$ ($\Downarrow$)	53	$\dtimes$ ($\Downarrow$)	30
$\downharpoonleft$ ($\Downarrow$)	72	$\downvdash$ ($\Downarrow$)	53	$\dTongey$ ($\Downarrow$)	184
$\downharpoonleft$ ($\Downarrow$)	70	$\downvdash$ ($\Downarrow$)	51	$\dststile$ ($\Downarrow$)	58
$\downharpoonleft$ ($\Downarrow$)	81	$\downwavearrow$ ($\Downarrow$)	76	$\dsttstile$ ($\Downarrow$)	58
$\downharpoonleft$ ($\Downarrow$)	79	$\downwhitearrow$ ($\Downarrow$)	80	$\dtttstile$ ($\Downarrow$)	58
$\downharpoonleft$ ($\Downarrow$)	84	$\downwhitearrow$ ($\Downarrow$)	82	$\DU$ (n)	125
$\downharpoonleftbar$ ($\Downarrow$)	84	$\downY$ ($\Downarrow$)	31	$\dualmap$ ($\Downarrow$)	87
$\downharpoonright$ ($\Downarrow$)	72	$\downY$ ($\Downarrow$)	30	$\dualmap$ ($\Downarrow$)	56
$\downharpoonright$ ($\Downarrow$)	70	$\downzigzagarrow$ ($\Downarrow$)	80	$\duevolte$ ($\Downarrow$)	153
$\downharpoonright$ ($\Downarrow$)	81	$\downzigzagarrow$ ($\Downarrow$)	77	$\duodecimal$ (base 12) numerals	113
$\downharpoonright$ ($\Downarrow$)	79	$\downzigzagarrow$ ($\Downarrow$)	82	$\duodecimal$ (base 12) tally markers	173
$\downharpoonrightbar$ ($\Downarrow$)	84	Doyle, Sir Arthur Conan	205	DVI	27, 125, 221
$\downharpoonsleftright$ ($\Downarrow$)	84	dozenal (package)	113, 173, 231	$\dvi$ files	228
$\downlcurvearrowright$ ($\Downarrow$)	77	dozenal (base 12) numerals	113	$\dVomey$ ($\Downarrow$)	184
$\downleftcurvedarrow$ ($\Downarrow$)	77	dozenal (base 12) tally markers	173	$\dWalley$ ($\Downarrow$)	184
$\downlsquigarrow$ ($\Downarrow$)	77	$\dprime$ ($\Downarrow$)	114	$\dWinkey$ ($\Downarrow$)	184
$\downlsquigarrow$ ($\Downarrow$)	72	$\DQ$ ($\Downarrow$)	125	$\dXey$ ($\Downarrow$)	184
$\Downmapsto$ ($\Downarrow$)	76	$\dracma$ ($\Downarrow$)	26	$\dz$ ($\Downarrow$)	19
$\Downmapsto$ ($\Downarrow$)	76	$\draftingarrow$ ($\Downarrow$)	82		
$\Downmapsto$ ($\Downarrow$)	72	$\drbkarrow$ ($\Downarrow$)	82		
$\downModels$ ($\Downarrow$)	51	$\dreizack$ ($\Downarrow$)	184		
$\downmodels$ ($\Downarrow$)	53	$\droang$ ($\Downarrow$)	103		
$\downmodels$ ($\Downarrow$)	51	$\drsh$ ($\Downarrow$)	71		
$\downp$ ($\Downarrow$)	24	$\drsh$ ($\Downarrow$)	80		
$\downparenthfill$	220				
$\downpitchfork$ (Ψ)	88				

e (M)	151	\emf (ℰ)	122	\EOFold (📄)	149
ε-TeX	96	\emf (ℰ)	122	\EOGod (👤)	149
\Earth (⊕)	123	\emf (ℰ)	122	\EOGoUp (📈)	149
\Earth (♁)	122	\emf (ℰ)	122	\EOgovernor (👤)	149
\Earth (♁)	124	\emgma (η)	19	\EOGuise (👤)	149
\earth (♁)	122	Emmentaler (font)	157	\EOHallow (👤)	149
\eastcross (✝)	133	emoticons	184	\EOi (°)	150
\EastPoint (E ²)	124	\empty (∅)	176	\EOii (° °)	150
\Ecommerce (E)	25	empty set	114–117	\EOiii (° ° °)	150
\eggbeater (♻)	184	\emptyset (∅)	115	\EOiv (° ° ° °)	150
\egsdot (⋮)	66	\emptysetset (∅)	116	\EOix (👤)	150
\EightAsterisk (*)	135	\emptysetset (∅)	116	\EOja (👤)	149
\EightFlowerPetal (🌸)	135	\emptysetset (∅)	114	\EOjaguar (🐆)	149
\EightFlowerPetalRemoved (*)	135	\emptysetsetoarr (∅)	114	\EOje (👤)	149
eighth note	see musical symbols	\emptysetsetoarrl (∅)	114	\EOJI (👤)	149
\eighthNote (♩)	155	\emptysetsetobar (∅)	114	\EOji (👤)	149
\eighthnote (♩)	152	\emptysetsetocirc (∅)	114	\EOjo (👤)	149
\eighthnote (♩)	152	\EN (τ)	125	\EOju (👤)	149
\eighthnote (♩)	152	\enclosecircle (⊙)	137	\EOkak (👤)	149
\eighthNoteDotted (♩̣)	155	\enclosediamond (◊)	137	\EOke (👤)	149
\eighthNoteDottedDouble (♩̣̣)	155	\enclosesquare (◻)	137	\EOki (👤)	149
\eighthNoteDottedDown (♩̣̣)	155	\enclosetriangle (◵)	137	\EOkij (👤)	149
\eighthNoteDottedDown (♩̣̣)	155	\End ([End])	125	\EOKing (👤)	149
\eighthNoteDown (♩̣)	155	end of proof	115	\EOknottedCloth (👤)	149
\EightStar (*)	135	\ending (⊥)	174	\EOknottedClothStraps (👤)	150
\EightStarBold (★)	135	\eng (η)	19	\EOko (👤)	150
\EightStarConvex (✱)	135	engineering symbols	117, 121, 127	\EOku (👤)	150
\EightStarTaper (✱)	135	\engma (η)	19	\EOkuu (👤)	150
\ejective (p)	19	\enleadertwodots (..)	112	\EOLetBlood (👤)	150
electrical impulse	121	\ENQ (♣)	126	\EOloinCloth (👤)	150
electrical symbols	121	entails	see \models	\EOlongLipII (👤)	150
electromotive force	122	\Enter ([Enter])	125	\EOLord (👤)	150
\electron (e ⁻)	129	enumerate	173	\EOlose (👤)	150
element of	see \in	\Envelope (✉)	141	\EOma (👤)	150
elements	124	envelopes	141, 180	\EOmacaw (👤)	150
\elinters (κ)	117	\enya (η)	19	\EOmacawI (👤)	150
\ell (ℓ)	93	\EOafter (👤)	148	\EOme (👤)	150
\ell (ℓ)	94	\EOandThen (👤)	148	\EOmexNew (👤)	150
\Ellipse (○)	139	\EOAppear (👤)	148	\EOmi (👤)	150
ellipses (dots)	14, 15, 110–112, 115, 218	\EOBeardMask (👤)	148	\EOMiddle (👤)	148
ellipses (ovals)	139, 140, 162–166, 191–192, 197, 207–208	\EOBedeck (👤)	148	\EOmonster (👤)	148
\EllipseShadow (○)	139	\EOBlood (👤)	149	\EOMountain (👤)	148
\EllipseSolid (●)	139	\EObrace (👤)	149	\EOmuu (👤)	148
\elsdot (⋈)	66	\EObuilding (👤)	149	\EOna (👤)	148
\EM (↓)	126	\EOBundle (👤)	149	\EOne (👤)	149
\Email (✉)	126	\EOChop (👤)	149	\EOni (👤)	149
\EmailCT (✉)	126	\EOChronI (👤)	149	\EOnow (👤)	149
emf (package)	122, 231, 232	\EOCloth (👤)	149		
\emf (ℰ)	122	\EODealWith (👤)	149		
\emf (ℰ)	122	\EODeer (👤)	149		
\emf (ℰ)	122	\EOeat (👤)	149		
\emf (ℰ)	122	\EOflint (👤)	149		
\emf (ℰ)	122	\EOflower (👤)	149		

\EOnu ()	149	\EOStarWarrior ()	148	\EOwe ()	150
\EOnuu ()	149	\EOstarWarrior ()	150	\EOwi ()	150
\EOofficerI (	149	\EOstep (	148	\EOwo (	150
\EOofficerII (	149	\EOSu (	148	\EOwuu (	150
\EOofficerIII (	149	\EOSu (	148	\EOx (	150
\EOofficerIV (	149	\EOSun (	148	\EOxi (	150
\EOpa (	149	\EOSuu (	149	\EOxii (	150
\EOpak (	149	\EOSuu (	149	\EOxiii (	150
\EOPatron (	149	\EOT (	126	\EOxiv (	150
\EOPatronII (	149	\EOta (	149	\EOxix (	150
\EOpe (	149	\EOte (	149	\EOxv (	150
\EOpenis (	149	\EOthrone (	149	\EOxvi (	150
\EOpi (	149	\EOti (	149	\EOxvii (	150
\EOPierce (	149	\EOTime (	149	\EOxviii (	150
\EOPlant (	149	\EOtime (	149	\EOxx (	150
\EOPlay (	149	\EOTitle (	149	\EOya (	150
\EOpo (	149	\EOTitleII (	149	\EOyaj (	150
\EOpriest (	149	\EOTitleIV (	149	\EOye (	150
\EOPrince (	149	\EOto (	149	\EOYear (	150
\EOpu (	149	\EOtu (	149	\EOyuu (	150
\EOpuu (	149	\EOtuki (	149	\EOzero (	150
\EOpuuk (	149	\EOtukpa (	149	\EP (€)	125
\EORain (	149	\EOturtle (	149	\eparsl (#)	56
\EOSa (	149	\EOtuu (	149	Epi-Olmec script	148–150
\EOSa (	149	\EOtza (	149	epi olmec (package)	148, 150,
\EOSacrifice (	149	\EOtze (	149	231, 232	
\EOSaw (	149	\EOtztetze (	149	epsdice (package)	172, 231
\EOScorpius (	149	\EOtzi (	149	\epsdice (	172
\EOset (	150	\EOtzu (	149	\epsi (ε)	19
\EOSi (	150	\EOtzuu (	149	\Epsilon (E)	90
\EOSi (	150	\EOundef (	149	\epsilon (ε)	90
\EOSing (	150	\EOv (	150	\epsilonup (ε)	91
\EOSini (	150	\EOvarBeardMask (	149	\eqbump (≈)	51
\EOSkin (	150	\EOvarja (	149	\eqbumped (≈)	50
\EOSky (	150	\EOvarji (	149	\eqbumped (≈)	55
\EOSkyAnimal (	150	\EOvarki (	149	\eqcirc (≡)	50
\EOSkyPillar (	150	\EOvarkuu (	149	\eqcirc (≡)	48
\EOSnake (	150	\EOvarni (	149	\eqcirc (≡)	55
\EOSo (	150	\EOvarpa (	149	\eqcirc (≡)	53
\EOSpan (	150	\EOvarSi (	150	\eqcirc (≡)	51
\EOSprinkle (	150	\EOvarsi (	150	\eqcirc (≡)	56
\EOstar (	150	\EOvartza (	150	\eqcolon (⋮)	49
		\EOvarwuu (	150	\Eqcolon (	57
		\EOvarYear (	150	\eqcolon (⋮)	50
		\EOvi (	150	\eqcolon (⋮)	57
		\EOvii (	150	\eqcolon (⋮)	49
		\EOviii (	150	\eqcolon (⋮)	53
		\EOwa (	150	\eqcolon (⋮)	56
				\eqdef (≡)	56
				\eqdot (≡)	53
				\eqdot (≡)	51
				\eqdot (≡)	56
				\eqeq (==)	57
				\eqeqeq (===)	57
				\eqfrown (⋈)	87
				\eqgtr (⋈)	66
				\eqleftrightharpoon (↔)	80

$\backslash eqless$ ($\lessdot$) 66
 $\backslash Eqqcolon$ ($\equiv$) 49
 $\backslash Eqqcolon$ ($\equiv$) 57
 $\backslash eqqcolon$ ($\equiv$) 57
 $\backslash eqqcolon$ ($\equiv$) 49
 $\backslash eqqcolon$ ($\equiv$) 53
 $\backslash eqqgtr$ ($\gtrsim$) 66
 $\backslash eqqlless$ ($\lessdot$) 66
 $\backslash eqqplus$ ($\mp$) 33
 $\backslash eqqsim$ ($\approx$) 57
 $\backslash eqqslantgtr$ ($\gtrsim$) 66
 $\backslash eqqslantless$ ($\lessdot$) 66
 $\backslash eqsim$ ($\approx$) 49
 $\backslash eqsim$ ($\approx$) 55
 $\backslash eqsim$ ($\approx$) 53
 $\backslash eqsim$ ($\approx$) 51
 $\backslash eqsim$ ($\approx$) 57
 $\backslash eqslantgtr$ ($\gtrsim$) 63
 $\backslash eqslantgtr$ ($\gtrsim$) 62
 $\backslash eqslantgtr$ ($\gtrsim$) 66
 $\backslash eqslantgtr$ ($\gtrsim$) 65
 $\backslash eqslantgtr$ ($\gtrsim$) 64
 $\backslash eqslantgtr$ ($\gtrsim$) 66
 $\backslash eqslantless$ ($\lessdot$) 63
 $\backslash eqslantless$ ($\lessdot$) 62
 $\backslash eqslantless$ ($\lessdot$) 66
 $\backslash eqslantless$ ($\lessdot$) 65
 $\backslash eqslantless$ ($\lessdot$) 64
 $\backslash eqslantless$ ($\lessdot$) 66
 $\backslash eqsmile$ ($\smile$) 87
 $\backslash equal$ ($=$) 53
 $\backslash equal$ ($=$) 51
 $\backslash equal$ ($=$) 174
 $\backslash equalclosed$ ($\equiv$) 51
 $\backslash equalleftarrow$ ($\Leftarrow$) 82
 $\backslash equalparallel$ ($\parallel$) 55
 $\backslash equalparallel$ ($\parallel$) 57
 $\backslash equalrightarrow$ ($\Rightarrow$) 82
 $\backslash equalscolon$ ($=:$) 59
 $\backslash equalscoloncolon$ ($=::$) 59
 $\backslash equalsfill$ 28, 219
 $\backslash equidecomposable$ 215
 $\backslash equilibrium$ *see* $\backslash rightleftharpoons$
 $\backslash Equiv$ ($\equiv$) 57
 $\backslash equiv$ ($\equiv$) 28, 48
 $\backslash equiv$ ($\equiv$) 53
 $\backslash equiv$ ($\equiv$) 51
 $\backslash equiv$ ($\equiv$) 57
 $\backslash Equivalence$ ($\Leftrightarrow$) 113
 $\backslash equivalence$ *see* $\backslash equiv$,
 $\backslash leftrightarrow$, *and*
 $\backslash threesim$
 $\backslash equivclosed$ ($\equiv$) 51
 $\backslash equivDD$ ($\equiv$) 57
 $\backslash equivVert$ ($\equiv$) 57
 $\backslash equivVvert$ ($\equiv$) 57
 $\backslash eqvparsl$ ($\equiv$) 56
 $\backslash er$ ($\textcircled{r}$) 19
 $\backslash Eros$ ($\textcircled{r}$) 124
 $\backslash errbarblackcircle$ ($\bullet$) 137
 $\backslash errbarblackdiamond$ ($\blacklozenge$) 137
 $\backslash errbarblacksquare$ ($\blacksquare$) 137

$\backslash errbarcircle$ ($\circ$) 137
 $\backslash errbardiamond$ ($\diamond$) 137
 $\backslash errbarsquare$ ($\square$) 137
 $\backslash errorsym$ (Ξ) 129
 $\backslash es$ -zet *see* $\backslash ss$
 $\backslash ESC$ (ESC) 126
 $\backslash Esc$ (Esc) 125
 $\backslash escapable$ characters 14
 $\backslash esh$ (J) 19
 $\backslash esh$ (J) 19
 $\backslash esint$ (package) 42, 231
 $\backslash esrelation$ (package) 86, 109, 231
 $\backslash Estatically$ (Δ) 127
 $\backslash estimated$ *see* $\backslash textestimated$
 $\backslash Estonia$ (A) 182
 $\backslash esvect$ (package) 106, 231
 $\backslash Eta$ (H) 90
 $\backslash eta$ (η) 90
 $\backslash etameson$ (η) 129
 $\backslash etamesonprime$ (η') 129
 $\backslash etaup$ (η) 91
 $\backslash ETB$ (t) 126
 $\backslash eth$ (O) 115
 $\backslash eth$ (O) 19
 $\backslash eth$ (O) 117
 $\backslash eth$ (O) 19
 $\backslash ETX$ (v) 126
 $\backslash eufrak$ (package) 119
 $\backslash Euler$ Roman 91
 $\backslash Eulerconst$ (E) 94
 $\backslash EUR$ (E) 25
 $\backslash EURcr$ (E) 25
 $\backslash EURdig$ (E) 25
 $\backslash EURhiv$ (E) 25
 $\backslash Euro$ (E) 26
 $\backslash euro$ 26
 $\backslash euro$ signs 25, 26
 $\backslash euro$ blackboard bold 120
 $\backslash eurologo$ (E) 26
 $\backslash European$ countries 181
 $\backslash eurosym$ (package) 26, 231
 $\backslash EURtm$ (E) 25
 $\backslash euscript$ (package) 119, 231
 $\backslash evaluated$ at *see* $\backslash vert$
 $\backslash evil$ spirits 179
 $\backslash exciton$ ($\sim h^*$) 129
 $\backslash Exclam$ ($!!$) 117
 $\backslash exclusive$ disjunction
 $\backslash \text{see } \backslash nleftarrow$ and $\backslash oplus$
 $\backslash exclusive$ or 214
 $\backslash exists$ ($\exists$) 93
 $\backslash exists$ ($\exists$) 93
 $\backslash exists$ ($\exists$) 94
 $\backslash exists$ ($\exists$) 93
 $\backslash exists$ ($\exists$) 94
 $\backslash exists$ ($\exists$) 94
 $\backslash exp$ (exp) 89
 $\backslash experimentalsym$ (X) 128
 $\backslash Explosionsafe$ (E) 127
 $\backslash extarrows$ (package) 108, 231
 $\backslash extensible$ accents 104–107, 110, 219–220

$\backslash extensible$ arrows 104–109
 $\backslash extensible$ braces 104–107
 $\backslash extensible$ symbols, creating 219–220

$\backslash extensible$ tildes 104, 107
 $\backslash extension$ characters 88, 89
 $\backslash externalsym$ (A) 128
 $\backslash extpfail$ (package) 109, 231
 $\backslash extraipa$ (package) 22, 231
 $\backslash eye$ (O) 151
 $\backslash eye$ (O) 141
 $\backslash EyesDollar$ (A) 25

F

$\backslash F$ (F) 151
 $\backslash f$ (f) (esvect package option) 106
 $\backslash f$ (f) 20
 $\backslash f$ (f) 151
 $\backslash fa$ (A) 186
 $\backslash faAdjust$ (A) 186
 $\backslash faAdn$ (A) 186
 $\backslash faAlignCenter$ (A) 186
 $\backslash faAlignJustify$ (A) 186
 $\backslash faAlignLeft$ (A) 186
 $\backslash faAlignRight$ (A) 186
 $\backslash faAmazon$ (A) 186
 $\backslash faAmbulance$ (A) 186
 $\backslash faAnchor$ (A) 186
 $\backslash faAndroid$ (A) 186
 $\backslash faAngellist$ (A) 186
 $\backslash faAngleDoubleDown$ (A) 186
 $\backslash faAngleDoubleLeft$ (A) 186
 $\backslash faAngleDoubleRight$ (A) 186
 $\backslash faAngleDoubleUp$ (A) 186
 $\backslash faAngleDown$ (A) 186
 $\backslash faAngleLeft$ (A) 186
 $\backslash faAngleRight$ (A) 186
 $\backslash faAngleUp$ (A) 186
 $\backslash faApple$ (A) 186
 $\backslash faArchive$ (A) 186
 $\backslash faAreaChart$ (A) 186
 $\backslash faArrowCircleDown$ (A) 131
 $\backslash faArrowCircleLeft$ (A) 131
 $\backslash faArrowCircleODown$ (A) 131
 $\backslash faArrowCircleOLeft$ (A) 131
 $\backslash faArrowCircleORight$ (A) 131
 $\backslash faArrowCircleOUp$ (A) 131
 $\backslash faArrowCircleRight$ (A) 131
 $\backslash faArrowCircleUp$ (A) 131
 $\backslash faArrowDown$ (A) 131
 $\backslash faArrowLeft$ (A) 131
 $\backslash faArrowRight$ (A) 131
 $\backslash faArrows$ (A) 131
 $\backslash faArrowsAlt$ (A) 131
 $\backslash faArrowsH$ (A) 131
 $\backslash faArrowsV$ (A) 131
 $\backslash faArrowUp$ (A) 131
 $\backslash faAsterisk$ (A) 186
 $\backslash faAt$ (A) 186
 $\backslash faAutomobile$ (A) 189
 $\backslash faBackward$ (A) 186
 $\backslash faBalanceScale$ (A) 186
 $\backslash faBan$ (A) 186

<code>\faBank</code> (🏦)	189	<code>\faCaretSquareORight</code> (◻)	187	<code>\faConnectdevelop</code> (🔗)	188
<code>\faBarChart</code> (📊)	186	<code>\faCaretSquareOUp</code> (◻)	187	<code>\faContao</code> (🔌)	188
<code>\faBarChart0</code> (📊)	189	<code>\faCaretUp</code> (▲)	187	<code>\faContent</code> (📄)	113
<code>\faBarcode</code> (📊)	186	<code>\faCartArrowDown</code> (🛒)	187	<code>\faCopy</code> (📋)	189
<code>\faBars</code> (≡)	186	<code>\faCartPlus</code> (🛒)	187	<code>\faCopyright</code> (©)	26
<code>\faBattery0</code> (🔋)	189	<code>\faCc</code> (🏠)	187	<code>\faCreativeCommons</code> (CC)	26
<code>\faBattery1</code> (🔋)	189	<code>\faCcAmex</code> (🏠)	187	<code>\faCreditCard</code> (💳)	188
<code>\faBattery2</code> (🔋)	189	<code>\faCcDinersClub</code> (🏠)	187	<code>\faCrop</code> (🔪)	188
<code>\faBattery3</code> (🔋)	189	<code>\faCcDiscover</code> (🏠)	187	<code>\faCrosshairs</code> (🎯)	188
<code>\faBattery4</code> (🔋)	189	<code>\faCcJcb</code> (🏠)	187	<code>\faCss3</code> (🎨)	188
<code>\faBatteryEmpty</code> (🔋)	186	<code>\faCcMastercard</code> (🏠)	188	<code>\faCube</code> (🎲)	188
<code>\faBatteryFull</code> (🔋)	186	<code>\faCcPaypal</code> (🏠)	188	<code>\faCubes</code> (🎲)	188
<code>\faBatteryHalf</code> (🔋)	186	<code>\faCcStripe</code> (🏠)	188	<code>\faCut</code> (✂)	189
<code>\faBatteryQuarter</code> (🔋)	186	<code>\faCcVisa</code> (🏠)	188	<code>\faCutlery</code> (🔪)	188
<code>\faBatteryThreeQuarters</code> (🔋)	186	<code>\faCertificate</code> (📜)	188	<code>\faDashboard</code> (📊)	189
<code>\faBed</code> (🛏)	187	faces	117, 126, 142, 169, 170, 177, 179, 183– 189, 193–195	<code>\faDashcube</code> (📊)	188
<code>\faBeer</code> (🍺)	187	<code>\faChain</code> (🔗)	189	<code>\faDatabase</code> (📊)	188
<code>\faBehance</code> (Bé)	187	<code>\faChainBroken</code> (🔗)	188	<code>\faDedent</code> (≡)	189
<code>\faBehanceSquare</code> (Bé)	187	<code>\faCheck</code> (✓)	134	<code>\faDelicious</code> (🍷)	188
<code>\faBell</code> (🔔)	187	<code>\faCheckCircle</code> (✓)	134	<code>\faDesktop</code> (🖥)	188
<code>\faBell0</code> (🔔)	187	<code>\faCheckCircle0</code> (✓)	134	<code>\faDeviantart</code> (🔗)	188
<code>\faBellSlash</code> (🔔)	187	<code>\faCheckSquare</code> (✓)	134	<code>\faDiamond</code> (💎)	188
<code>\faBellSlash0</code> (🔔)	187	<code>\faCheckSquare0</code> (✓)	134	<code>\faDigg</code> (🔗)	188
<code>\faBicycle</code> (🚲)	187	<code>\faChevronCircleDown</code> (▼)	131	<code>\faDollar</code> (\$)	25
<code>\faBinoculars</code> (🔭)	187	<code>\faChevronCircleLeft</code> (◀)	131	<code>\faDotCircle0</code> (◉)	140
<code>\faBirthdayCake</code> (🍰)	187	<code>\faChevronCircleRight</code> (▶)	131	<code>\faDownload</code> (⬇)	188
<code>\faBitbucket</code> (🔑)	187	<code>\faChevronCircleUp</code> (▲)	131	<code>\faDribbble</code> (🔗)	188
<code>\faBitbucketSquare</code> (🔑)	187	<code>\faChevronDown</code> (▼)	131	<code>\faDropbox</code> (🔗)	188
<code>\faBitcoin</code> (₿)	25	<code>\faChevronLeft</code> (◀)	131	<code>\faDrupal</code> (🔗)	188
<code>\faBlackTie</code> (👔)	187	<code>\faChevronRight</code> (▶)	131	<code>\faEdit</code> (✎)	189
<code>\faBold</code> (B)	187	<code>\faChevronUp</code> (▲)	131	<code>\faEject</code> (⏏)	188
<code>\faBolt</code> (⚡)	187	<code>\faChild</code> (👶)	188	<code>\faEllipsisH</code> (⋯)	188
<code>\faBomb</code> (💣)	187	<code>\faChrome</code> (🦊)	188	<code>\faEllipsisV</code> (⋮)	188
<code>\faBook</code> (📖)	187	<code>\faCircle</code> (●)	140	<code>\faEmpire</code> (👑)	188
<code>\faBookmark</code> (🔖)	187	<code>\faCircle0</code> (○)	140	<code>\faEnvelope</code> (✉)	189
<code>\faBookmark0</code> (🔖)	187	<code>\faCircleONotch</code> (◌)	140	<code>\faEnvelope0</code> (✉)	189
<code>\faBriefcase</code> (💼)	187	<code>\faCircleThin</code> (○)	140	<code>\faEnvelopeSquare</code> (✉)	189
<code>\faBtc</code> (₿)	25	<code>\faClipboard</code> (📋)	188	<code>\faEraser</code> (🧽)	189
<code>\faBtc</code> (₿)	25	<code>\faClock0</code> (🕒)	188	<code>\faEur</code> (€)	25
<code>\faBug</code> (🐛)	187	<code>\faClone</code> (📋)	188	<code>\faEur</code> (€)	25
<code>\faBuilding</code> (🏢)	187	<code>\faClose</code> (✕)	134	<code>\faEuro</code> (€)	25
<code>\faBuilding0</code> (🏢)	187	<code>\faCloud</code> (☁)	188	<code>\faExchange</code> (⇄)	189
<code>\faBullhorn</code> (📢)	187	<code>\faCloudDownload</code> (☁)	188	<code>\faExclamation</code> (!)	189
<code>\faBullseye</code> (🎯)	187	<code>\faCloudUpload</code> (☁)	188	<code>\faExclamationCircle</code> (⚠)	189
<code>\faBus</code> (🚌)	187	<code>\faCny</code> (¥)	25	<code>\faExclamationTriangle</code> (⚠)	189
<code>\faBuysellads</code> (A)	187	<code>\faCode</code> (</>)	188	<code>\faExpand</code> (🔍)	189
<code>\faCab</code> (🚕)	189	<code>\faCodeFork</code> (🔗)	188	<code>\faExpeditedssl</code> (🔒)	189
<code>\faCalculator</code> (🧮)	187	<code>\faCodepen</code> (🔗)	188	<code>\faExternalLink</code> (🔗)	189
<code>\faCalendar</code> (📅)	187	<code>\faCoffee</code> (☕)	188	<code>\faExternalLinkSquare</code> (🔗)	189
<code>\faCalendarCheck0</code> (📅)	187	<code>\faCog</code> (⚙)	188	<code>\faEye</code> (👁)	189
<code>\faCalendarMinus0</code> (📅)	187	<code>\faCogs</code> (⚙)	188	<code>\faEyedropper</code> (🎨)	189
<code>\faCalendar0</code> (📅)	187	<code>\faColumns</code> (📊)	188	<code>\faEyeSlash</code> (👁)	189
<code>\faCalendarPlus0</code> (📅)	187	<code>\faComment</code> (💬)	188	<code>\faFacebook</code> (f)	189
<code>\faCalendarTimes0</code> (📅)	187	<code>\faCommenting</code> (💬)	188	<code>\faFacebookF</code> (f)	189
<code>\faCamera</code> (📷)	187	<code>\faCommenting0</code> (💬)	188	<code>\faFacebookOfficial</code> (f)	189
<code>\faCameraRetro</code> (📷)	187	<code>\faComment0</code> (💬)	188	<code>\faFacebookSquare</code> (f)	189
<code>\faCar</code> (🚗)	187	<code>\faComments</code> (💬)	188	<code>\faFastBackward</code> (⏮)	189
<code>\faCaretDown</code> (▼)	187	<code>\faComments0</code> (💬)	188	<code>\faFastForward</code> (⏭)	189
<code>\faCaretLeft</code> (◀)	187	<code>\faCompass</code> (🧭)	188	<code>\faFax</code> (📠)	189
<code>\faCaretRight</code> (▶)	187	<code>\faCompress</code> (🔍)	188	<code>\faFeed</code> (📡)	189
<code>\faCaretSquareODown</code> (◻)	187				
<code>\faCaretSquareOLeft</code> (◻)	187				

\faFemale (♀)	186	\faGlobe (🌐)	187	\faKey (🔑)	187
\faFighterJet (✈)	186	\faGoogle (G)	187	\faKeyboard0 (🌨)	187
\faFile (📄)	186	\faGooglePlus (G+)	187	\faKrw (₩)	25
\faFileArchive0 (📦)	186	\faGooglePlusSquare (G+)	187	\faKrw (₩)	25
\faFileAudio0 (🔊)	186	\faGoogleWallet (👛)	187	\faLanguage (🗺)	188
\faFileCode0 (📄)	186	\faGraduationCap (🎓)	187	\faLaptop (💻)	188
\faFileExcel0 (📊)	186	\faGratipay (💵)	187	\faLastfm (OS)	188
\faFileImage0 (🖼)	186	\faGroup (👥)	189	\faLastfmSquare (OS)	188
\faFileMovie0 (🎬)	189	\faHackerNews (📰)	187	\faLeaf (🍃)	188
\faFile0 (📄)	186	\faHandGrab0 (👉)	133	\faLeanpub (📖)	188
\faFilePdf0 (📄)	186	\faHandLizard0 (🦎)	133	\faLegal (⚖)	189
\faFilePhoto0 (📷)	189	\faHand0Down (👇)	133	\faLemon0 (🍋)	188
\faFilePicture0 (🖼)	189	\faHand0Left (👈)	133	\faLevelDown (⬇)	188
\faFilePowerpoint0 (📄)	186	\faHand0Right (👉)	133	\faLevelUp (⬆)	188
\faFiles0 (📁)	186	\faHand0Up (👆)	133	\faLifeBouy (🛟)	189
\faFileSound0 (🔊)	189	\faHandPaper0 (👏)	133	\faLifeRing (🛟)	188
\faFileText (📄)	186	\faHandPaper0 (👏)	133	\faLifeSaver (🛟)	189
\faFileText0 (📄)	186	\faHandPeace0 (🕊)	133	\faLightbulb0 (💡)	188
\faFileVideo0 (📹)	186	\faHandPointer0 (👉)	133	\faLineChart (📈)	188
\faFileWord0 (📄)	186	\faHandRock0 (👊)	133	\faLink (🔗)	188
\faFileZip0 (📦)	189	\faHandRock0 (👊)	133	\faLinkedin (in)	188
\faFilm (🎬)	186	\faHandScissors0 (✂)	133	\faLinkedinSquare (in)	188
\faFilter (🔍)	186	\faHandSpock0 (🖖)	133	\faLinux (🐧)	188
\faFire (🔥)	186	\faHandStop0 (🛑)	133	\faList (☰)	188
\faFireExtinguisher (🧯)	186	\faHdd0 (💿)	187	\faListAlt (☰)	188
\faFirefox (🦊)	186	\faHeader (H)	187	\faList01 (☰)	188
\faFlag (🚩)	186	\faHeadphones (🎧)	187	\faListUl (☰)	188
\faFlagCheckerered (🚩)	186	\faHeart (♥)	187	\fallingdotseq (≈)	50
\faFlag0 (🚩)	186	\faHeartbeat (💓)	187	\fallingdotseq (≈)	48
\faFlash (⚡)	189	\faHeart0 (♡)	187	\fallingdotseq (≈)	55
\faFlask (🧪)	186	\faHistory (📖)	187	\fallingdotseq (≈)	53
\faFlickr (📷)	186	\faHome (🏠)	187	\fallingdotseq (≈)	51
\faFloppy0 (💾)	186	\faHospital0 (🏥)	187	\fallingdotseq (≈)	56
\faFolder (📁)	186	\faHotel (🏨)	189	\FallingEdge (⌋)	121
\faFolder0 (📁)	186	\faHourglass (⌚)	187	\faLocationArrow (📍)	188
\faFolderOpen (📂)	186	\faHourglassEnd (⌚)	187	\faLock (🔒)	188
\faFolderOpen0 (📂)	186	\faHourglassHalf (⌚)	187	\faLongArrowDown (⬇)	131
\faFont (A)	186	\faHourglass0 (⌚)	187	\faLongArrowLeft (⬅)	131
\faFonticons (fi)	186	\faHourglassStart (⌚)	187	\faLongArrowRight (➡)	131
\faForumbee (🐝)	186	\faHouzz (🏡)	187	\faLongArrowUp (⬆)	131
\faForward (➡)	186	\faHSquare (🏠)	187	falsum	see \bot
\faFoursquare (📍)	186	\faHtml5 (🔌)	187	\faMagic (🪄)	188
\faFrown0 (☹)	187	\faICursor (I)	187	\faMagnet (🧲)	188
\faFutbol0 (⚽)	187	\faIls (ℳ)	25	\faMailForward (➡)	189
\faGamepad (🎮)	187	\faIls (ℳ)	25	\faMailReply (↩)	189
\faGavel (⚖)	187	\faImage (🖼)	189	\faMailReplyAll (↩)	189
\faGbp (£)	25	\faInbox (📧)	187	\faMale (♂)	188
\faGe (🌐)	189	\faIndent (☰)	187	\faMap (🗺)	188
\faGear (⚙)	189	\faIndustry (🏭)	187	\faMapMarker (📍)	188
\faGears (⚙)	189	\faInfo (i)	187	\faMap0 (🗺)	188
\faGenderless (♿)	127	\faInfoCircle (i)	187	\faMapPin (📍)	188
\faGetPocket (🔖)	187	\faInr (₹)	25	\faMapSigns (🗺)	188
\faGg (🎮)	187	\faInr (₹)	25	\faMars (♂)	123, 127
\faGgCircle (🎮)	187	\faInstagram (📷)	187	\faMarsDouble (♂)	127
\faGift (📺)	187	\faInstitution (🏛)	189	\faMarsStroke (♂)	127
\faGit (git)	187	\faInternetExplorer (🌐)	187	\faMarsStrokeH (♂)	127
\faGithub (🐙)	187	\faIntersex (♿)	127	\faMarsStrokeV (♂)	127
\faGithubAlt (🐙)	187	\faIoxhost (🌐)	187	\faMaxcdn (m)	188
\faGithubSquare (📺)	187	\faItalic (I)	187	\faMeanpath (m)	188
\faGitSquare (📺)	187	\faJoomla (X)	187	\faMedium (M)	188
\faGittip (👉)	189	\faJpy (¥)	25	\faMedkit (🩹)	188
\faGlass (Y)	187	\faJpy (¥)	25	\faMeh0 (😞)	188
		\faJsfiddle (🔗)	187	\faMercury (♂)	123

<code>\faMicrophone</code> ()	188	<code>\faPlayCircle</code> ()	186	<code>\faShekel</code> ()	25
<code>\faMicrophonesSlash</code> ()	188	<code>\faPlayCircle0</code> ()	186	<code>\faSheqel</code> ()	25
<code>\faMinus</code> ()	188	<code>\faPlug</code> ()	186	<code>\faShield</code> ()	187
<code>\faMinusCircle</code> ()	188	<code>\faPlus</code> ()	186	<code>\faShip</code> ()	187
<code>\faMinusSquare</code> ()	188	<code>\faPlusCircle</code> ()	186	<code>\faShirtsinbulk</code> ()	187
<code>\faMinusSquare0</code> ()	188	<code>\faPlusSquare</code> ()	186	<code>\faShoppingCart</code> ()	187
<code>\faMobile</code> ()	188	<code>\faPlusSquare0</code> ()	186	<code>\faSignal</code> ()	187
<code>\faMobilePhone</code> ()	189	<code>\faPowerOff</code> ()	186	<code>\faSignIn</code> ()	187
<code>\faMoney</code> ()	188	<code>\faPrint</code> ()	186	<code>\faSignOut</code> ()	187
<code>\faMoon0</code> ()	123	<code>\faPuzzlePiece</code> ()	186	<code>\faSimplybuilt</code> ()	187
<code>\faMortarBoard</code> ()	189	<code>\faQq</code> ()	186	<code>\faSitemap</code> ()	187
<code>\faMotorcycle</code> ()	188	<code>\faQrcode</code> ()	186	<code>\faSkyatlas</code> ()	187
<code>\faMousePointer</code> ()	188	<code>\Faquant</code> ()	113	<code>\faSkype</code> ()	187
<code>\faMusic</code> ()	188	<code>\Faquantn</code> ()	113	<code>\faSlack</code> ()	187
<code>\faNavicon</code> ()	189	<code>\Faquantnn</code> ()	113	<code>\faSliders</code> ()	187
<code>\Fancontent</code> ()	113	<code>\faQuestion</code> ()	186	<code>\faSlideshare</code> ()	187
<code>fancy borders</code>	196–202	<code>\faQuestionCircle</code> ()	186	<code>\faSmile0</code> ()	187
<code>\faNeuter</code> ()	127	<code>\faQuoteLeft</code> ()	186	<code>\faSoccerBall0</code> ()	189
<code>\faNewspaper0</code> ()	188	<code>\faQuoteRight</code> ()	186	<code>\faSort</code> ()	187
<code>\Fanncontent</code> ()	113	<code>\faRa</code> ()	189	<code>\faSortAlphaAsc</code> ()	187
<code>\Fannquant</code> ()	113	<code>\faRandom</code> ()	186	<code>\faSortAlphaDesc</code> ()	187
<code>\Fannquantn</code> ()	113	<code>\faRebel</code> ()	186	<code>\faSortAmountAsc</code> ()	187
<code>\Fannquantnn</code> ()	113	<code>\faRecycle</code> ()	186	<code>\faSortAmountDesc</code> ()	187
<code>\Fanoven</code> ()	183	<code>\faReddit</code> ()	186	<code>\faSortAsc</code> ()	187
<code>\Fanquant</code> ()	113	<code>\faRedditSquare</code> ()	186	<code>\faSortDesc</code> ()	187
<code>\Fanquantn</code> ()	113	<code>\faRefresh</code> ()	186	<code>\faSortDown</code> ()	189
<code>\Fanquantnn</code> ()	113	<code>\faRegistered</code> ()	26	<code>\faSortNumericAsc</code> ()	187
<code>\faObjectGroup</code> ()	188	<code>\faRemove</code> ()	134	<code>\faSortNumericDesc</code> ()	187
<code>\faObjectUngroup</code> ()	188	<code>\faRenren</code> ()	186	<code>\faSortUp</code> ()	189
<code>\fa0dnoklassniki</code> ()	188	<code>\faReorder</code> ()	189	<code>\faSoundcloud</code> ()	187
<code>\fa0dnoklassnikiSquare</code> ()	188	<code>\faRepeat</code> ()	131	<code>\faSpaceShuttle</code> ()	187
<code>\faOpencart</code> ()	188	<code>\faRepeat</code> ()	131	<code>\faSpinner</code> ()	187
<code>\faOpenid</code> ()	188	<code>\faReply</code> ()	186	<code>\faSpoon</code> ()	187
<code>\faOpera</code> ()	189	<code>\faReplyAll</code> ()	186	<code>\faSpotify</code> ()	187
<code>\faOptinMonster</code> ()	189	<code>\faRetweet</code> ()	186	<code>\faSquare</code> ()	140
<code>\faOutdent</code> ()	189	<code>\faRmb</code> ()	25	<code>\faSquare0</code> ()	140
<code>\faPagelines</code> ()	189	<code>\faRoad</code> ()	186	<code>\faStackExchange</code> ()	187
<code>\faPaintBrush</code> ()	189	<code>\faRocket</code> ()	186	<code>\faStackOverflow</code> ()	187
<code>\faPaperclip</code> ()	189	<code>\faRotateLeft</code> ()	131	<code>\faStar</code> ()	136
<code>\faPaperPlane</code> ()	189	<code>\faRotateRight</code> ()	131	<code>\faStarHalf</code> ()	136
<code>\faPaperPlane0</code> ()	189	<code>\faRouble</code> ()	25	<code>\faStarHalfEmpty</code> ()	136
<code>\faParagraph</code> ()	189	<code>\faRss</code> ()	186	<code>\faStarHalfFull</code> ()	136
<code>\faPaste</code> ()	189	<code>\faRssSquare</code> ()	186	<code>\faStarHalf0</code> ()	136
<code>\faPause</code> ()	189	<code>\faRub</code> ()	25	<code>\faStarHalf0</code> ()	136
<code>\faPaw</code> ()	189	<code>\faRub</code> ()	25	<code>\faStar0</code> ()	136
<code>\faPaypal</code> ()	189	<code>\faRuble</code> ()	25	<code>\faSteam</code> ()	187
<code>\faPencil</code> ()	132	<code>\faRupee</code> ()	25	<code>\faSteamSquare</code> ()	187
<code>\faPencilSquare</code> ()	132	<code>\faSafari</code> ()	186	<code>\faStepBackward</code> ()	187
<code>\faPencilSquare0</code> ()	132	<code>\faSave</code> ()	189	<code>\faStepForward</code> ()	187
<code>\faPhone</code> ()	189	<code>\faScissors</code> ()	186	<code>\faStethoscope</code> ()	187
<code>\faPhoneSquare</code> ()	189	<code>\faSearch</code> ()	186	<code>\faStickyNote</code> ()	187
<code>\faPhoto</code> ()	189	<code>\faSearchMinus</code> ()	186	<code>\faStickyNote0</code> ()	187
<code>\faPicture0</code> ()	189	<code>\faSearchPlus</code> ()	187	<code>\faStop</code> ()	187
<code>\faPieChart</code> ()	189	<code>\faSellsy</code> ()	187	<code>\faStreetView</code> ()	187
<code>\faPiedPiper</code> ()	189	<code>\faSend</code> ()	189	<code>\faStrikethrough</code> ()	187
<code>\faPiedPiperAlt</code> ()	189	<code>\faSend0</code> ()	189	<code>\faStumbleupon</code> ()	187
<code>\faPinterest</code> ()	189	<code>\faServer</code> ()	187	<code>\faStumbleuponCircle</code> ()	187
<code>\faPinterestP</code> ()	189	<code>\faShare</code> ()	187	<code>\faSubscript</code> ()	187
<code>\faPinterestSquare</code> ()	189	<code>\faShareAlt</code> ()	187	<code>\faSubway</code> ()	187
<code>\faPlane</code> ()	186	<code>\faShareAltSquare</code> ()	187	<code>\faSuitcase</code> ()	188
<code>\faPlay</code> ()	186	<code>\faShareSquare</code> ()	187	<code>\faSun0</code> ()	123
		<code>\faShareSquare0</code> ()	187	<code>\faSuperscript</code> ()	188
				<code>\faSupport</code> ()	189

<code>\faTable</code> (📄)	188	<code>\faUndo</code> (↶)	131	<code>\fdiagovrdiag</code> (X)	117
<code>\faTablet</code> (📱)	188	<code>\faUniversity</code> (🎓)	188	<code>fdsymbol</code> (package)	31, 32, 35, 43, 44, 53, 54, 61, 65, 69, 76–80, 87, 88, 92, 94, 98, 99, 103, 105, 111, 114, 116, 137, 140, 152, 231
<code>\faTachometer</code> (📊)	188	<code>\faUnlink</code> (🔗)	189	<code>feet</code>	<i>see</i> <code>\prime</code> and <code>\textquotesingle</code>
<code>\faTag</code> (🏷)	188	<code>\faUnlock</code> (🔓)	188	<code>\FEMALE</code> (♀)	127
<code>\faTags</code> (🏷)	188	<code>\faUnlockAlt</code> (🔓)	188	<code>\Female</code> (♀)	127
<code>\faTasks</code> (📅)	188	<code>\faUnsorted</code> (🔼)	189	<code>female</code>	18, 122–124, 127, 185–189, 193–195
<code>\faTaxi</code> (🚕)	188	<code>\faUpload</code> (📶)	188	<code>\female</code> (♀)	127
<code>\fatbslash</code> (\\)	29	<code>\faUsd</code> (\$) (USD)	25	<code>\female</code> (♀)	127
<code>\fatbslash</code> (\\)	55	<code>\faUsd</code> (\$) (USD)	25	<code>\FemaleFemale</code> (♀)	127
<code>\faTelevision</code> (📺)	188	<code>\faUser</code> (👤)	188	<code>\FemaleMale</code> (♀)	127
<code>\faTencentWeibo</code> (👤)	188	<code>\faUserMd</code> (👤)	188	<code>\Ferli</code> (📺)	154
<code>\faTerminal</code> (🖥)	188	<code>\faUserMd</code> (👤)	188	<code>\fermata</code>	159
<code>\faTextHeight</code> (Tl)	188	<code>\faUserPlus</code> (👤)	188	<code>\fermata</code> (∞)	157
<code>\faTextWidth</code> (Tl)	188	<code>\faUsers</code> (👤)	188	<code>\fermatadown</code> (∞)	153
<code>\faTh</code> (📄)	188	<code>\faUserSecret</code> (👤)	188	<code>\fermataup</code> (∞)	153
<code>\faThLarge</code> (📄)	188	<code>\faUserTimes</code> (👤)	188	<code>\Fermi</code> (📺)	154
<code>\faThList</code> (📄)	188	<code>\faVenus</code> (♀)	123, 127	<code>\fermiDistrib</code> (F)	128
<code>\faThumbsDown</code> (👎)	133	<code>\faVenusDouble</code> (♀)	127	<code>\fermion</code> (F)	128
<code>\faThumbsODown</code> (👎)	133	<code>\faVenusMars</code> (♂)	127	<code>fermions</code>	128–129
<code>\faThumbsUp</code> (👍)	133	<code>\faViacoin</code> (¥)	25	<code>feyn</code> (package)	128, 231
<code>\faThumbTack</code> (📌)	188	<code>\faVideoCamera</code> (📹)	188	<code>Feynman</code> slashed character notation	216
<code>\faTicket</code> (🎫)	188	<code>\faVimeo</code> (V)	188	<code>Feynman-diagram</code> symbols	128
<code>\faTimes</code> (✕)	134	<code>\faVimeoSquare</code> (V)	188	<code>\feyn{a}</code> (a)	128
<code>\faTimes</code> (✕)	134	<code>\faVine</code> (V)	188	<code>\feyn{c}</code> (c)	128
<code>\faTimesCircle</code> (⊗)	134	<code>\faVk</code> (VK)	188	<code>\feyn{fd}</code> (f)	128
<code>\faTimesCircle0</code> (⊗)	134	<code>\faVolumeDown</code> (🔊)	189	<code>\feyn{flS}</code> (f)	128
<code>\faTint</code> (💧)	188	<code>\faVolumeOff</code> (🔊)	189	<code>\feyn{fl}</code> (f)	128
<code>\faToggleDown</code> (📶)	189	<code>\faVolumeUp</code> (🔊)	189	<code>\feyn{fs}</code> (f)	128
<code>\faToggleLeft</code> (📶)	189	<code>\faWarning</code> (⚠)	189	<code>\feyn{fu}</code> (f)	128
<code>\faToggleOff</code> (📶)	188	<code>\faWechat</code> (WeChat)	189	<code>\feyn{fv}</code> (f)	128
<code>\faToggleOn</code> (📶)	188	<code>\faWeibo</code> (Weibo)	189	<code>\feyn{f}</code> (f)	128
<code>\faToggleRight</code> (📶)	189	<code>\faWeixin</code> (Weixin)	189	<code>\feyn{gl}</code> (f)	128
<code>\faToggleUp</code> (📶)	189	<code>\faWhatsapp</code> (WhatsApp)	189	<code>\feyn{glB}</code> (f)	128
<code>\faTrademark</code> (TM)	26	<code>\faWheelchair</code> (♿)	189	<code>\feyn{glS}</code> (f)	128
<code>\faTrain</code> (🚆)	188	<code>\faWifi</code> (📶)	189	<code>\feyn{glu}</code> (f)	128
<code>\faTransgender</code> (♿)	127	<code>\faWikipediaW</code> (W)	189	<code>\feyn{gl}</code> (f)	128
<code>\faTransgender</code> (♿)	127	<code>\faWindows</code> (Windows)	189	<code>\feyn{gu}</code> (f)	128
<code>\faTransgenderAlt</code> (♿)	127	<code>\faWon</code> (₩)	25	<code>\feyn{gvs}</code> (f)	128
<code>\faTrash</code> (🗑)	188	<code>\faWordpress</code> (WordPress)	189	<code>\feyn{gv}</code> (f)	128
<code>\faTrash0</code> (🗑)	188	<code>\faWrench</code> (🔧)	189	<code>\feyn{g}</code> (f)	128
<code>\faTree</code> (🌲)	188	<code>\FAX</code> (FAX)	126	<code>\feyn{g}</code> (f)	128
<code>\faTrello</code> (Trello)	188	<code>\fax</code> (fax)	126	<code>\feyn{hd}</code> (f)	128
<code>\faTripadvisor</code> (TripAdvisor)	188	<code>\faXing</code> (Xing)	189	<code>\feyn{hs}</code> (f)	128
<code>\faTrophy</code> (🏆)	188	<code>\faXingSquare</code> (Xing)	189	<code>\feyn{hu}</code> (f)	128
<code>\faTruck</code> (🚚)	188	<code>\Faxmachine</code> (Fax)	126	<code>\feyn{h}</code> (f)	128
<code>\faTry</code> (📄)	25	<code>\faYahoo</code> (Y)	189	<code>\feyn{ms}</code> (f)	128
<code>\faTry</code> (📄)	25	<code>\faYc</code> (Y)	189	<code>\feyn{m}</code> (f)	128
<code>\fatsemi</code> (⸮)	29	<code>\faYCombinator</code> (Y)	189	<code>\feyn{P}</code> (P)	128
<code>\fatsemi</code> (⸮)	32	<code>\faYCombinatorSquare</code> (Y)	189	<code>\feyn{p}</code> (p)	128
<code>\fatslash</code> (/)	29	<code>\faYcSquare</code> (Y)	189	<code>\feyn{x}</code> (x)	128
<code>\fatslash</code> (/)	55	<code>\faYelp</code> (Y)	189	<code>\FF</code> (F)	126
<code>\faTty</code> (TTY)	188	<code>\faYen</code> (¥)	25	<code>fge</code> (package)	85, 94, 103, 113, 118, 231
<code>\faTumblr</code> (t)	188	<code>\faYoutube</code> (YouTube)	189	<code>\fgeA</code> (V)	94
<code>\faTumblrSquare</code> (t)	188	<code>\faYoutubePlay</code> (YouTube)	189		
<code>\faTurkishLira</code> (₺)	25	<code>\faYoutubeSquare</code> (YouTube)	189		
<code>\faTv</code> (TV)	189	<code>\fbowtie</code> (🎻)	56		
<code>\faTwitch</code> (Twitch)	188	<code>fc</code> (package)	16, 20		
<code>\faTwitter</code> (Twitter)	188	<code>\fcdice</code> (🎲)	172		
<code>\faTwitterSquare</code> (Twitter)	188	<code>fclfont</code> (package)	231		
<code>\faUmbrella</code> (☂)	188	<code>\fcmp</code> (⸮)	33		
<code>\faUnderline</code> (U)	188	<code>\Fcontent</code> (—)	113		
<code>\faUndo</code> (↶)	131	<code>\fcscore</code> (I III III III)	173		
		<code>.fd</code> files	12, 223, 229		
		<code>\fdiagovnearrow</code> (↗)	82		

<code>\fgebackslash (\)</code>	118	<code>\FilledDiamondShadowC (◆)</code>	139	<code>\Finland (🇫🇮)</code>	182
<code>\fgebaracute (⌣)</code>	118	<code>\FilledDiamondShape (◆)</code>	139	<code>\finpartvoice (🗣)</code>	22
<code>\fgebarcap (⋈)</code>	118	<code>\FilledHut (🏠)</code>	171	<code>\finpartvoiceless (🗣)</code>	22
<code>\fgec (̂)</code>	94	<code>\filledlargestar (★)</code>	136	<code>\fint (f)</code>	41
<code>\fgecap (⌢)</code>	118	<code>\filledlozenge (◈)</code>	136	<code>\fint (f)</code>	42
<code>\fgecapbar (⌢)</code>	118	<code>\filledmedlozenge (◈)</code>	136	<code>\fint (f)</code>	44
<code>\fgecup (⌣)</code>	118	<code>\filledmedsquare (■)</code>	35	<code>\fint (f)</code>	45
<code>\fgecupacute (⌣)</code>	118	<code>\filledmedtriangledown (▼)</code>	35, 68	<code>\fintsl (f)</code>	46
<code>\fgecupbar (⌣)</code>	118	<code>\filledmedtriangleleft (◀)</code>	35, 68	<code>\fintup (f)</code>	46
<code>\fged (p)</code>	94	<code>\filledmedtriangleright (▶)</code>	35, 68	<code>\Finv (⌋)</code>	93
<code>\fgee (̂)</code>	94	<code>\filledmedtriangleup (▲)</code>	35, 68	<code>\Finv (⌋)</code>	93
<code>\fgeeszett (g)</code>	94	<code>\FilledRainCloud (☁)</code>	171	<code>\Finv (⌋)</code>	94
<code>\fgeeta (q)</code>	94	<code>\FilledSectioningDiamond (⬢)</code>	171	<code>\Finv (⌋)</code>	94
<code>\fgeF (J)</code>	94	<code>\FilledSmallCircle (●)</code>	139	<code>\Finv (⌋)</code>	94
<code>\fgef (y)</code>	94	<code>\FilledSmallCircle (●)</code>	139	<code>\Fire (🔥)</code>	171, 185
<code>\fgeinfty (∞)</code>	118	<code>\FilledSmallDiamondShape (◆)</code>	139	<code>\Fire (Δ)</code>	124
<code>\fgelangle (⌢)</code>	118	<code>\FilledSmallSquare (■)</code>	139	fish	197
<code>\fgelb</code>	94	<code>\FilledSmallTriangleDown (▼)</code>	139	fish hook	<i>see</i> \strictif
<code>\fgelb (q)</code>	94	<code>\FilledSmallTriangleLeft (◀)</code>	139	<code>\fisheye (👁)</code>	137
<code>\fgeleftB (⌢)</code>	94	<code>\FilledSmallTriangleRight (▶)</code>	139	fists	132, 133, 191
<code>\fgeleftC (⌣)</code>	94	<code>\FilledSmallTriangleUp (▲)</code>	139	<code>\fivedots (⋯)</code>	30, 111
<code>\fgeN (q)</code>	94	<code>\FilledSnowCloud (☁)</code>	171	<code>\FiveFlowerOpen (🌸)</code>	135
<code>\fgeoverU (q)</code>	94	<code>\FilledSquare (■)</code>	139	<code>\FiveFlowerPetal (🌸)</code>	135
<code>\fgerightarrow (⇒)</code>	85	<code>\filledsquare (■)</code>	35	<code>\FiveStar (★)</code>	135
<code>\fgerightB (⌢)</code>	94	<code>\FilledSquareShadowA (■)</code>	139	<code>\FiveStarCenterOpen (☆)</code>	135
<code>\fges (f)</code>	94	<code>\FilledSquareShadowC (■)</code>	139	<code>\FiveStarConvex (★)</code>	135
<code>\fgestruckone (1)</code>	113	<code>\filledsquarewithdots (■)</code>	141	<code>\FiveStarLines (☆)</code>	135
<code>\fgestruckzero (0)</code>	113	<code>\filledstar (★)</code>	35	<code>\FiveStarOpen (☆)</code>	135
<code>\fgeU (J)</code>	94	<code>\FilledSunCloud (☁)</code>	171	<code>\FiveStarOpenCircled (☆)</code>	135
<code>\fgeuparrow (↑)</code>	85	<code>\FilledTriangleDown (▼)</code>	139	<code>\FiveStarOpenDotted (☆)</code>	135
<code>\fgeupbracket (⌢)</code>	118	<code>\filledtriangledown (▼)</code>	35, 68	<code>\FiveStarOutline (☆)</code>	135
field (F)	<i>see</i> alphabets, math	<code>\filledtriangleleft (◀)</code>	35, 68	<code>\FiveStarOutlineHeavy (☆)</code>	135
<code>\file (⇒)</code>	174	<code>\filledtriangleright (▶)</code>	35, 68	<code>\FiveStarShadow (☆)</code>	135
file extensions	186–189	<code>\filledtriangleup (▲)</code>	139	<code>\Fixedbearing (⌢)</code>	127
<code>.dvi</code>	228	<code>\FilledWeakRainCloud (☁)</code>	171	<code>\fixedddots (⋯)</code>	110
<code>.fd</code>	12, 223, 229	finger, pointing	<i>see</i> fists	<code>\fixedvdots (⋮)</code>	110
<code>.mf</code>	12, 191, 221	finite field (F)	<i>see</i> alphabets, math	fixmath (package)	225
<code>.otf</code>	152			<code>\fj (f)</code>	19
<code>.pdf</code>	228			<code>\FL (L)</code>	125
<code>.sty</code>	12			<code>\Flag (1)</code>	171
<code>.tex</code>	228, 229			<code>\flageolett (p)</code>	153
<code>.tfm</code>	12, 191, 211, 229			flags	185–186
file symbols	186–189			<code>\flap (r)</code>	19
<code>\FilledBigCircle (●)</code>	139			<code>\flapr (r)</code>	19
<code>\FilledBigDiamondShape (◆)</code>	139			<code>\Flasche (l)</code>	184
<code>\FilledBigSquare (■)</code>	139			<code>\flat (b)</code>	152
<code>\FilledBigTriangleDown (▼)</code>	139			<code>\flat (b)</code>	152
<code>\FilledBigTriangleLeft (◀)</code>	139			<code>\flat (b)</code>	152
<code>\FilledBigTriangleRight (▶)</code>	139			<code>\flat (b)</code>	156
<code>\FilledBigTriangleUp (▲)</code>	139			<code>\flat (b)</code>	152
<code>\FilledCircle (●)</code>	139			<code>\flat (b)</code>	152
<code>\FilledCloud (☁)</code>	171			<code>\flatflat (bb)</code>	156
<code>\filledddiamond (◆)</code>	35			<code>\Flatsteel (—)</code>	127
<code>\FilledDiamondShadowA (◆)</code>	139			fletched arrows	85, 130
				fleurons	136, 141, 196
				<code>\Florin (ℳ)</code>	25

florin	<i>see</i> <code>\textflorin</code>	Symbol	91, 214	<code>\frownie</code> (☹)	169
flourishes	141, 199	Times Roman	25, 213	<code>\frownsmile</code> (☺)	53, 88
<code>\floweroneleft</code> (☹)	136	Type 1	223	<code>\frownsmile</code> (☺)	87
<code>\floweroneright</code> (☹)	136	Utopia	25, 47	<code>\frownsmileeq</code> (☹)	87
flowers	135, 136, 185–186, 196–197	Zapf Chancery	119	<code>\Frowny</code> (☹)	170
<code>\fltns</code> (◊)	137	Zapf Dingbats	130, 134	frowny faces	126, 169, 170, 183–189
Flynn, Peter	215	<code>\fontsize</code>	211, 213	<code>\fryingpan</code> (— )	184
<code>\FM</code> (℥)	125	<code>fontspec</code> (package)	152, 229, 230	<code>\FS</code> (L)	126
<code>\Fncontent</code> (—)	113	<code>\Football</code> (⚽)	170	<code>\fullmoon</code> (◯)	123
<code>\Fnncontent</code> (— )	113	<code>\forall</code> (∀)	93	<code>\fullmoon</code> (◯)	122
<code>\Fnnquant</code> (π )	113	<code>\forall</code> (∀)	93	<code>\fullnote</code> (◦)	152
<code>\Fnnquantn</code> (π )	113	<code>\forall</code> (∀)	94	<code>\fullouterjoin</code> (⋈)	117
<code>\Fnnquantnn</code> (π )	113	<code>\Force</code> (↓)	127		
<code>\Fnquant</code> (— )	113	<code>\Fork</code> (t)	183		
<code>\Fnquantn</code> (— )	113	<code>\forks</code> (⌘)	57	G	
<code>\Fnquantnn</code> (— )	113	<code>\forksnot</code> (⌘)	56	<code>\G</code> (♠)	20
<code>\fnsymbol</code>	173	<code>\forkv</code> (m)	55	<code>g</code> (esvect package option)	106
<code>\Fog</code> (☼)	171	<code>\forkv</code> (m)	56	<code>g</code> (X)	151
font encodings	12, 14–16, 20, 23, 214, 219, 226, 228, 230	<code>forte</code> (f)	157, 168	<code>\Game</code> (☹)	93
7-bit	12	<code>\Fortune</code> (⊗)	124	<code>\Game</code> (☹)	93
8-bit	12	<code>\Forward</code> (▶)	169	<code>\Game</code> (☹)	94
ASCII	230	<code>\ForwardToEnd</code> (▶▶)	169	<code>\Game</code> (☹)	94
Cyrillic	20	<code>\ForwardToIndex</code> (▶▶▶)	169	<code>\Game</code> (☹)	94
document	226, 228	<code>\FourAsterisk</code> (✱)	135	game-related symbols 140, 141, 171, 172, 174–176, 186– 189, 208–210	
Latin 1	230	<code>\FourClowerOpen</code> (⌘)	135	<code>\Gamma</code> (Γ)	90
limiting scope of	12	<code>\FourClowerSolid</code> (♣)	135	<code>\gamma</code> (γ)	90
LY1	12	<code>\Fourier</code> (—○)	59	<code>\gammaup</code> (γ)	91
OT1	12, 15, 20, 219, 226, 228	<code>fourier</code> (package)	26, 59, 91, 95, 101, 106, 133, 136, 170, 231	<code>\Ganz</code> (o)	154
OT2	214	<code>fourier</code> (emf package option) 122		<code>\GaPa</code> (—)	154
T1	12, 14–16, 20, 226, 228	<code>\fourier</code> (○—)	59	Garamond (font)	25, 47
T2A	20, 214	Fourier transform (ℱ)	<i>see</i> alphabets, math	<code>\Gasstove</code> (⌘)	183
T2B	20	<code>\FourStar</code> (✦)	135	<code>\gcd</code> (gcd)	89
T2C	20	<code>\FourStarOpen</code> (✧)	135	<code>\GD</code> (Ψ)	125
T4	16, 20, 23	<code>\fourth</code> (////)	116	<code>\GE</code> (≥)	125
T5	16, 20	<code>\fourvdots</code> (⋮)	112	<code>\ge</code>	<i>see</i> <code>\geq</code>
TS1	214, 228	<code>\Fquantn</code> (— )	113	<code>\ge</code> (≥)	65
U	214	<code>\Fquantnn</code> (— )	113	<code>\ge</code> (≥)	67
X2	20	<code>\fracslash</code> (/)	33	<code>\Gemini</code> (♊)	123
fontawesome (package)	25, 26, 123, 127, 131–134, 136, 140, 186, 189, 231, 232	fractions	117	<code>\Gemini</code> (♊)	122
<code>fontdef.dtx</code> (file)	215, 218	fraktur	<i>see</i> alphabets, math	<code>\Gemini</code> (♊)	124
<code>fontenc</code> (package)	12, 15, 16, 20, 226, 228	<code>\France</code> (🇫🇷)	182	<code>\gemini</code> (♊)	122
<code>\fontencoding</code>	12	<code>frcursive</code> (emf package option)	122	genealogical symbols	169
fonts		Freemason’s cipher	179	<code>\geneuro</code> (€)	26
Calligra	119	<code>frege</code> (package)	113, 231, 232	<code>\geneuronarrow</code> (€)	26
Charter	25, 47	Frege logic symbols	85, 94, 112, 113, 118	<code>\geneurowide</code> (€)	26
Computer Modern	85, 211, 213, 226	Frege, Gottlob	112, 113	<code>\gensymb</code> (package)	121
CountriesOfEurope	183	<code>\frown</code> (⋀)	48	<code>\Gentsroom</code> (♂)	170
Courier	25	<code>\frown</code> (⋀)	55	geometric shapes 124, 136–140, 162–166, 175, 176, 186– 189, 191–192, 207–208	
Emmentaler	157	<code>\frown</code> (⋀)	53, 88	<code>\geq</code> (≥)	63
Garamond	25, 47	<code>\frown</code> (⋀)	87	<code>\geq</code> (≥)	62, 63
Helvetica	25	<code>\frown</code> (⋀)	87	<code>\geq</code> (≥)	65
“pi”	214	<code>\frown</code> (⋀)	56	<code>\geq</code> (≥)	64
Soyombo	180	frown symbols	87, 88	<code>\geq</code> (≥)	66, 67
		<code>\frowneq</code> (≍)	53, 88	<code>\geqclosed</code> (⋚)	65, 69
		<code>\frowneq</code> (≍)	87	<code>\geqclosed</code> (⋚)	64, 68
		<code>\frowneqsmile</code> (≍)	87	<code>\geqdot</code> (≥)	65

<code>\gtrless</code> ($\gtrless$)	66	<code>\HandCuffRightUp</code> ()	132	<code>\heartsuit</code> ($\heartsuit$)	141
<code>\gtrneqqless</code> ($\gtrneqqless$)	64	<code>\HandLeft</code> ()	132	<code>\heavyqtleft</code> ($\heavyqtleft$)	183
<code>\gtrsim</code> ($\gtrsim$)	63	<code>\HandLeftUp</code> ()	132	<code>\heavyqtright</code> ($\heavyqtright$)	183
<code>\gtrsim</code> ($\gtrsim$)	62	<code>\HandPencilLeft</code> ()	132	Hebrew	92, 93, 120
<code>\gtrsim</code> ($\gtrsim$)	66	<code>\HandRight</code> ()	132	Helvetica (font)	25
<code>\gtrsim</code> ($\gtrsim$)	65	<code>\HandRightUp</code> ()	132	<code>\hemiobelion</code> ()	26
<code>\gtrsim</code> ($\gtrsim$)	64	hands	<i>see</i> fists	<code>\Herd</code> ()	184
<code>\gtrsim</code> ($\gtrsim$)	66	hands (package)	191, 231	<code>\HERMAPHRODITE</code> ()	127
<code>\GU</code> (Δ)	125	<code>\Handwash</code> ()	170	<code>\Hermaphrodite</code> ($\heartsuit$)	127
<code>\guillemotleft</code> ($\llcorner$)	16, 227	<code>\HaPa</code> (Δ)	154	<code>\Hermaphrodite</code> ($\heartsuit$)	127
<code>\guillemotright</code> ($\ggcorner$)	16, 227	harmony (package)	154, 231	<code>\hermitmatrix</code> ($\pm$)	117
<code>\guilsinglleft</code> ($\lrcorner$)	16, 228	harpoon (package)	85, 231, 232	<code>\hermitmatrix</code> ($\pm$)	117
<code>\guilsinglright</code> ($\rccorner$)	16, 228	harpoons	70, 72, 75, 79–81, 84–86, 207–208	<code>\Heta</code> (F)	148
<code>\gvcropped</code> ()	128	<code>\hash</code> ($\#$)	116	<code>\heta</code> (η)	148
<code>\gvertneqq</code> ($\gvertneqq$)	63	<code>\hash</code> ($\#$)	55	<code>\hexagon</code> ($\square$)	137
<code>\gvertneqq</code> ($\gvertneqq$)	62	hash mark	<i>see</i> <code>\#</code>	<code>\hexagon</code> ($\square$)	136
<code>\gvertneqq</code> ($\gvertneqq$)	66	<code>\hat</code> ($\hat$)	103	<code>\hexagonblack</code> ()	137
<code>\gvertneqq</code> ($\gvertneqq$)	65	<code>\hat</code> ($\hat$)	102	<code>\Hexasteel</code> ()	127
<code>\gvertneqq</code> ($\gvertneqq$)	64	<code>\hatapprox</code> ($\hatapprox$)	56	<code>\hexstar</code> ($\star$)	135
<code>\gvertneqq</code> ($\gvertneqq$)	66	<code>\hateq</code> ($\hat{=}$)	53	<code>\HF</code> ($\approx$)	121
		<code>\hateq</code> ($\hat{=}$)	50	<code>\HF</code> ()	143
H		<code>\hausab</code> ($\mathcal{B}$)	19	<code>\Hf</code> ()	143
<code>H</code> (N)	151	<code>\hausab</code> ($\mathcal{B}$)	19	<code>\hfermion</code> ($_$)	128
<code>\H</code> ($\mathcal{H}$)	20	<code>\hausab</code> ($\mathcal{B}$)	19	<code>\hfil</code>	216
<code>h</code> (esvect package option)	106	<code>\hausad</code> ($\mathcal{D}$)	19	<code>\HG</code> ($\mathcal{G}$)	143
<code>\h</code> ($\mathcal{H}$)	151	<code>\hausad</code> ($\mathcal{D}$)	19	<code>\Hg</code> ($\mathcal{H}$)	143
<code>\h</code> ($\mathcal{H}$)	20	<code>\hausad</code> ($\mathcal{D}$)	19	<code>\HH</code>	154
<code>h</code> ($\mathcal{H}$)	151	<code>\hausak</code> ($\mathcal{K}$)	19	<code>\HH</code> ($\mathcal{H}$)	143
Hälsinge runes	<i>see</i> staveless runes	<code>\hausak</code> ($\mathcal{K}$)	19	<code>\Hh</code> ($\mathcal{H}$)	143
<code>\HA</code> ()	143	<code>\HB</code> ($\mathcal{B}$)	143	hhcount (package)	172, 173, 231, 232
<code>\Ha</code> ()	143	<code>\Hb</code> ($\mathcal{B}$)	143	<code>\Hhundred</code> ($\mathcal{H}$)	143
háček ()	<i>see</i> accents	<code>\HBar</code> ($\overline{\mathcal{H}}$)	139	<code>\HI</code> ()	143
<code>\Hades</code> ($\mathcal{H}$)	124	<code>\hbar</code> ($\hbar$)	93, 215	<code>\Hi</code> ($\mathcal{H}$)	143
<code>\Hail</code> ()	171	<code>\hbar</code> ($\hbar$)	94	<code>\hiatus</code> ($\mathcal{H}$)	177
<code>\Halb</code> ($\mathcal{H}$)	154	<code>\hbar</code> ($\hbar$)	94	<code>\Hib1</code> ()	143
half note	<i>see</i> musical symbols	<code>\hbar</code> ($\hbar$)	94	<code>\Hibp</code> ()	143
<code>\HalfCircleLeft</code> ()	139	<code>\hbipropto</code> (∞)	30	<code>\Hibs</code> ()	143
<code>\HalfCircleRight</code> ()	139	<code>\hbond</code> ($\mathcal{H}$)	128	<code>\Hibw</code> ()	143
<code>\HalfFilledHut</code> ()	171	<code>\HC</code> ($\mathcal{H}$)	143	<code>\Hidalgo</code> ($\mathcal{H}$)	124
<code>\halflength</code> ($\mathcal{H}$)	24	<code>\Hc</code> ($\mathcal{H}$)	143	hieroglf (package)	143, 231
<code>\halfNote</code> ($\mathcal{H}$)	155	<code>\hcrossing</code> ($\times$)	50	hieroglyphics	143
<code>\halfnote</code> ($\mathcal{H}$)	152	<code>\HCthousand</code> ()	143	<code>\Higgsboson</code> ($\mathcal{H}$)	128
<code>\halfNoteDotted</code> ($\mathcal{H}$)	155	<code>\HD</code> ()	143	Hilbert space ($\mathcal{H}$)	<i>see</i> alphabets, math
<code>\halfNoteDottedDouble</code> ($\mathcal{H}$)	155	<code>\Hd</code> ()	143	<code>\hill</code> ()	23
<code>\halfNoteDottedDoubleDown</code> ($\mathcal{H}$)	155	<code>\hdotdot</code> ($\ddot{\mathcal{H}}$)	31, 111	<code>\HJ</code> ()	143
<code>\halfNoteDottedDown</code> ($\mathcal{H}$)	155	<code>\hdotdot</code> ($\ddot{\mathcal{H}}$)	30, 111	<code>\Hj</code> ($\mathcal{H}$)	143
<code>\halfNoteRest</code> ()	156	<code>\hdots</code> ($\cdots$)	111	<code>\HK</code> ($\mathcal{H}$)	143
<code>\halfNoteRestDotted</code> ()	156	<code>\hdots</code> ($\cdots$)	111	<code>\Hk</code> ($\mathcal{H}$)	143
<code>\HalfSun</code> ()	171	<code>\hdots</code> ($\cdots$)	111	<code>\hknearrow</code> ($\nearrow$)	77
halloweenmath (package)	37, 109, 110, 231, 232	<code>\hdots</code> ($\cdots$)	111	<code>\hknearrow</code> ($\nearrow$)	82
Hamiltonian ($\mathcal{H}$)	<i>see</i> alphabets, math	<code>\Hdual</code> ($\mathcal{H}$)	143	<code>\hknwarrow</code> ($\nwarrow$)	77
<code>\HandCuffLeft</code> ()	132	<code>\HE</code> ()	143	<code>\hknwarrow</code> ($\nwarrow$)	82
<code>\HandCuffLeftUp</code> ()	132	<code>\He</code> ()	143	<code>\hksearrow</code> ($\searrow$)	82
<code>\HandCuffRight</code> ()	132	heads	<i>see</i> faces	<code>\hksearrow</code> ($\searrow$)	77
		<code>\Heart</code> ($\heartsuit$)	170	<code>\hksqrt</code> ($\sqrt{\mathcal{H}}$)	217
		heartctrbull (bullcntr package option)	173	<code>\hkswarrow</code> ($\swarrow$)	82
		<code>\heartctrbull</code>	173	<code>\hkswarrow</code> ($\swarrow$)	77
		hearts	124, 140, 141, 185–189	<code>\HL</code> ($\mathcal{H}$)	143
		<code>\heartsuit</code> ($\heartsuit$)	140		
		<code>\heartsuit</code> ($\heartsuit$)	140		
		<code>\heartsuit</code> ($\heartsuit$)	140		
		<code>\heartsuit</code> ($\heartsuit$)	140		

<code>\Hl</code> ()	143	<code>\hpause</code> ()	153	<code>\ialign</code>	216, 218, 219
<code>\HM</code> ()	143	<code>\Hplural</code> ()	143	<code>\IB</code> ()	125
<code>\Hm</code> ()	143	<code>\Hplus</code> ()	143	<code>\ibar</code> ()	19
<code>\Hman</code> ()	143	<code>\HQ</code> ()	143	IBM PC	126, 178, 226
<code>\Hmillion</code> ()	143	<code>\Hq</code> ()	143	<code>\IC</code> ()	124
<code>\Hms</code> ()	143	<code>\Hquery</code> ()	143	<code>\Iceland</code> ()	183
<code>\HN</code> ()	143	<code>\HR</code> ()	143	Icelandic staves	178
<code>\Hn</code> ()	143	<code>\Hr</code> ()	143	<code>\IceMountain</code> ()	171
<code>\HO</code> ()	143	<code>\hrectangle</code> ()	137	<code>\iddots</code> ()	112
<code>\Ho</code> ()	143	<code>\hrectangleblack</code> ()	137	<code>\iddots</code> ()	218
<code>\hole</code> (h^+)	128	<code>\HS</code> ()	143	<code>\idotsint</code> ($f \cdots f$)	39
<code>\HollowBox</code> ()	134	<code>\Hs</code> ()	143	<code>\idotsint</code> ($f \cdots f$)	41
Holmes, Sherlock	205	<code>\hs</code> ()	153	<code>\idotsint</code> ($f \cdots f$)	44
Holt, Alexander	1, 230	<code>\Hscribe</code> ()	143	<code>\idotsint</code> ($f \cdots f$)	43
<code>\holter</code> ()	110	<code>\Hslash</code> ()	143	<code>\iff</code> <i>see</i> <code>\Longleftarrow</code>	
<code>holtpolt</code> (package)	110, 231	<code>\hslash</code> ($\hbar$)	93	<code>ifsym</code> (package)	121, 139, 171, 212, 214, 231
<code>\hom</code> (hom)	89	<code>\hslash</code> ($\hbar$)	94	<code>igo</code> (package)	175, 231
<code>\Home</code> ()	125	<code>\hslash</code> ($\hbar$)	94	<code>\igocircle</code> ()	175
		<code>\hslash</code> ($\hbar$)	94	<code>\igocircle</code> ()	175
<code>\Homer</code> ()	177	<code>\Hsv</code> ()	143	<code>\igocross</code> ()	175
<code>\Hone</code> ()	143	<code>\HT</code> ()	126	<code>\igocross</code> ()	175
hook accent ()	<i>see</i> accents	<code>\HT</code> ()	143	<code>\igonone</code> ()	175
<code>\hookb</code> ($\hookleftarrow$)	19	<code>\Ht</code> ()	143	<code>\igonone</code> ()	175
<code>\hookd</code> ($\hookrightarrow$)	19	<code>\Hten</code> ()	143	<code>\igosquare</code> ()	175
<code>\hookd</code> ($\hookrightarrow$)	19	<code>\Hthousand</code> ()	143	<code>\igosquare</code> ()	175
<code>\hookdownarrow</code> ($\downarrow$)	76	<code>\Htongue</code> ()	143	<code>\igotriangle</code> ()	175
<code>\hookdownminus</code> ($\hookrightarrow$)	116	<code>\HU</code> ()	143	<code>\igotriangle</code> ()	175
<code>\hookdownminus</code> ($\hookrightarrow$)	116	<code>\Hu</code> ()	143	<code>\iiint</code> ($\iiint$)	39
<code>\hookg</code> ($\hookrightarrow$)	19	Hungarian umlaut ()	<i>see</i> accents	<code>\iiint</code> ($\iiint$)	41
<code>\hookh</code> ($\hookrightarrow$)	19	<code>\Hungary</code> ()	183	<code>\iiint</code> ($\iiint$)	42
<code>\hookheng</code> ($\hookrightarrow$)	19	<code>\Hut</code> ()	171	<code>\iiint</code> ($\iiint$)	44
<code>\hookleftarrow</code> ($\hookleftarrow$)	70	<code>\HV</code> ()	143	<code>\iiint</code> ($\iiint$)	43
<code>\hookleftarrow</code> ($\hookleftarrow$)	80	<code>\Hv</code> ()	143	<code>\iiint</code> ($\iiint$)	45
<code>\hookleftarrow</code> ($\hookleftarrow$)	76	<code>\hv</code> ($\hookrightarrow$)	19	<code>\iiint</code> ($\iiint$)	46
<code>\hookleftarrow</code> ($\hookleftarrow$)	73	<code>\Hvbar</code> ($\hookrightarrow$)	143	<code>\iiint</code> ($\iiint$)	40
<code>\hookleftarrow</code> ($\hookleftarrow$)	85	<code>\HW</code> ()	143	<code>\iiint</code> ($\iiint$)	39
<code>\hookleftarrow</code> ($\hookleftarrow$)	82	<code>\Hw</code> ()	143	<code>\iiint</code> ($\iiint$)	39
<code>\hooknearrow</code> ($\nearrow$)	76	<code>\HX</code> ()	143	<code>\iiint</code> ($\iiint$)	41
<code>\hooknwarrow</code> ($\nwarrow$)	76	<code>\Hx</code> ()	143	<code>\iiint</code> ($\iiint$)	42
<code>\hookreversepsilon</code> ($\hookrightarrow$)	19	<code>\HXthousand</code> ()	143	<code>\iiint</code> ($\iiint$)	44
<code>\hookrightarrow</code> ($\hookrightarrow$)	70	<code>\HY</code> ()	143	<code>\iiint</code> ($\iiint$)	43
<code>\hookrightarrow</code> ($\hookrightarrow$)	80	<code>\Hy</code> ()	143	<code>\iiint</code> ($\iiint$)	45
<code>\hookrightarrow</code> ($\hookrightarrow$)	76	<code>\Hygiea</code> ()	124	<code>\iiint</code> ($\iiint$)	46
<code>\hookrightarrow</code> ($\hookrightarrow$)	73	hyphen, discretionary	228	<code>\iiint</code> ($\iiint$)	46
<code>\hookrightarrow</code> ($\hookrightarrow$)	85	<code>\hyphenbullet</code> ($\bullet$)	117	<code>\iinfin</code> (∞)	117
<code>\hookrightarrow</code> ($\hookrightarrow$)	82	<code>\HZ</code> ()	143	<code>\iinfin</code> (∞)	114
<code>\hooksearrow</code> ($\searrow$)	76	<code>\Hz</code> ()	143	<code>\iint</code> ($\iint$)	40
<code>\hookswarrow</code> ($\swarrow$)	76	<code>\hzigzag</code> ($\sim$)	117	<code>\iint</code> ($\iint$)	39
<code>\hookuparrow</code> ($\uparrow$)	76			<code>\iint</code> ($\iint$)	39
<code>\hookupminus</code> ($\hookrightarrow$)	32			<code>\iint</code> ($\iint$)	41
<code>\hookupminus</code> ($\hookrightarrow$)	116			<code>\iint</code> ($\iint$)	42
Horn, Berthold	120			<code>\iint</code> ($\iint$)	44
<code>\hoshi</code> ($\dagger$)	176			<code>\iint</code> ($\iint$)	43
<code>\hourglass</code> ($\times$)	32			<code>\iint</code> ($\iint$)	45
<code>\hourglass</code> ($\times$)	37			<code>\iintsl</code> ($\iint$)	46
<code>\house</code> ()	137			<code>\iintup</code> ($\iint$)	46
<code>\HP</code> ()	143			<code>\IJ</code> (IJ)	15
<code>\Hp</code> ()	143			<code>\ij</code> (ij)	15
				<code>\Im</code> ($\Im$)	93

$\backslash\mathrm{Im}$ ($\Im$)	94	$\backslash\mathrm{intbar}$ ($\int$)	44	$\backslash\mathrm{InversTransformHoriz}$ ($\bullet\!\!\circ$)	59
$\backslash\mathrm{im}$ ($\mathfrak{j}$)	94	$\backslash\mathrm{intbar}$ ($\int$)	45	$\backslash\mathrm{InversTransformVert}$ ($\circ$)	59
$\backslash\mathrm{imageof}$ ($\bullet\!\!\circ$)	87	$\backslash\mathrm{intBarsl}$ ($\nint$)	46	inverted symbols	17–19, 24, 214
$\backslash\mathrm{imageof}$ ($\bullet\!\!\circ$)	56	$\backslash\mathrm{intbarsl}$ ($\int$)	46	inverters	126
$\backslash\mathrm{imath}$ ($\mathfrak{i}$)	93, 102	$\backslash\mathrm{intBarup}$ ($\nint$)	46	$\backslash\mathrm{invf}$ ($\mathfrak{f}$)	19
$\backslash\mathrm{imath}$ ($\mathfrak{i}$)	94	$\backslash\mathrm{intbarup}$ ($\int$)	46	$\backslash\mathrm{invglotstop}$ ($\mathfrak{b}$)	19
$\backslash\mathrm{imath}$ ($\mathfrak{i}$)	94	$\backslash\mathrm{intcap}$ ($\int$)	45	$\backslash\mathrm{invh}$ ($\mathfrak{u}$)	19
$\backslash\mathrm{impliedby}$	<i>see</i>	$\backslash\mathrm{intcapsl}$ ($\int$)	47	$\backslash\mathrm{INVl}$ (∇)	126
$\backslash\mathrm{Longleftarrow}$		$\backslash\mathrm{intcapup}$ ($\int$)	47	$\backslash\mathrm{invlazys}$ (∞)	33
$\backslash\mathrm{implies}$	<i>see</i> $\backslash\mathrm{Longrightarrow}$ and $\backslash\mathrm{vdash}$	$\backslash\mathrm{intclockwise}$ ($\int$)	44	$\backslash\mathrm{invlegr}$ ($\mathfrak{l}$)	19
impulse train	<i>see</i> sha	$\backslash\mathrm{intclockwise}$ ($\int$)	47	$\backslash\mathrm{invm}$ ($\mathfrak{u}$)	19
$\backslash\mathrm{in}$ (ϵ)	93	$\backslash\mathrm{intclockwise}$ ($\int$)	45	$\backslash\mathrm{invneg}$ ($-$)	49
$\backslash\mathrm{in}$ (ϵ)	93	$\backslash\mathrm{intclockwisesl}$ ($\int$)	46	$\backslash\mathrm{invneg}$ ($-$)	116
$\backslash\mathrm{in}$ (ϵ)	53, 94	$\backslash\mathrm{intclockwiseup}$ ($\int$)	46	$\backslash\mathrm{invneg}$ ($-$)	116
$\backslash\mathrm{in}$ (ϵ)	94	$\backslash\mathrm{intctrclockwise}$ ($\int$)	44	$\backslash\mathrm{invnot}$ ($-$)	117
$\backslash\mathrm{in}$ (ϵ)	93	$\backslash\mathrm{intcup}$ (ψ)	45	$\backslash\mathrm{invnot}$ ($-$)	116
$\backslash\mathrm{in}$ (ϵ)	56	$\backslash\mathrm{intcupsl}$ (ψ)	47	$\backslash\mathrm{invnot}$ ($-$)	116
inches	<i>see</i> $\backslash\mathrm{second}$ and $\backslash\mathrm{textquotedbl}$	$\backslash\mathrm{intcupup}$ (ψ)	47	$\backslash\mathrm{INVr}$ (∇)	126
$\backslash\mathrm{incoh}$ ($\asymp$)	59	$\backslash\mathrm{INTEGER}$ ($\mathbb{Z}$)	89	$\backslash\mathrm{invr}$ ($\mathfrak{r}$)	19
$\backslash\mathrm{increment}$ (Δ)	117	$\backslash\mathrm{Integer}$ ($\mathbb{Z}$)	89	$\backslash\mathrm{invscr}$ ($\mathfrak{s}$)	19
independence		integers ($\mathbb{Z}$)	<i>see</i> alphabets, math	$\backslash\mathrm{invscripta}$ ($\mathfrak{p}$)	19
probabilistic	217	integrals	38–48, 116, 217	$\backslash\mathrm{invsmileface}$ ($\odot$)	183
statistical	217	product	48	$\backslash\mathrm{INVu}$ (∇)	126
stochastic	<i>see</i> $\backslash\mathrm{bot}$	integrals (wasysym package option)	39	$\backslash\mathrm{invv}$ ($\wedge$)	19
$\backslash\mathrm{independent}$ ($\perp$)	217	$\backslash\mathrm{interaction}$ ($\mathfrak{e}$)	128	$\backslash\mathrm{invw}$ ($\mathfrak{m}$)	19
$\backslash\mathrm{Industry}$ ($\mathfrak{m}$)	170	$\backslash\mathrm{intercal}$ ($\intercal$)	29	$\backslash\mathrm{invwhitelowerhalfcircle}$	137
inequalities	14, 62–67	$\backslash\mathrm{intercal}$ ($\intercal$)	32, 94	$\backslash\mathrm{invwhiteupperhalfcircle}$	137
inexact differential	<i>see</i> $\backslash\mathrm{dbar}$	$\backslash\mathrm{intercal}$ ($\intercal$)	31	$\backslash\mathrm{invy}$ (λ)	19
$\backslash\mathrm{inf}$ ($\inf$)	89	$\backslash\mathrm{intercal}$ ($\intercal$)	93	$\backslash\mathrm{IO}$ ($\mathfrak{u}$)	125
infimum	<i>see</i> $\backslash\mathrm{inf}$ and $\backslash\mathrm{sqcap}$	$\backslash\mathrm{intercal}$ ($\intercal$)	33, 94	$\backslash\mathrm{ion}$ ($\odot$)	128
infinity	114–116, 118, 217	interior	<i>see</i> $\backslash\mathrm{mathring}$	$\backslash\mathrm{ionicbond}$ ($\oplus$)	128
$\backslash\mathrm{Info}$ ($\mathfrak{i}$)	170	$\backslash\mathrm{interleave}$ ($\mathfrak{lll}$)	29	$\backslash\mathrm{Iota}$ ($\mathfrak{i}$)	90
$\backslash\mathrm{Info}$ ($\mathfrak{i}$)	180	$\backslash\mathrm{interleave}$ ($\mathfrak{lll}$)	33	$\backslash\mathrm{iota}$ (ι)	90
information symbols	170	$\backslash\mathrm{internalsym}$ ($\boxminus$)	128	iota, upside-down	214
informer symbols	174	intersection	<i>see</i> $\backslash\mathrm{cap}$	$\backslash\mathrm{iotaup}$ ($\mathfrak{i}$)	91
$\backslash\mathrm{infy}$ (∞)	116	$\backslash\mathrm{Interval}$ ($\mathfrak{e}$)	171	$\backslash\mathrm{ipagamma}$ ($\mathfrak{y}$)	19
$\backslash\mathrm{infy}$ (∞)	115	$\backslash\mathrm{intlarhk}$ ($\int$)	45	$\backslash\mathrm{ipercatal}$ ($\mathfrak{p}$)	177
$\backslash\mathrm{infy}$ (∞)	116	$\backslash\mathrm{intlarhksl}$ ($\int$)	47	$\backslash\mathrm{Ireland}$ ($\mathfrak{s}$)	183
$\backslash\mathrm{infy}$ (∞)	116	$\backslash\mathrm{intlarhkup}$ ($\int$)	47	$\backslash\mathrm{IroningI}$ ($\mathfrak{a}$)	170
$\backslash\mathrm{infy}$ (∞)	114	$\backslash\mathrm{intprod}$ ($\rightarrow$)	31, 32, 116	$\backslash\mathrm{IroningII}$ ($\mathfrak{a}$)	170
$\backslash\mathrm{ING}$ (ϕ)	151	$\backslash\mathrm{intprod}$ ($\rightarrow$)	33	$\backslash\mathrm{IroningIII}$ ($\mathfrak{a}$)	170
$\backslash\mathrm{Ing}$ ($\mathfrak{f}$)	151	$\backslash\mathrm{intprodr}$ ($\rightarrow$)	31, 32, 116	irony mark ($\mathfrak{e}$)	214
$\backslash\mathrm{ing}$ ($\mathfrak{f}$)	151	$\backslash\mathrm{intprodr}$ ($\rightarrow$)	33	irrational numbers ($\mathbb{J}$)	<i>see</i> alphabets, math
$\backslash\mathrm{inipartvoice}$ ($\mathfrak{u}$)	22	$\backslash\mathrm{intsl}$ ($\int$)	46	$\backslash\mathrm{Irritant}$ ($\mathfrak{x}$)	171
$\backslash\mathrm{inipartvoiceless}$ ($\mathfrak{u}$)	22	$\backslash\mathrm{intup}$ ($\int$)	44	$\backslash\mathrm{isindot}$ ($\mathfrak{e}$)	56
$\backslash\mathrm{injlil}$ (injlil)	89	$\backslash\mathrm{intup}$ ($\int$)	46	$\backslash\mathrm{isinE}$ ($\mathfrak{e}$)	56
$\backslash\mathrm{Innocey}$ ($\mathfrak{e}$)	184	$\backslash\mathrm{intx}$ ($\mathfrak{f}$)	45	$\backslash\mathrm{isinobar}$ ($\mathfrak{e}$)	56
$\backslash\mathrm{inplus}$ ($\mathfrak{e}$)	49	$\backslash\mathrm{intxsl}$ ($\mathfrak{f}$)	47	$\backslash\mathrm{isins}$ ($\mathfrak{e}$)	56
$\backslash\mathrm{inplus}$ ($\mathfrak{e}$)	55	$\backslash\mathrm{intxup}$ ($\mathfrak{f}$)	47	$\backslash\mathrm{isinvb}$ ($\mathfrak{e}$)	56
inputenc (package)	229	$\backslash\mathrm{inva}$ ($\mathfrak{v}$)	19	$\backslash\mathrm{ismodeledby}$ ($\mathfrak{e}$)	215
$\backslash\mathrm{Ins}$ ($\mathfrak{ins}$)	125	$\backslash\mathrm{invamp}$ ($\mathfrak{v}$)	30	ISO character entities	228
$\backslash\mathrm{int}$ ($\int$)	40	$\backslash\mathrm{invamp}$ ($\mathfrak{v}$)	34	isoent (package)	228
$\backslash\mathrm{int}$ ($\int$)	39	$\backslash\mathrm{invbackneg}$ ($\mathfrak{v}$)	116	Isthmian script	148–150
$\backslash\mathrm{int}$ ($\int$)	39	$\backslash\mathrm{INVd}$ (∇)	126	italic	14, 15, 26, 221, 223, 225, 228
$\backslash\mathrm{int}$ ($\int$)	39	$\backslash\mathrm{invdiameter}$ ($\mathfrak{d}$)	169		
$\backslash\mathrm{int}$ ($\int$)	44	$\backslash\mathrm{inve}$ ($\mathfrak{a}$)	19		
$\backslash\mathrm{int}$ ($\int$)	43	inverse limit	<i>see</i> $\backslash\mathrm{varprojlim}$		
$\backslash\mathrm{int}$ ($\int$)	45	$\backslash\mathrm{inversebullet}$ ($\mathfrak{b}$)	117		
$\backslash\mathrm{intBar}$ ($\nint$)	44	$\backslash\mathrm{inversewhitecircle}$ ($\mathfrak{b}$)	137		
$\backslash\mathrm{intBar}$ ($\nint$)	45				

`\Italy` () 183

J

`J` () 151

`\j` () 151

`\j` () 20

`j` () 151

`\JackStar` () 135

`\JackStarBold` () 135

Jewish star 135

`\jmath` (*j*) 93, 102

`\jmath` (*j*) 94

`\jmath` (*j*) 94

`\Joch` () 171

`\Join` () 48, 49

`\Join` () 32, 53

`\Join` () 31

`\Join` () 117

`\joinrel` 215

joint denial .. *see* `\downarrow`

`\Jpsimeson` (Ψ) 128

junicode (package) .. 229, 231

`Junicode.ttf` (file) 229

`\Juno` () 124

`\Jupiter` () 123

`\Jupiter` () 122

`\Jupiter` () 124

`\jupiter` () 122

K

`\K` (Υ) 151

`\k` (Υ) 151

`\k` () 24

`\k` () 20

`k` (ϵ) 151

`\Kaonminus` (K^-) 128

`\Kaonnull` (K^0) 128

`\Kaonplus` (K^+) 128

`\Kappa` (κ) 90

`\kappa` (κ) 90

`\kappaup` (κ) 91

`\ker` (*ker*) 89

`\kernelcontraction` ($\sim$) . 55

`\kernelcontraction` ($\sim$) . 56

ket 96

`\Keyboard` () 125

keyboard symbols 125

keys, computer 125

keystroke (package) . 125, 231

`\keystroke` () 125

king 175, 209–210

`\Knife` () 183

knight 175, 209–210

knitting (package) 181, 231, 232

knitting symbols 181

knot (package) .. 199, 202, 231

knots 199–202

Knuth, Donald E. 12, 85, 226, 233

symbols by 169

`\Kochtopf` () 184

`\Koppa` ($\wp$) 148

`\koppa` ($\wp$) 148

`\Kr` () 154

`\kreuz` () 169

Kronecker product *see* `\otimes`

Kronecker sum .. *see* `\oplus`

`\Kronos` () 124

kroužek () *see* accents

`\kside` ($\gg$) 174

L

`\L` ($\mathbb{L}$) 15

`\l` ($\mathbb{l}$) 15

`l` ($\mathbb{l}$) 151

`\labdentalnas` ($\mathfrak{m}$) 19

`\labvel` 23

`\Ladiesroom` () 170

Lagrangian ($\mathcal{L}$) *see* alphabets, math

`\Lambda` (Λ) 90

`\lambda` (λ) 90

`\lambdabar` ($\bar{\lambda}$) 115

`\lambdabar` ($\bar{\lambda}$) 117

`\lambdaslash` (λ) 115

`\lambdaslash` (λ) 117

`\lambdaup` (λ) 91

Lamport, Leslie 230, 233

`\land` *see* `\wedge`

`\land` ($\wedge$) 32

`\land` ($\wedge$) 33

land masses 181

`\landdowntint` ($\int$) 42

`\landdowntint` ($\int$) 44

`\landdowntint` ($\int$) 43

`\landupint` ($\int$) 42

`\landupint` ($\int$) 43, 44

`\landupint` ($\int$) 43

`\Langle` ($\leq$) 120

`\LAngle` ($\langle \rangle$) 101

`\LAngle` ($\langle \rangle$) 98

`\LAngle` ($\langle \rangle$) 99

`\langle` ($\langle \rangle$) 28, 96

`\langle` ($\langle \rangle$) 98

`\langle` ($\langle \rangle$) 98

`\langle` ($\langle \rangle$) 100

`\langlebar` ($\langle \rangle$) 98

`\langledot` ($\langle \rangle$) 98

`\langledot` ($\langle \rangle$) 95

`\laplac` ($\square$) 117

`\Laplace` ($\bullet \circ$) 59

`\laplace` ($\circ \bullet$) 59

Laplace transform ($\mathcal{L}$) ... *see* alphabets, math

Laplacian (Δ) ... *see* `\Delta`

Laplacian (∇^2) .. *see* `\nabla`

`\largeblackcircle` ($\bullet$) . 137

`\largeblacksquare` ($\blacksquare$) . 137

`\largeblackstar` ($\star$) ... 137

`\largecircle` ($\bigcirc$) 137

`\largecircle` ($\bigcirc$) 136

`largetrbull` (bullcntr package option) 173

`\largetrbull` 173

`\largediamond` ($\diamond$) 136

`\largelozenge` ($\lozenge$) 136

`\largepencil` () 132

`\largepentagram` ($\star$) ... 136

`\LargerOrEqual` ($\supseteq$) 113

`\largesquare` ($\square$) 137

`\largesquare` ($\square$) 136

`\largestar` ($\star$) 136

`\largestarofdavid` ($\star$) . 136

`\targetriangledown` (∇) 69, 137

`\targetriangledown` (∇) 68

`\targetriangleleft` ($\triangleleft$) 68

`\targetriangleright` ($\triangleright$) 68

`\targetriangleup` ($\triangle$) .. 69, 137

`\targetriangleup` ($\triangle$) .. 68

`\largewhitestar` ($\star$) ... 137

`\LArrow` () 125

`\larrowfill` 108

`\Laserbeam` () 127

`\lat` ($\supset$) 66

`\late` ($\supseteq$) 66

$\LaTeX$ 1, 12, 20, 48, 89, 96, 110, 115, 130, 173, 191, 210, 211, 214–220, 224, 226, 228–230, 232, 233

$\LaTeX 2_{\epsilon}$ 1, 12, 14, 15, 26, 29, 48, 59, 70, 103, 110, 115, 120, 140, 152, 191, 210–212, 214, 215, 217, 218, 223, 225–228, 233

latexsym (package) . 29, 48, 59, 70, 115, 211, 231

`\latfric` ($\mathfrak{f}$) 19

Latin 1 12, 226–228, 230

`\Latvia` ($\text{\AA}$) 181

`\Laughey` ($\oplus$) 184

laundry symbols 170

`\LB` ($\mathfrak{l}$) 125

`\Lbag` ($\mathfrak{f}$) 95

`\lbag` ($\mathfrak{f}$) 95

`\lbag` ($\mathfrak{f}$) 32

`\lbag` ($\mathfrak{l}$) 95

`\lblackbowtie` ($\bowtie$) 32

`\lblkbrbrak` ($\langle \rangle$) 95

`\lBrace` ($\left\{ \right\}$) 99

`\lbrace` ($\{$) 98

$\backslash$ lbrace ($\{$)	99	$\backslash$ le ($\leq$)	67	$\backslash$ leftdowncurvedarrow ($\curvearrowleft$)	77
$\backslash$ lbrace ($\}$)	97	$\backslash$ leadsto ($\leadsto$)	49, 70	$\backslash$ leftdowncurvedarrow ($\curvearrowleft$)	83
$\backslash$ lbrace ($\left\{ \right.$)	99	$\backslash$ leadsto ($\leadsto$)	77	$\backslash$ lefttevaw ($\left. \vphantom{\left\{ \right.} \right\}$)	100
$\backslash$ Lbrack ($\llbracket$)	120	$\backslash$ leadsto ($\leadsto$)	73	$\backslash$ leftfilledspoon ($\leftarrow$)	86
$\backslash$ lBrack ($\llbracket$)	101	$\backslash$ leadsto ($\leadsto$)	83	$\backslash$ leftfishtail ($\leftarrow$)	56
$\backslash$ lBrack ($\llbracket$)	98	leaf	see $\backslash$ textleaf	$\backslash$ leftfootline ($\leftarrow$)	53
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leafleft ($\leftarrow$)	136	$\backslash$ leftfootline ($\leftarrow$)	50
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leafNE ($\nearrow$)	136	$\backslash$ leftfree ($\leftarrow$)	50
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leafright ($\rightarrow$)	136	$\backslash$ lefthalfcap ($\cap$)	30
$\backslash$ lBrack ($\llbracket$)	99	leaves	136, 141, 196	$\backslash$ lefthalfcup ($\cup$)	31
$\backslash$ lBrack ($\llbracket$)	99	Lefschetz motive ($\mathcal{L}$)	see alphabets, math	$\backslash$ lefthand ($\leftarrow$)	133
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ Left	177	$\backslash$ leftharpoonaccent ($\leftharpoonup$)	103
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ left	96, 100, 101, 211, 213	$\backslash$ leftharpoonccw ($\leftarrow$)	75
$\backslash$ lBrack ($\llbracket$)	98	$\backslash$ LEFTarrow ($\Leftarrow$)	169	$\backslash$ leftharpoonccw ($\leftarrow$)	75
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ Leftarrow ($\Leftarrow$)	28, 70	$\backslash$ leftharpoondown ($\rightarrow$)	72
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ Leftarrow ($\Leftarrow$)	77	$\backslash$ leftharpoondown ($\rightarrow$)	70
$\backslash$ lBrack ($\llbracket$)	95	$\backslash$ Leftarrow ($\Leftarrow$)	72	$\backslash$ leftharpoondown ($\rightarrow$)	81
$\backslash$ lBrack ($\llbracket$)	95	$\backslash$ Leftarrow ($\Leftarrow$)	83	$\backslash$ leftharpoondown ($\rightarrow$)	79
$\backslash$ lBrack ($\llbracket$)	95	$\backslash$ leftarrow ($\leftarrow$)	71	$\backslash$ leftharpoondown ($\rightarrow$)	84
$\backslash$ lBrack ($\llbracket$)	95	$\backslash$ leftarrow ($\leftarrow$)	70	$\backslash$ leftharpoondownbar ($\rightarrow$)	84
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrow ($\leftarrow$)	76	$\backslash$ leftharpoonsupdown ($\rightleftharpoons$)	84
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrow ($\leftarrow$)	73	$\backslash$ leftharpoonup ($\rightarrow$)	72
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrow ($\leftarrow$)	85	$\backslash$ leftharpoonup ($\rightarrow$)	70
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrow ($\leftarrow$)	83	$\backslash$ leftharpoonup ($\rightarrow$)	81
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowaccent ($\Leftarrow$)	103	$\backslash$ leftharpoonup ($\rightarrow$)	79
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowapprox ($\approx$)	83	$\backslash$ leftharpoonup ($\rightarrow$)	84
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowbackapprox ($\approx$)	83	$\backslash$ leftharpoonupbar ($\rightarrow$)	84
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowbsimilar ($\rightarrow$)	83	$\backslash$ leftharpoonupdash ($\rightleftharpoons$)	84
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowless ($\rightarrow$)	66	$\backslash$ leftlcurvearrow ($\rightarrow$)	77
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowonoplus ($\oplus$)	83	$\backslash$ leftleftarrows ($\rightleftharpoons$)	71
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowplus ($\rightarrow$)	83	$\backslash$ leftleftarrows ($\rightleftharpoons$)	70
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowshorthandarrow		$\backslash$ leftleftarrows ($\rightleftharpoons$)	81
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowshorthandarrow	83	$\backslash$ leftleftarrows ($\rightleftharpoons$)	76
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowshorthandarrow	83	$\backslash$ leftleftarrows ($\rightleftharpoons$)	73
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowshorthandarrow	62	$\backslash$ leftleftarrows ($\rightleftharpoons$)	83
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowshorthandarrow	70	$\backslash$ leftleftharpoons ($\rightleftharpoons$)	72
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowshorthandarrow	80	$\backslash$ leftlsquigarrow ($\rightarrow$)	77
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowshorthandarrow	76	$\backslash$ leftlsquigarrow ($\rightarrow$)	73
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowshorthandarrow	73	$\backslash$ Leftmapsto ($\mapsto$)	76
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowshorthandarrow	83	$\backslash$ Leftmapsto ($\mapsto$)	76
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowshorthandarrow	80	$\backslash$ Leftmapsto ($\mapsto$)	73
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowshorthandarrow	71	$\backslash$ leftModels ($\models$)	50
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowshorthandarrow	81	$\backslash$ leftmodels ($\models$)	53
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowshorthandarrow	83	$\backslash$ leftmodels ($\models$)	50
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowshorthandarrow	83	$\backslash$ leftmoon ($\mathbb{C}$)	123
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowshorthandarrow	53	$\backslash$ leftmoon ($\mathbb{C}$)	123
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowshorthandarrow	53	$\backslash$ leftmoon ($\mathbb{C}$)	122
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowshorthandarrow	72	$\backslash$ leftouterjoin ($\bowtie$)	117
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowshorthandarrow	76	$\backslash$ leftp ($\leftarrow$)	24
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowshorthandarrow	83	$\backslash$ leftpitchfork ($\leftarrow$)	88
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowshorthandarrow	81	$\backslash$ leftpitchfork ($\leftarrow$)	86
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowshorthandarrow	87	$\backslash$ leftpointright ($\rightarrow$)	132
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowshorthandarrow	136	$\backslash$ leftpropto ($\propto$)	50
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowshorthandarrow	136	$\backslash$ leftcurvearrow ($\rightarrow$)	77
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowshorthandarrow	136	$\backslash$ Leftrightarrow ($\rightarrow$)	70
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowshorthandarrow	77	$\backslash$ Leftrightarrow ($\rightarrow$)	76
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowshorthandarrow	83	$\backslash$ Leftrightarrow ($\rightarrow$)	73
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowshorthandarrow	81	$\backslash$ Leftrightarrow ($\rightarrow$)	83
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowshorthandarrow	83	$\backslash$ leftrightarrow ($\rightarrow$)	71
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowshorthandarrow	83	$\backslash$ leftrightarrow ($\rightarrow$)	70
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowshorthandarrow	56	$\backslash$ leftrightarrow ($\rightarrow$)	76
$\backslash$ lBrack ($\llbracket$)	99	$\backslash$ leftarrowshorthandarrow	83	$\backslash$ leftrightarrow ($\rightarrow$)	73

<code>\LinearACCXLVI</code> (𐤋)	144	<code>\LinearACLXXXI</code> (𐤌)	145	<code>\LinearACXXXVIII</code> (𐤓)	144
<code>\LinearACCXLVII</code> (𐤍)	144	<code>\LinearACLXXXII</code> (𐤎)	145	<code>\LinearAI</code> (𐤀)	143
<code>\LinearACCXLVIII</code> (𐤏)	144	<code>\LinearACLXXXIII</code> (𐤏)	145	<code>\LinearAII</code> (𐤁)	143
<code>\LinearACCXV</code> (𐤐)	144	<code>\LinearACLXXXIV</code> (𐤐)	145	<code>\LinearAIII</code> (𐤂)	143
<code>\LinearACCXVI</code> (𐤑)	144	<code>\LinearACLXXXIX</code> (𐤑)	145	<code>\LinearAIV</code> (𐤃)	143
<code>\LinearACCXVII</code> (𐤒)	144	<code>\LinearACLXXXV</code> (𐤒)	145	<code>\LinearAIX</code> (𐤄)	143
<code>\LinearACCXVIII</code> (𐤓)	144	<code>\LinearACLXXXVI</code> (𐤓)	145	<code>\LinearAL</code> (𐤅)	144
<code>\LinearACCXX</code> (𐤔)	144	<code>\LinearACLXXXVII</code> (𐤔)	145	<code>\LinearALI</code> (𐤆)	144
<code>\LinearACCXXI</code> (𐤕)	144	<code>\LinearACLXXXVIII</code> (𐤕)	145	<code>\LinearALII</code> (𐤇)	144
<code>\LinearACCXXII</code> (𐤖)	144	<code>\LinearACLXXXIX</code> (𐤖)	145	<code>\LinearALIII</code> (𐤈)	144
<code>\LinearACCXXIII</code> (𐤗)	144	<code>\LinearACV</code> (𐤇)	143	<code>\LinearALIV</code> (𐤉)	144
<code>\LinearACCXXIV</code> (𐤘)	144	<code>\LinearACVII</code> (𐤈)	143	<code>\LinearALIX</code> (𐤊)	144
<code>\LinearACCXXIX</code> (𐤘)	144	<code>\LinearACVIII</code> (𐤉)	143	<code>\LinearALV</code> (𐤋)	144
<code>\LinearACCXXV</code> (𐤙)	144	<code>\LinearACX</code> (𐤊)	143	<code>\LinearALVI</code> (𐤌)	144
<code>\LinearACCXXVI</code> (𐤚)	144	<code>\LinearACXI</code> (𐤋)	143	<code>\LinearALVII</code> (𐤍)	144
<code>\LinearACCXXVII</code> (𐤛)	144	<code>\LinearACXCII</code> (𐤌)	145	<code>\LinearALVIII</code> (𐤎)	144
<code>\LinearACCXXVIII</code> (𐤜)	144	<code>\LinearACXCIII</code> (𐤍)	145	<code>\LinearALX</code> (𐤏)	144
<code>\LinearACCXXX</code> (𐤝)	144	<code>\LinearACXCIV</code> (𐤎)	145	<code>\LinearALXI</code> (𐤐)	144
<code>\LinearACCXXXI</code> (𐤞)	144	<code>\LinearACXCIX</code> (𐤏)	143	<code>\LinearALXII</code> (𐤑)	144
<code>\LinearACCXXXII</code> (𐤟)	144	<code>\LinearACXCV</code> (𐤐)	145	<code>\LinearALXIII</code> (𐤒)	144
<code>\LinearACCXXXIII</code> (𐤠)	144	<code>\LinearACXCVI</code> (𐤑)	145	<code>\LinearALXIV</code> (𐤓)	144
<code>\LinearACCXXXIV</code> (𐤡)	144	<code>\LinearACXCVII</code> (𐤒)	143	<code>\LinearALXIX</code> (𐤔)	145
<code>\LinearACCXXXIX</code> (𐤡)	144	<code>\LinearACXCVIII</code> (𐤓)	143	<code>\LinearALXV</code> (𐤕)	144
<code>\LinearACCXXXV</code> (𐤢)	144	<code>\LinearACXI</code> (𐤔)	143	<code>\LinearALXVI</code> (𐤖)	144
<code>\LinearACCXXXVI</code> (𐤣)	144	<code>\LinearACXII</code> (𐤕)	144	<code>\LinearALXVII</code> (𐤗)	145
<code>\LinearACCXXXVII</code> (𐤤)	144	<code>\LinearACXIII</code> (𐤖)	144	<code>\LinearALXVIII</code> (𐤘)	145
<code>\LinearACCXXXVIII</code> (𐤥)	144	<code>\LinearACXIV</code> (𐤗)	144	<code>\LinearALXX</code> (𐤙)	145
<code>\LinearACI</code> (𐤦)	143	<code>\LinearACXIX</code> (𐤘)	144	<code>\LinearALXXI</code> (𐤚)	145
<code>\LinearACII</code> (𐤧)	143	<code>\LinearACXL</code> (𐤙)	144	<code>\LinearALXXII</code> (𐤛)	145
<code>\LinearACIII</code> (𐤨)	143	<code>\LinearACXLI</code> (𐤚)	144	<code>\LinearALXXIII</code> (𐤜)	145
<code>\LinearACIV</code> (𐤩)	143	<code>\LinearACXLII</code> (𐤛)	144	<code>\LinearALXXIV</code> (𐤝)	145
<code>\LinearACIX</code> (𐤪)	143	<code>\LinearACXLIII</code> (𐤜)	144	<code>\LinearALXXIX</code> (𐤞)	145
<code>\LinearACL</code> (𐤫)	144	<code>\LinearACXLIV</code> (𐤝)	144	<code>\LinearALXXV</code> (𐤟)	145
<code>\LinearACLI</code> (𐤬)	144	<code>\LinearACXLIX</code> (𐤞)	144	<code>\LinearALXXVI</code> (𐤠)	145
<code>\LinearACLII</code> (𐤭)	144	<code>\LinearACXLV</code> (𐤟)	144	<code>\LinearALXXVII</code> (𐤡)	145
<code>\LinearACLIII</code> (𐤮)	144	<code>\LinearACXLVI</code> (𐤠)	144	<code>\LinearALXXVIII</code> (𐤢)	145
<code>\LinearACLIV</code> (𐤯)	144	<code>\LinearACXLVII</code> (𐤡)	144	<code>\LinearALXXX</code> (𐤣)	145
<code>\LinearACLIX</code> (𐤰)	144	<code>\LinearACXLVIII</code> (𐤢)	144	<code>\LinearALXXXI</code> (𐤤)	145
<code>\LinearACLV</code> (𐤱)	144	<code>\LinearACXV</code> (𐤣)	144	<code>\LinearALXXXII</code> (𐤥)	145
<code>\LinearACLVI</code> (𐤲)	144	<code>\LinearACXVI</code> (𐤤)	144	<code>\LinearALXXXIII</code> (𐤦)	145
<code>\LinearACLVII</code> (𐤳)	144	<code>\LinearACXVII</code> (𐤥)	144	<code>\LinearALXXXIV</code> (𐤧)	145
<code>\LinearACLVIII</code> (𐤴)	144	<code>\LinearACXVIII</code> (𐤦)	144	<code>\LinearALXXXIX</code> (𐤨)	145
<code>\LinearACLX</code> (𐤵)	144	<code>\LinearACXX</code> (𐤧)	144	<code>\LinearALXXXV</code> (𐤩)	145
<code>\LinearACLXI</code> (𐤶)	144	<code>\LinearACXXI</code> (𐤨)	144	<code>\LinearALXXXVI</code> (𐤪)	145
<code>\LinearACLXII</code> (𐤷)	144	<code>\LinearACXXII</code> (𐤩)	144	<code>\LinearALXXXVII</code> (𐤫)	145
<code>\LinearACLXIII</code> (𐤸)	144	<code>\LinearACXXIII</code> (𐤪)	144	<code>\LinearALXXXVIII</code> (𐤬)	145
<code>\LinearACLXIV</code> (𐤹)	144	<code>\LinearACXXIV</code> (𐤫)	144	<code>\LinearALXXXX</code> (𐤭)	145
<code>\LinearACLXIX</code> (𐤹)	145	<code>\LinearACXXIX</code> (𐤬)	144	<code>\LinearALXXXI</code> (𐤮)	145
<code>\LinearACLXV</code> (𐤺)	145	<code>\LinearACXXV</code> (𐤭)	144	<code>\LinearAV</code> (𐤏)	143
<code>\LinearACLXVI</code> (𐤻)	145	<code>\LinearACXXVI</code> (𐤮)	144	<code>\LinearAVI</code> (𐤐)	143
<code>\LinearACLXVII</code> (𐤼)	145	<code>\LinearACXXVII</code> (𐤯)	144	<code>\LinearAVII</code> (𐤑)	143
<code>\LinearACLXVIII</code> (𐤽)	145	<code>\LinearACXXVIII</code> (𐤰)	144	<code>\LinearAVIII</code> (𐤒)	143
<code>\LinearACLXX</code> (𐤾)	145	<code>\LinearACXXX</code> (𐤱)	144	<code>\LinearAX</code> (𐤀)	143
<code>\LinearACLXXI</code> (𐤿)	145	<code>\LinearACXXXI</code> (𐤲)	144	<code>\LinearAXCI</code> (𐤁)	145
<code>\LinearACLXXII</code> (𐥀)	145	<code>\LinearACXXXII</code> (𐤳)	144	<code>\LinearAXCII</code> (𐤂)	145
<code>\LinearACLXXIII</code> (𐥁)	145	<code>\LinearACXXXIII</code> (𐤴)	144	<code>\LinearAXCIII</code> (𐤃)	145
<code>\LinearACLXXIV</code> (𐥂)	145	<code>\LinearACXXXIV</code> (𐤵)	144	<code>\LinearAXCIV</code> (𐤄)	145
<code>\LinearACLXXIX</code> (𐥂)	145	<code>\LinearACXXXIX</code> (𐤶)	144	<code>\LinearAXCIX</code> (𐤅)	143
<code>\LinearACLXXV</code> (𐥃)	145	<code>\LinearACXXXV</code> (𐤷)	144	<code>\LinearAXCV</code> (𐤆)	145
<code>\LinearACLXXVI</code> (𐥄)	145	<code>\LinearACXXXVI</code> (𐤸)	144	<code>\LinearAXCVI</code> (𐤇)	145
<code>\LinearACLXXVII</code> (𐥅)	145	<code>\LinearACXXXVII</code> (𐤹)	144	<code>\LinearAXCVII</code> (𐤈)	145
<code>\LinearACLXXVIII</code> (𐥆)	145			<code>\LinearAXCVIII</code> (𐤉)	145
<code>\LinearACLXXX</code> (𐥇)	145				

<code>\LinearAXI</code> ($\oplus$)	143	<code>\llap</code>	24, 25, 218	<code>\lneqq</code> ($\nlessapprox$)	65
<code>\LinearAXII</code> ($\overline{\Pi}$)	143	<code>\llarc</code> ($\lrcorner$)	117	<code>\lneqq</code> ($\nlessapprox$)	64
<code>\LinearAXIII</code> ($\oplus$)	143	<code>\llblacktriangle</code> ($\blacktriangleleft$)	138	<code>\lneqq</code> ($\nlessapprox$)	67
<code>\LinearAXIV</code> ($\oplus$)	144	<code>\llbracket</code> ($\llbracket$)	96	<code>\lnot</code>	<i>see</i> <code>\neg</code>
<code>\LinearAXIX</code> ($\oplus$)	144	<code>\llbracket</code> ($\llbracket$)	101	<code>\lnot</code> ($\neg$)	116
<code>\LinearAXL</code> ($\mathbb{L}$)	144	<code>\llceil</code> ($\lceil$)	95	<code>\lnot</code> ($\neg$)	116
<code>\LinearAXLI</code> ($\mathbb{L}$)	144	<code>\llcorner</code> ($\llcorner$)	95	<code>\lnot</code> ($\neg$)	117
<code>\LinearAXLII</code> ($\mathbb{L}$)	144	<code>\llcorner</code> ($\llcorner$)	95	<code>\lnsim</code> ($\lesssim$)	63
<code>\LinearAXLIII</code> ($\mathbb{L}$)	144	<code>\llcorner</code> ($\llcorner$)	95	<code>\lnsim</code> ($\lesssim$)	62
<code>\LinearAXLIV</code> ($\mathbb{L}$)	144	<code>\llcorner</code> ($\llcorner$)	95	<code>\lnsim</code> ($\lesssim$)	66
<code>\LinearAXLIX</code> ($\mathbb{L}$)	144	<code>\llcorner</code> ($\llcorner$)	99	<code>\lnsim</code> ($\lesssim$)	65
<code>\LinearAXLV</code> ($\mathbb{L}$)	144	<code>\llcorner</code> ($\llcorner$)	97	<code>\lnsim</code> ($\lesssim$)	64
<code>\LinearAXLVI</code> ($\mathbb{L}$)	144	<code>\llcorner</code> ($\llcorner$)	95	<code>\lnsim</code> ($\lesssim$)	66
<code>\LinearAXLVII</code> ($\mathbb{L}$)	144	<code>\llcorner</code> ($\llcorner$)	50	<code>\LO</code> ($\circ$)	125
<code>\LinearAXLVIII</code> ($\mathbb{L}$)	144	<code>\llcorner</code> ($\llcorner$)	55	local ring ($\mathcal{O}$)	<i>see</i> alphabets, math
<code>\LinearAXV</code> ($\mathbb{L}$)	144	<code>\Lleftarrow</code> ($\Leftarrow$)	83	<code>\log</code> ($\log$)	89, 224
<code>\LinearAXVI</code> ($\mathbb{L}$)	144	<code>\Lleftarrow</code> ($\Leftarrow$)	70	log-like symbols	89, 224
<code>\LinearAXVII</code> ($\mathbb{L}$)	144	<code>\Lleftarrow</code> ($\Leftarrow$)	81	logic (package)	126
<code>\LinearAXVIII</code> ($\mathbb{L}$)	144	<code>\Lleftarrow</code> ($\Leftarrow$)	76	logic gates	126
<code>\LinearAXX</code> ($\mathbb{L}$)	144	<code>\Lleftarrow</code> ($\Leftarrow$)	73	logical operators	
<code>\LinearAXXI</code> ($\mathbb{L}$)	144	<code>\Lleftarrow</code> ($\Leftarrow$)	83	and	<i>see</i> <code>\wedge</code>
<code>\LinearAXXII</code> ($\mathbb{L}$)	144	<code>\Lleftarrow</code> ($\Leftarrow$)	95	not	<i>see</i> <code>\neg</code> and <code>\sim</code>
<code>\LinearAXXIII</code> ($\mathbb{L}$)	144	<code>\Lleftarrow</code> ($\Leftarrow$)	63	or	<i>see</i> <code>\vee</code>
<code>\LinearAXXIV</code> ($\mathbb{L}$)	144	<code>\Lleftarrow</code> ($\Leftarrow$)	62	<code>\logof</code> ($\otimes$)	49
<code>\LinearAXXIX</code> ($\mathbb{L}$)	144	<code>\Lleftarrow</code> ($\Leftarrow$)	212	lollipop	<i>see</i> <code>\multimap</code>
<code>\LinearAXXV</code> ($\mathbb{L}$)	144	<code>\Lleftarrow</code> ($\Leftarrow$)	66	long s ($\mathfrak{f}$)	214
<code>\LinearAXXVI</code> ($\mathbb{L}$)	144	<code>\Lleftarrow</code> ($\Leftarrow$)	65	long division	104–105
<code>\LinearAXXVII</code> ($\mathbb{L}$)	144	<code>\Lleftarrow</code> ($\Leftarrow$)	64	long-branch runes	<i>see</i> normal runes
<code>\LinearAXXVIII</code> ($\mathbb{L}$)	144	<code>\Lleftarrow</code> ($\Leftarrow$)	67	<code>\longa</code> ($\mathfrak{h}$)	153
<code>\LinearAXXX</code> ($\mathbb{L}$)	144	<code>\Lleftarrow</code> ($\Leftarrow$)	65	<code>\longa</code> ($\mathfrak{h}$)	177
<code>\LinearAXXXI</code> ($\mathbb{L}$)	144	<code>\Lleftarrow</code> ($\Leftarrow$)	64	<code>\longcastling</code> (O-O-O)	174
<code>\LinearAXXXII</code> ($\mathbb{L}$)	144	<code>\Lleftarrow</code> ($\Leftarrow$)	67	<code>\longdashv</code> ($\dashv$)	53
<code>\LinearAXXXIII</code> ($\mathbb{L}$)	144	<code>\Lleftarrow</code> ($\Leftarrow$)	95	<code>\longdashv</code> ($\dashv$)	56
<code>\LinearAXXXIV</code> ($\mathbb{L}$)	144	<code>\Lleftarrow</code> ($\Leftarrow$)	95	<code>\longdiv</code> (package)	104
<code>\LinearAXXXIX</code> ($\mathbb{L}$)	144	<code>\Lleftarrow</code> ($\Leftarrow$)	138	<code>\longdiv.tex</code> (file)	104
<code>\LinearAXXXV</code> ($\mathbb{L}$)	144	<code>\Lleftarrow</code> ($\Leftarrow$)	96	<code>\longdivision</code> ($\sqrt{\quad}$)	104, 105
<code>\LinearAXXXVI</code> ($\mathbb{L}$)	144	<code>\Lleftarrow</code> ($\Leftarrow$)	99	<code>\longhookrightarrow</code> ($\hookrightarrow$)	85
<code>\LinearAXXXVII</code> ($\mathbb{L}$)	144	<code>\Lleftarrow</code> ($\Leftarrow$)	97	<code>\longleadsto</code> ($\leadsto$)	77
<code>\LinearAXXXVIII</code> ($\mathbb{L}$)	144	<code>\Lleftarrow</code> ($\Leftarrow$)	100	<code>\Longleftarrow</code> ($\Longleftarrow$)	70
<code>\LinearAXXXIX</code> ($\mathbb{L}$)	144	<code>\Lleftarrow</code> ($\Leftarrow$)	89	<code>\Longleftarrow</code> ($\Longleftarrow$)	72
<code>\LinearAXXXV</code> ($\mathbb{L}$)	144	<code>\Lleftarrow</code> ($\Leftarrow$)	63	<code>\Longleftarrow</code> ($\Longleftarrow$)	76
<code>\LinearAXXXVI</code> ($\mathbb{L}$)	144	<code>\Lleftarrow</code> ($\Leftarrow$)	62	<code>\Longleftarrow</code> ($\Longleftarrow$)	83
<code>\LinearAXXXVII</code> ($\mathbb{L}$)	144	<code>\Lleftarrow</code> ($\Leftarrow$)	66	<code>\longleftarrow</code> ($\leftarrow$)	72
<code>\LinearAXXXVIII</code> ($\mathbb{L}$)	144	<code>\Lleftarrow</code> ($\Leftarrow$)	65	<code>\longleftarrow</code> ($\leftarrow$)	70
<code>\LinearAXXXIX</code> ($\mathbb{L}$)	144	<code>\Lleftarrow</code> ($\Leftarrow$)	64	<code>\longleftarrow</code> ($\leftarrow$)	76
<code>\LinearAXXXV</code> ($\mathbb{L}$)	144	<code>\Lleftarrow</code> ($\Leftarrow$)	67	<code>\longleftarrow</code> ($\leftarrow$)	85
<code>\LinearAXXXVI</code> ($\mathbb{L}$)	144	<code>\Lleftarrow</code> ($\Leftarrow$)	95	<code>\longleftarrow</code> ($\leftarrow$)	83
<code>\LinearAXXXVII</code> ($\mathbb{L}$)	144	<code>\Lleftarrow</code> ($\Leftarrow$)	95	<code>\longleftarrow</code> ($\leftarrow$)	53
<code>\LinearAXXXVIII</code> ($\mathbb{L}$)	144	<code>\Lleftarrow</code> ($\Leftarrow$)	138	<code>\longleftarrow</code> ($\leftarrow$)	86
<code>\LinearAXXXIX</code> ($\mathbb{L}$)	144	<code>\Lleftarrow</code> ($\Leftarrow$)	96	<code>\longleftarrow</code> ($\leftarrow$)	86
<code>\linearb</code> (package)	146, 147, 231, 232	<code>\Lleftarrow</code> ($\Leftarrow$)	89	<code>\Longleftarrow</code> ($\Longleftarrow$)	70
<code>\linefeed</code> ($\neg$)	81	<code>\Lleftarrow</code> ($\Leftarrow$)	63	<code>\Longleftarrow</code> ($\Longleftarrow$)	72
<code>\linefeed</code> ($\neg$)	83	<code>\Lleftarrow</code> ($\Leftarrow$)	62	<code>\Longleftarrow</code> ($\Longleftarrow$)	76
<code>\Lineload</code> ($\mathbb{L}$)	127	<code>\Lleftarrow</code> ($\Leftarrow$)	65	<code>\Longleftarrow</code> ($\Longleftarrow$)	83
linguistic symbols	17–20	<code>\Lleftarrow</code> ($\Leftarrow$)	64	<code>\Longleftarrow</code> ($\Longleftarrow$)	72
		<code>\Lleftarrow</code> ($\Leftarrow$)	67	<code>\Longleftarrow</code> ($\Longleftarrow$)	76
		<code>\Lleftarrow</code> ($\Leftarrow$)	97	<code>\Longleftarrow</code> ($\Longleftarrow$)	85
		<code>\Lleftarrow</code> ($\Leftarrow$)	95	<code>\Longleftarrow</code> ($\Longleftarrow$)	83
		<code>\Lleftarrow</code> ($\Leftarrow$)	66	<code>\Longleftarrow</code> ($\Longleftarrow$)	77
		<code>\Lleftarrow</code> ($\Leftarrow$)	63	<code>\Longleftarrow</code> ($\Longleftarrow$)	86
		<code>\Lleftarrow</code> ($\Leftarrow$)	62	<code>\Longleftarrow</code> ($\Longleftarrow$)	70
		<code>\Lleftarrow</code> ($\Leftarrow$)	65	<code>\Longleftarrow</code> ($\Longleftarrow$)	72
		<code>\Lleftarrow</code> ($\Leftarrow$)	64	<code>\Longleftarrow</code> ($\Longleftarrow$)	76
		<code>\Lleftarrow</code> ($\Leftarrow$)	67	<code>\Longleftarrow</code> ($\Longleftarrow$)	83
		<code>\Lleftarrow</code> ($\Leftarrow$)	95	<code>\Longleftarrow</code> ($\Longleftarrow$)	72
		<code>\Lleftarrow</code> ($\Leftarrow$)	95	<code>\Longleftarrow</code> ($\Longleftarrow$)	70
		<code>\Lleftarrow</code> ($\Leftarrow$)	63	<code>\Longleftarrow</code> ($\Longleftarrow$)	76
		<code>\Lleftarrow</code> ($\Leftarrow$)	62	<code>\Longleftarrow</code> ($\Longleftarrow$)	85
		<code>\Lleftarrow</code> ($\Leftarrow$)	65	<code>\Longleftarrow</code> ($\Longleftarrow$)	83
		<code>\Lleftarrow</code> ($\Leftarrow$)	64	<code>\Longleftarrow</code> ($\Longleftarrow$)	77
		<code>\Lleftarrow</code> ($\Leftarrow$)	67	<code>\Longleftarrow</code> ($\Longleftarrow$)	86
		<code>\Lleftarrow</code> ($\Leftarrow$)	95	<code>\Longleftarrow</code> ($\Longleftarrow$)	70
		<code>\Lleftarrow</code> ($\Leftarrow$)	95	<code>\Longleftarrow</code> ($\Longleftarrow$)	72
		<code>\Lleftarrow</code> ($\Leftarrow$)	63	<code>\Longleftarrow</code> ($\Longleftarrow$)	76
		<code>\Lleftarrow</code> ($\Leftarrow$)	62	<code>\Longleftarrow</code> ($\Longleftarrow$)	83
		<code>\Lleftarrow</code> ($\Leftarrow$)	65	<code>\Longleftarrow</code> ($\Longleftarrow$)	72
		<code>\Lleftarrow</code> ($\Leftarrow$)	64	<code>\Longleftarrow</code> ($\Longleftarrow$)	76
		<code>\Lleftarrow</code> ($\Leftarrow$)	67	<code>\Longleftarrow</code> ($\Longleftarrow$)	85
		<code>\Lleftarrow</code> ($\Leftarrow$)	95	<code>\Longleftarrow</code> ($\Longleftarrow$)	83
		<code>\Lleftarrow</code> ($\Leftarrow$)	95	<code>\Longleftarrow</code> ($\Longleftarrow$)	77

<code>\longleftsquigarrow</code> ()	83	<code>\lozenge</code> ($\diamond$)	137	<code>\ltilarr</code> ($\lesssim$)	66
<code>\longleftwvearrow</code> ()	76	<code>\lozenge</code> ($\diamond$)	137	<code>\ltquest</code> ($\lessgtr$)	66
<code>\Longmapsfrom</code> ($\Longleftarrow$)	71	<code>\lozenge</code> ($\diamond$)	136	<code>\ltriple</code>	101
<code>\Longmapsfrom</code> ($\Longleftarrow$)	53, 76	<code>\lozenge</code> ($\diamond$)	138	<code>\ltrivb</code> ($\triangleleft$)	69
<code>\Longmapsfrom</code> ($\Longleftarrow$)	83	<code>\lozengedot</code> ($\diamond$)	137	<code>\LU</code> ($\supset$)	125
<code>\longmapsfrom</code> ($\longleftarrow$)	71	<code>\lozengeminus</code> ($\diamond$)	137	<code>Lua_{La}TeX</code>	152
<code>\longmapsfrom</code> ($\longleftarrow$)	53, 76	<code>\lozengeminus</code> ($\diamond$)	37	<code>Luecking, Dan</code>	217
<code>\longmapsfrom</code> ($\longleftarrow$)	85	<code>lozenges</code>	115, 136–138,	<code>\Luxembourg</code> ($\circ$)	181
<code>\longmapsfrom</code> ($\longleftarrow$)	83	162–166, 169		<code>\lVert</code> ($\ $)	96
<code>\Longmapsto</code> ($\Rightarrow$)	71	<code>\Lparen</code> ($\langle$)	120	<code>\lVert</code> ($\ $)	101
<code>\Longmapsto</code> ($\Rightarrow$)	76	<code>\lParen</code> ($\langle$)	100	<code>\lVert</code> ($\ $)	98
<code>\Longmapsto</code> ($\Rightarrow$)	82	<code>\lparen</code> ($\langle$)	99	<code>\lvert</code> ($ $)	98
<code>\longmapsto</code> ($\rightarrow$)	72	<code>\lparen</code> ($\langle$)	99	<code>\lvertneqq</code> ($\napprox$)	63
<code>\longmapsto</code> ($\rightarrow$)	70	<code>\Lparengtr</code> ($\gtr$)	95	<code>\lvertneqq</code> ($\napprox$)	62
<code>\longmapsto</code> ($\rightarrow$)	76	<code>\lparenless</code> ($\lessdot$)	95	<code>\lvertneqq</code> ($\napprox$)	66
<code>\longmapsto</code> ($\rightarrow$)	85	<code>\lrrarc</code> ($\curvearrowright$)	117	<code>\lvertneqq</code> ($\napprox$)	65
<code>\longmapsto</code> ($\rightarrow$)	82	<code>\lrblacktriangle</code> ($\blacktriangleleft$)	138	<code>\lvertneqq</code> ($\napprox$)	64
<code>\LongPulseHigh</code> ($\sqcap$)	121	<code>\lrcorner</code> ($\lrcorner$)	95	<code>\lvertneqq</code> ($\napprox$)	66
<code>\LongPulseLow</code> ($\sqcap$)	121	<code>\lrcorner</code> ($\lrcorner$)	95	<code>\lVvert</code> ($\ $)	98
<code>\Longrightarrow</code> ($\Rightarrow$)	70	<code>\lrcorner</code> ($\lrcorner$)	98	<code>\Lvzigzag</code> ($\mathbb{Z}$)	95
<code>\Longrightarrow</code> ($\Rightarrow$)	72	<code>\lrcorner</code> ($\lrcorner$)	97	<code>\lvzigzag</code> ($\mathbb{Z}$)	95
<code>\Longrightarrow</code> ($\Rightarrow$)	76	<code>\lrcorner</code> ($\lrcorner$)	95	<code>\lwave</code> ()	100
<code>\Longrightarrow</code> ($\Rightarrow$)	82	<code>\lrcorner</code> ($\lrcorner$)	95	<code>\lWavy</code> ()	97
<code>\longrightarrow</code> ($\rightarrow$)	72	<code>\lrcorner</code> ($\lrcorner$)	95	<code>\lwavy</code> ($\rightarrow$)	97
<code>\longrightarrow</code> ($\rightarrow$)	70	<code>\lrcorner</code> ($\lrcorner$)	98	<code>\lz</code> ($\mathbb{Z}$)	19
<code>\longrightarrow</code> ($\rightarrow$)	76	<code>\lrcorner</code> ($\lrcorner$)	97		
<code>\longrightarrow</code> ($\rightarrow$)	85	<code>\lrcorner</code> ($\lrcorner$)	95		
<code>\longrightarrow</code> ($\rightarrow$)	82	<code>\lrJoin</code>	<i>see</i> <code>\Join</code>		
<code>\longrightfootline</code> ($\rightarrow$)	53	<code>\lrtimes</code> ($\rtimes$)	49		
<code>\longrightharpoondown</code> ($\rightarrow$)	86	<code>\lrtimes</code> ($\rtimes$)	32		
<code>\longrightharpoonup</code> ($\rightarrow$)	86	<code>\lrtriangle</code> ($\triangleleft$)	138		
<code>\longrightsquigarrow</code> ()	77	<code>\lrtriangleeq</code> ($\trianglelefteq$)	69		
<code>\longrightsquigarrow</code> ()	82	<code>\lsem</code> ($\ $)	99		
<code>\longrightwvearrow</code> ()	76	<code>\lsem</code> ($\ $)	97		
<code>\looparrowdownleft</code> ($\looparrowleft$)	71	<code>\lsemantic</code>	<i>see</i> <code>\ldbrack</code>		
<code>\looparrowdownleft</code> ($\looparrowleft$)	81	<code>\lsf</code> ()	153		
<code>\looparrowdownright</code> ($\looparrowright$)	71	<code>\lsfz</code> ()	153		
<code>\looparrowdownright</code> ($\looparrowright$)	81	<code>\Lsh</code> ($\leftarrow$)	71		
<code>\looparrowleft</code> ($\leftarrow$)	71	<code>\Lsh</code> ($\leftarrow$)	70		
<code>\looparrowleft</code> ($\leftarrow$)	70	<code>\Lsh</code> ($\leftarrow$)	80		
<code>\looparrowleft</code> ($\leftarrow$)	81	<code>\Lsh</code> ($\leftarrow$)	76		
<code>\looparrowleft</code> ($\leftarrow$)	76	<code>\Lsh</code> ($\leftarrow$)	72		
<code>\looparrowleft</code> ($\leftarrow$)	72	<code>\Lsh</code> ($\leftarrow$)	82		
<code>\looparrowleft</code> ($\leftarrow$)	82	<code>\lsime</code> ($\lesssim$)	66		
<code>\looparrowright</code> ($\rightarrow$)	71	<code>\lsing</code> ($\lesssim$)	66		
<code>\looparrowright</code> ($\rightarrow$)	70	<code>\lsqhook</code> ($\sqhook$)	56		
<code>\looparrowright</code> ($\rightarrow$)	81	<code>\Lsteel</code> ($\mathbb{L}$)	127		
<code>\looparrowright</code> ($\rightarrow$)	76	<code>\Lt</code> ($\lessgtr$)	66		
<code>\looparrowright</code> ($\rightarrow$)	72	<code>\Lt</code> ($\lessgtr$)	66		
<code>\looparrowright</code> ($\rightarrow$)	82	<code>\ltcc</code> ($\triangleleft$)	65		
<code>\Loosebearing</code> ($\triangle$)	127	<code>\ltcc</code> ($\triangleleft$)	66		
<code>\lor</code>	<i>see</i> <code>\vee</code>	<code>\ltcir</code> ($\lessgtr$)	66		
<code>\lor</code> ($\vee$)	32	<code>\ltcir</code> ($\lessgtr$)	66		
<code>\lor</code> ($\vee$)	33	<code>\ltimes</code> ($\ltimes$)	30		
<code>\LowerDiamond</code> ($\blacklozenge$)	139	<code>\ltimes</code> ($\ltimes$)	29		
<code>lowering</code>	<i>see</i> <code>\textlowering</code>	<code>\ltimes</code> ($\ltimes$)	32		
<code>\lowint</code> ($\int$)	45	<code>\ltimes</code> ($\ltimes$)	31, 32		
<code>\lowintsl</code> ($\int$)	47	<code>\ltimes</code> ($\ltimes$)	31		
<code>\lowintup</code> ($\int$)	47	<code>\ltimes</code> ($\ltimes$)	33		
<code>\lozenge</code> ($\diamond$)	115	<code>\ltimesblack</code> ($\blackltimes$)	32		

M

<code>\M</code>	16
<code>\M</code> ($\angle$)	176
<code>\m</code>	16
<code>\m</code> ($\angle$)	176
<code>m</code> ($\mathbb{M}$)	151
<code>\ma</code> ($\times$)	176
<code>\Macedonia</code> ($\cdot$)	181
<code>\macron</code> ($\bar{}$)	23
<code>macron</code> ($\bar{}$)	<i>see</i> accents
<code>\Maggie</code> ()	177
<code>magic</code> (package)	209, 231
<code>Magic: The Gathering</code> symbols	209
<code>magical signs</code>	178
<code>\magnon</code> ($\rightarrow$)	128
<code>majuscules</code>	90
<code>\makeatletter</code>	218
<code>\makeatother</code>	218
<code>\MALE</code> ($\bullet$)	127
<code>\Male</code> (σ)	127
<code>male</code>	122–124, 127, 185–189,
	193–195
<code>\male</code> (δ)	127
<code>\male</code> (σ)	127
<code>\MaleMale</code> ($\otimes$)	127
<code>\Malta</code> ($\circ$)	181
<code>\maltese</code> ($\mathbb{M}$)	15

<code>\maltese</code> (✠) 117	<code>\mapsto</code> ($\mapsto$) 77	<code>\mathcent</code> (¢) 93
<code>\maltese</code> (✠) 116	<code>\mapsto</code> ($\mapsto$) 73	<code>\mathchoice</code> 217
<code>\maltese</code> (✠) 116	<code>\mapsto</code> ($\mapsto$) 85	<code>\mathclose</code> 224
<code>\maltese</code> (✠) 117	<code>\mapsto</code> ($\mapsto$) 82	<code>\mathcloud</code> (☁) 37
<code>man</code> . 142, 170, 185, 191–192, 203–207	<code>\Mapstochar</code> (⌚) 88	<code>\mathcolon</code> (:) 111
<code>\manboldkidney</code> (☞) 169	<code>\Mapstochar</code> (⌚) 88	<code>mathcomp</code> (package) 113
<code>\manconcentriccircles</code> (◎) 169	<code>\mapstochar</code> (⌚) 88	<code>mathdesign</code> (package) . 25, 33, 47, 94, 100, 118, 231
<code>\manconcentricdiamond</code> (◈) 169	<code>\mapstochar</code> (⌚) 89	<code>\mathdollar</code> (\$) 28
<code>\mancone</code> (▽) 169	<code>\Mapsup</code> (⌚) 77	<code>\mathdollar</code> (\$) 94
<code>\mancube</code> (⌘) 169	<code>\mapsup</code> (⌚) 80	<code>mathdots</code> (package) . 102, 110, 112, 218, 231
<code>\manerrarrow</code> (↯) 169	<code>\mapsup</code> (⌚) 77	<code>\mathds</code> 119
<code>\ManFace</code> (☹) 170	<code>\mapsup</code> (⌚) 82	<code>\mathellipsis</code> (...) 28
<code>\manfilledquartercircle</code> (◐) 169	<code>\marcato</code> (♩) 157	<code>\mathellipsis</code> (...) 112
<code>manfnt</code> (package) . . . 169, 231	<code>\marcatoDown</code> (♩) 157	mathematical symbols 28–120
<code>\manhpennib</code> (↶) 169		<code>\mathfrak</code> 119
<code>\manimpossiblecube</code> (⌘) . 169		<code>\mathghost</code> (⌚) 37
<code>\mankidney</code> (☞) 169		<code>\mathit</code> 119
<code>\manlhpennib</code> (↶) 169		<code>\mathleftghost</code> (⌚) 37
<code>\manpenkidney</code> (☞) 169		<code>\mathnormal</code> 119
<code>\manquadrifolium</code> (☼) . . 169		<code>\mathop</code> 224
<code>\manquartercircle</code> (↷) . . 169		<code>\mathopen</code> 224
<code>\manrotatedquadrifolium</code> (☼) 169		<code>\mathord</code> 224
<code>\manrotatedquartercircle</code> (↷) 169		<code>\mathpalette</code> 217, 218
<code>\manstar</code> (☆) 169		<code>\mathparagraph</code> (¶) 28
<code>\mantiltppennib</code> (↶) 169		<code>\mathparagraph</code> (¶) 94
<code>\mantriangledown</code> (▼) . . . 169		<code>\mathpunct</code> 224
<code>\mantriangleright</code> (►) . . . 169		<code>\mathratio</code> (:) 111
<code>\mantriangleup</code> (▲) 169		<code>\mathrel</code> 215, 224
<code>\manvpennib</code> (⌚) 169		<code>\mathrightghost</code> (⌚) 37
<code>map</code> symbols 191–192		<code>\mathring</code> (◌̇) 103
<code>\Mappedfromchar</code> (⌚) 88		<code>\mathring</code> (◌̇) 102, 103
<code>\mappedfromchar</code> (⌚) 88		<code>\mathrm</code> 119
<code>maps</code> 181		<code>mathrsfs</code> (package) . . 119, 231
<code>\Mapsdwn</code> (⌚) 77		<code>mathscr</code> (euscript package op- tion) 119
<code>\mapsdown</code> (⌚) 80		<code>mathscr</code> (urwchancal package op- tion) 119
<code>\mapsdown</code> (⌚) 77		<code>\mathscr</code> 119
<code>\mapsdown</code> (⌚) 82		<code>\mathsection</code> (§) 28
<code>\Mapsfrom</code> (⇐) 71		<code>\mathsection</code> (§) 117
<code>\Mapsfrom</code> (⇐) 80		
<code>\Mapsfrom</code> (⇐) 77		<code>\mathslash</code> (/) 98
<code>\Mapsfrom</code> (⇐) 82		<code>\mathslash</code> (/) 99
<code>\mapsfrom</code> (⇐) 71		<code>mathspec</code> (package) 90
<code>\mapsfrom</code> (⇐) 80		<code>mathspec.sty</code> (file) 90
<code>\mapsfrom</code> (⇐) 77		<code>\mathsterling</code> (£) 93
<code>\mapsfrom</code> (⇐) 85		<code>\mathsterling</code> (£) 28
<code>\mapsfrom</code> (⇐) 82		<code>\mathsterling</code> (£) 94
<code>\Mapsfromchar</code> (⌚) 88		<code>mathtools</code> (package) 28, 57, 85, 106, 108, 231
<code>\Mapsfromchar</code> (⌚) 88		<code>\mathunderscore</code> (⏟) 28
<code>\mapsfromchar</code> (⌚) 88		<code>\mathvisiblespace</code> (␣) . . 117
<code>\mapsfromchar</code> (⌚) 88		<code>\mathwitch</code> (⌚) 37
<code>\mapsfromchar</code> (⌚) 88		<code>\mathwitch*</code> (⌚) 37
<code>\mapsfromchar</code> (⌚) 89		<code>\max</code> (max) 89
<code>\Mapsto</code> (⇒) 71		<code>\maxima</code> (⌚) 153
<code>\Mapsto</code> (⇒) 80		Maxwell-Stefan diffusion coeffi- cient <i>see</i> DH
<code>\Mapsto</code> (⇒) 77		<code>\maxwellDistrib</code> (M) . . . 129
<code>\Mapsto</code> (⇒) 82		<code>\maya</code> 113
<code>\mapsto</code> ($\mapsto$) 70		
<code>\mapsto</code> ($\mapsto$) 80		



Mayan numerals	113	<code>\measuredangleleft</code> ($\sphericalangle$)	114	METAFONT	12, 120, 220–223
<code>\Mb</code> ($\sphericalangle$)	176	<code>\measuredangleleft</code> ($\sphericalangle$)	115	METAFONTbook symbols	169
<code>\mb</code> ($\sphericalangle$)	176	<code>\measuredrightangle</code> ($\sphericalangle$)	114	<code>\metalbond</code> (⌞)	129
<code>\Mbb</code> ($\sphericalangle$)	176	<code>\measuredrightangle</code> ($\sphericalangle$)	114	<code>\meterplus</code> (⌞)	153
<code>\mBb</code> ($\sphericalangle$)	176	<code>\measuredrightangle</code> ($\sphericalangle$)	115	<code>\method</code> (⌞)	129
<code>\mbB</code> ($\sphericalangle$)	176	<code>\measuredrightangledot</code> ($\sphericalangle$)	114	metre (package)	23, 102, 176, 231
<code>\mbb</code> ($\sphericalangle$)	176	mechanical scaling	221, 223	metre	176
mboard (package)	119, 120, 231	<code>\medbackslash</code> ($\backslash$)	31, 32	metrical symbols	176, 177
<code>\mbbx</code> ($\sphericalangle$)	176	<code>\medbackslash</code> ($\backslash$)	31	mezzo (♩)	157, 168
<code>\mbox</code>	217, 218	<code>\medblackcircle</code> ($\bullet$)	35	.mf files	12, 191, 221
<code>\MC</code> (M^{c})	124	<code>\medblackdiamond</code> ($\blacklozenge$)	35	<code>\mglgwhtcircle</code> ($\circ$)	138
<code>\mdblkcircle</code> ($\bullet$)	138	<code>\medblacklozenge</code> ($\blacklozenge$)	137	<code>\mglgwhtlozenge</code> ($\blacklozenge$)	138
<code>\mdblkdiamond</code> ($\blacklozenge$)	36	<code>\medblacksquare</code> ($\blacksquare$)	35	<code>\mho</code> (℧)	115
<code>\mdblkdiamond</code> ($\blacklozenge$)	138	<code>\medblackstar</code> ($\star$)	35	<code>\mho</code> (℧)	92
<code>\mdblkllozenge</code> ($\blacklozenge$)	137	<code>\medblackstar</code> ($\star$)	138	miami (emf package option)	122
<code>\mdblkllozenge</code> ($\blacklozenge$)	138	<code>\medblacktriangledown</code> ($\blacktriangledown$)	35, 69	micro	see <code>\textmu</code>
<code>\mdblksquare</code> ($\blacksquare$)	36	<code>\medblacktriangleleft</code> ($\blacktriangleleft$)	35, 69	<code>\micro</code> (μ)	121
<code>\mdblksquare</code> ($\blacksquare$)	138	<code>\medblacktriangleleft</code> ($\blacktriangleleft$)	35, 69	Microsoft [®] Windows [®]	228
<code>\mdlgbkcircle</code> ($\bullet$)	36	<code>\medblacktriangleright</code> ($\blacktriangleright$)	35, 69	<code>\mid</code> ($ $)	48, 98
<code>\mdlgbkcircle</code> ($\bullet$)	138	<code>\medblacktriangleup</code> ($\blacktriangleup$)	35, 69	<code>\mid</code> ($ $)	53
<code>\mdlgbkldiamond</code> ($\blacklozenge$)	36	<code>\medbullet</code> ($\bullet$)	30	<code>\midbarvee</code> ($\veebar$)	33
<code>\mdlgbkldiamond</code> ($\blacklozenge$)	138	<code>\medcirc</code> ($\circ$)	30	<code>\midbarwedge</code> ($\wedgebar$)	33
<code>\mdlgbkllozenge</code> ($\blacklozenge$)	137	<code>\medcircle</code> ($\circ$)	35	<code>\midcir</code> ($\circ$)	87
<code>\mdlgbkllozenge</code> ($\blacklozenge$)	37, 138	<code>\medcircle</code> ($\circ$)	31	<code>\midcir</code> ($\circ$)	56
<code>\mdlgbllsquare</code> ($\blacksquare$)	36	<code>\meddiamond</code> ($\diamond$)	35	<code>\middle</code>	96
<code>\mdlgbllsquare</code> ($\blacksquare$)	138	<code>\meddiamond</code> ($\diamond$)	35	<code>\middlebar</code> (⌞)	103
<code>\mdlghwtcircle</code> ($\circ$)	36	media control symbols	169, 186–189	<code>\middleslash</code> (⌞)	103
<code>\mdlghwtcircle</code> ($\circ$)	37	medieval runes	151	<code>\midtilde</code> ($\sim$)	24
<code>\mdlghwtdiamond</code> ($\diamond$)	36	<code>\medlozenge</code> ($\lozenge$)	137	MIL-STD-806	126
<code>\mdlghwtdiamond</code> ($\diamond$)	138	<code>\medlozenge</code> ($\lozenge$)	136	millesimal sign	see <code>\textperthousand</code>
<code>\mdlghwtlozenge</code> ($\lozenge$)	137	<code>\medslash</code> ($\diagup$)	31, 32, 35	milstd (package)	126, 231, 232
<code>\mdlghwtlozenge</code> ($\lozenge$)	138	<code>\medslash</code> ($\diagup$)	31	<code>\min</code> (min)	89, 224
<code>\mdlghwtsquare</code> ($\square$)	36	<code>\medsquare</code> ($\square$)	35	<code>\MineSign</code> (⌞)	170
<code>\mdlghwtsquare</code> ($\square$)	138	<code>\medsquare</code> ($\square$)	35	minim	see musical symbols
<code>\mdsmbkcircle</code> ($\bullet$)	138	<code>\medstar</code> ($\star$)	36	<code>\minim</code> (⌞)	155
<code>\mdsmbkcircle</code> ($\bullet$)	138	<code>\medstar</code> ($\star$)	35	<code>\minimDotted</code> (⌞)	155
<code>\mdsmwhtcircle</code> ($\circ$)	138	<code>\medstarofdavid</code> (⌞)	136	<code>\minimDottedDouble</code> (⌞)	155
<code>\mdsmwhtsquare</code> ($\square$)	138	<code>\medtriangledown</code> (∇)	35, 69	<code>\minimDottedDoubleDown</code> (⌞)	155
<code>\mdwhtcircle</code> ($\circ$)	138	<code>\medtriangledown</code> (∇)	35, 68	<code>\minimDottedDown</code> (⌞)	155
<code>\mdwhtdiamond</code> ($\diamond$)	36	<code>\medtriangleleft</code> ($\triangleleft$)	35, 69	<code>\minimDown</code> (⌞)	155
<code>\mdwhtdiamond</code> ($\diamond$)	138	<code>\medtriangleleft</code> ($\triangleleft$)	35, 68	Minkowski space ($\mathbb{M}$)	see alphabets, math
<code>\mdwhtlozenge</code> ($\lozenge$)	137	<code>\medtriangleright</code> ($\triangleright$)	35, 69	minus	see <code>\textminus</code>
<code>\mdwhtlozenge</code> ($\lozenge$)	138	<code>\medtriangleright</code> ($\triangleright$)	35, 68	<code>\minus</code> ($-$)	31
<code>\mdwhtsquare</code> ($\square$)	36	<code>\medtriangleright</code> ($\triangleright$)	35, 69	<code>\minus</code> ($-$)	31
<code>\mdwhtsquare</code> ($\square$)	138	<code>\medtriangleup</code> ($\triangleup$)	35, 68	minus, double-dotted ($\div$)	see <code>\div</code>
mdwmath (package)	107, 231, 232	<code>\medvert</code> (⌞)	31	<code>\minuscolon</code> ($-:$)	59
<code>\measangledltosw</code> (⌞)	115	<code>\medvertdot</code> (⌞)	31	<code>\minuscoloncolon</code> ($-::$)	59
<code>\measangledrtose</code> (⌞)	115	<code>\medwhitestar</code> ($\star$)	35	<code>\minusdot</code> (⌞)	31
<code>\measangleldtosw</code> (⌞)	115	<code>\medwhitestar</code> ($\star$)	138	<code>\minusdot</code> (⌞)	31
<code>\measanglelutonw</code> (⌞)	115	Mellin transform ($\mathcal{M}$)	see alphabets, math	<code>\minusdot</code> (⌞)	33
<code>\measanglerdtose</code> (⌞)	115	membership	see <code>\in</code>	<code>\minusfdots</code> (⌞)	31
<code>\measanglerutone</code> (⌞)	115	<code>\Mercury</code> (⌞)	123	<code>\minusfdots</code> (⌞)	33
<code>\measanglelutronw</code> (⌞)	115	<code>\Mercury</code> (⌞)	122	<code>\minushookdown</code> (⌞)	116
<code>\measanglelurtone</code> (⌞)	115	<code>\Mercury</code> (⌞)	124	<code>\minushookdown</code> (⌞)	116
<code>\measangleurtone</code> (⌞)	115	<code>\mercury</code> (⌞)	122	<code>\minushookup</code> (⌞)	32
<code>\measeq</code> (⌞)	56	<code>\merge</code> (⌞)	29	<code>\minushookup</code> (⌞)	116
<code>\measuredangle</code> ($\sphericalangle$)	116	<code>\merge</code> (⌞)	32	<code>\minuso</code> ($\ominus$)	29, 216
<code>\measuredangle</code> ($\sphericalangle$)	114				
<code>\measuredangle</code> ($\sphericalangle$)	114				
<code>\measuredangle</code> ($\sphericalangle$)	114				
<code>\measuredangle</code> ($\sphericalangle$)	114				
<code>\measuredangle</code> ($\sphericalangle$)	115				

$\backslash$ minuso ($\ominus$) 32
 $\backslash$ minusrdots ($\div$) 31
 $\backslash$ minusrdots ($\div$) 33
minutes, angular . *see* $\backslash$ prime
miscellaneous symbols 115–118,
141, 169–186, 190
“Missing \$ inserted” .. 28
 $\backslash$ mlcp ($\mathfrak{M}$) 56
 $\backslash$ Mmappedfromchar ($\mathfrak{M}$) 88
 $\backslash$ mmappedfromchar ($\mathfrak{M}$) 88
 $\backslash$ Mmapstochar ($\mathfrak{M}$) 88
 $\backslash$ mmapstochar ($\mathfrak{M}$) 88
MnSymbol (package) 28, 30, 31,
35, 43, 50–52, 61, 64, 68,
72–75, 86, 87, 92, 93, 97,
102, 104, 105, 111, 114,
116, 136, 140, 152, 231
 $\backslash$ Moai ($\mathfrak{M}$) 185
 $\backslash$ Mobilefone ($\mathfrak{M}$) 126
 $\backslash$ mod 89
 $\backslash$ models ($\models$) 48, 215
 $\backslash$ models ($\models$) 53
 $\backslash$ models ($\models$) 51
 $\backslash$ models ($\models$) 56
 $\backslash$ modtwosum ($\mathfrak{M}$) 44
 $\backslash$ modtwosum ($\mathfrak{M}$) 45
moduli space . *see* alphabets,
math
 $\backslash$ Moldova ($\mathfrak{M}$) 182
monetary symbols 25, 26, 120
 $\backslash$ Montenegro ($\mathfrak{M}$) 182
monus *see* $\backslash$ dotdiv
 $\backslash$ moo ($\mathfrak{M}$) 29
 $\backslash$ moo ($\mathfrak{M}$) 32
 $\backslash$ Moon ($\mathfrak{M}$) 123
 $\backslash$ Moon ($\mathfrak{M}$) 122
 $\backslash$ Moon ($\mathfrak{M}$) 124
moon . 122–124, 179, 193–195
 $\backslash$ MoonPha 179
moonphase (package) 193, 231
 $\backslash$ Mordent ($\mathfrak{M}$) 153
 $\backslash$ mordent ($\mathfrak{M}$) 153
 $\backslash$ morepawns ($\mathfrak{M}$) 174
 $\backslash$ moreroom ($\mathfrak{M}$) 174
 $\backslash$ Mountain ($\mathfrak{M}$) 171
mouse . *see* $\backslash$ ComputerMouse
 $\backslash$ MoveDown ($\mathfrak{M}$) 169
 $\backslash$ moverlay 218
 $\backslash$ MoveUp ($\mathfrak{M}$) 169
 $\backslash$ mp ($\mathfrak{M}$) 29
 $\backslash$ mp ($\mathfrak{M}$) 32
 $\backslash$ mp ($\mathfrak{M}$) 31
 $\backslash$ mp ($\mathfrak{M}$) 31
 $\backslash$ mp ($\mathfrak{M}$) 33
 $\backslash$ Mu ($\mathfrak{M}$) 90
 $\backslash$ mu ($\mathfrak{M}$) 90
multiline braces 107
 $\backslash$ multimap ($\mathfrak{M}$) 48, 49
 $\backslash$ multimap ($\mathfrak{M}$) 55
 $\backslash$ multimap ($\mathfrak{M}$) 87
 $\backslash$ multimap ($\mathfrak{M}$) 86
 $\backslash$ multimap ($\mathfrak{M}$) 56
 $\backslash$ multimapboth ($\mathfrak{M}$) 49

$\backslash$ multimapboth ($\mathfrak{M}$) 55
 $\backslash$ multimapboth ($\mathfrak{M}$) 59
 $\backslash$ multimapbothvert ($\mathfrak{M}$) 49
 $\backslash$ multimapbothvert ($\mathfrak{M}$) 55
 $\backslash$ multimapdot ($\mathfrak{M}$) 49
 $\backslash$ multimapdot ($\mathfrak{M}$) 55
 $\backslash$ multimapdotboth ($\mathfrak{M}$) 49
 $\backslash$ multimapdotboth ($\mathfrak{M}$) 55
 $\backslash$ multimapdotbothA ($\mathfrak{M}$) 49
 $\backslash$ multimapdotbothA ($\mathfrak{M}$) 55
 $\backslash$ multimapdotbothAvert ($\mathfrak{M}$) 49
 $\backslash$ multimapdotbothAvert ($\mathfrak{M}$) 55
 $\backslash$ multimapdotbothB ($\mathfrak{M}$) 49
 $\backslash$ multimapdotbothB ($\mathfrak{M}$) 55
 $\backslash$ multimapdotbothBvert ($\mathfrak{M}$) 49
 $\backslash$ multimapdotbothBvert ($\mathfrak{M}$) 55
 $\backslash$ multimapdotbothvert ($\mathfrak{M}$) 49
 $\backslash$ multimapdotbothvert ($\mathfrak{M}$) 55
 $\backslash$ multimapdotinv ($\mathfrak{M}$) 49
 $\backslash$ multimapdotinv ($\mathfrak{M}$) 55
 $\backslash$ multimapinv ($\mathfrak{M}$) 49
 $\backslash$ multimapinv ($\mathfrak{M}$) 55
 $\backslash$ multimapinv ($\mathfrak{M}$) 87
 $\backslash$ multimapinv ($\mathfrak{M}$) 56
multiple accents per character
..... 219
 $\backslash$ MultiplicationDot ($\mathfrak{M}$) 113
multiplicative disjunction . *see*
 $\backslash$ bindnasrepma, $\backslash$ invamp,
and $\backslash$ parr
 $\backslash$ Mundus ($\mathfrak{M}$) 170
 $\backslash$ muon ($\mathfrak{M}$) 129
Museum of Icelandic Sorcery
and Witchcraft ... 179
musical symbols 27, 152–168,
185–189
musixgre (package) 154
musixlit (package) 154
musixper (package) 154
MusixTEX 153, 154
musixtex (package) .. 231, 232
 $\backslash$ muup ($\mathfrak{M}$) 91
 $\backslash$ MVAt ($\mathfrak{M}$) 170
 $\backslash$ MVComma ($\mathfrak{M}$) 113
 $\backslash$ MVDivision ($\mathfrak{M}$) 113
 $\backslash$ MVEight ($\mathfrak{M}$) 113
 $\backslash$ MVFive ($\mathfrak{M}$) 113
 $\backslash$ MVFour ($\mathfrak{M}$) 113
 $\backslash$ MVLeftBracket ($\mathfrak{M}$) 113
 $\backslash$ MVMinus ($\mathfrak{M}$) 113
 $\backslash$ MVMultiplication ($\mathfrak{M}$) 113
 $\backslash$ MVNine ($\mathfrak{M}$) 113
 $\backslash$ MVOne ($\mathfrak{M}$) 113
 $\backslash$ MVPeriod ($\mathfrak{M}$) 113
 $\backslash$ MVPlus ($\mathfrak{M}$) 113
 $\backslash$ MVRightArrow ($\mathfrak{M}$) 113
 $\backslash$ MVRightBracket ($\mathfrak{M}$) 113
 $\backslash$ MVSeven ($\mathfrak{M}$) 113
 $\backslash$ MVSix ($\mathfrak{M}$) 113
 $\backslash$ MVThree ($\mathfrak{M}$) 113
 $\backslash$ MVTwo ($\mathfrak{M}$) 113
 $\backslash$ MVZero ($\mathfrak{M}$) 113

N
n ($\mathfrak{N}$) 151
 $\backslash$ nabla (∇) 115
 $\backslash$ nabla (∇) 116
 $\backslash$ nabla (∇) 117
 $\backslash$ nacwcirclearrowdown ($\mathfrak{N}$) 77
 $\backslash$ nacwcirclearrowleft ($\mathfrak{N}$) 77
 $\backslash$ nacwcirclearrowright ($\mathfrak{N}$)
..... 77
 $\backslash$ nacwcirclearrowup ($\mathfrak{N}$) 77
 $\backslash$ nacwgapcirclearrow ($\mathfrak{N}$) 78
 $\backslash$ nacwleftarcarrow ($\mathfrak{N}$) .. 77
 $\backslash$ nacwnearcarrow ($\mathfrak{N}$) ... 77
 $\backslash$ nacwnwarcarrow ($\mathfrak{N}$) ... 77
 $\backslash$ nacwopencirclearrow ($\mathfrak{N}$) 78
 $\backslash$ nacwoverarcarrow ($\mathfrak{N}$) . 77
 $\backslash$ nacwrightarcarrow ($\mathfrak{N}$) . 78
 $\backslash$ nacwsearcarrow ($\mathfrak{N}$) ... 78
 $\backslash$ nacwswarcarrow ($\mathfrak{N}$) ... 78
 $\backslash$ nacwunderarcarrow ($\mathfrak{N}$) . 78
 $\backslash$ NAK ($\mathfrak{N}$) 126
NAND gates 126
 $\backslash$ NANDd ($\mathfrak{N}$) 126
 $\backslash$ NAND1 ($\mathfrak{N}$) 126
 $\backslash$ NANDr ($\mathfrak{N}$) 126
 $\backslash$ NANDu ($\mathfrak{N}$) 126
 $\backslash$ napprox ($\mathfrak{N}$) 50
 $\backslash$ napprox ($\mathfrak{N}$) 54
 $\backslash$ napprox ($\mathfrak{N}$) 52
 $\backslash$ napprox ($\mathfrak{N}$) 57
 $\backslash$ napproxeq ($\mathfrak{N}$) 49
 $\backslash$ napproxeq ($\mathfrak{N}$) 54
 $\backslash$ napproxeq ($\mathfrak{N}$) 52
 $\backslash$ napproxeq ($\mathfrak{N}$) 57
 $\backslash$ napproxident ($\mathfrak{N}$) 54
 $\backslash$ narceq ($\mathfrak{N}$) 54, 88
 $\backslash$ nAssert ($\mathfrak{N}$) 54
 $\backslash$ nassert ($\mathfrak{N}$) 54
 $\backslash$ nasymp ($\mathfrak{N}$) 49
 $\backslash$ nasymp ($\mathfrak{N}$) 54, 88
 $\backslash$ nasymp ($\mathfrak{N}$) 87
 $\backslash$ nasymp ($\mathfrak{N}$) 57
 $\backslash$ Natal ($\mathfrak{N}$) 124
nath (package) .. 95, 101, 231
 $\backslash$ NATURAL ($\mathfrak{N}$) 89
 $\backslash$ Natural ($\mathfrak{N}$) 89
 $\backslash$ natural ($\mathfrak{N}$) 152
 $\backslash$ natural ($\mathfrak{N}$) 152
 $\backslash$ natural ($\mathfrak{N}$) 152
 $\backslash$ natural ($\mathfrak{N}$) 156
 $\backslash$ natural ($\mathfrak{N}$) 152
 $\backslash$ natural ($\mathfrak{N}$) 152
natural numbers ($\mathbb{N}$) *see*
alphabets, math
 $\backslash$ nbackapprox ($\mathfrak{N}$) 52
 $\backslash$ nbackapproxeq ($\mathfrak{N}$) 52

<code>\backcong</code> ($\neq$)	54	<code>\ncurvearrowsenw</code> ($\curvearrowright$)	73	<code>\downassert</code> ($\Downarrow$)	54
<code>\backcong</code> ($\neq$)	52	<code>\ncurvearrowswne</code> ($\curvearrowleft$)	73	<code>\downbkarrow</code> ($\Downarrow$)	78
<code>\backeqsim</code> ($\approx$)	52	<code>\ncurvearrowupdown</code> ($\Updownarrow$)	73	<code>\downblackspoon</code> ($\blackspoon$)	87
<code>\backsim</code> ($\sim$)	49	<code>\ncwcirclearrowdown</code> ($\Downarrow$)	78	<code>\downdownarrows</code> ($\Downarrow$)	78
<code>\backsim</code> ($\sim$)	54	<code>\ncwcirclearrowleft</code> ($\Leftarrow$)	78	<code>\downdownarrows</code> ($\Downarrow$)	74
<code>\backsim</code> ($\sim$)	52	<code>\ncwcirclearrowright</code> ($\Rightarrow$)	78	<code>\downfilledspoon</code> ($\spoon$)	86
<code>\backsimeq</code> ($\backsimeq$)	49	<code>\ncwcirclearrowup</code> ($\Uparrow$)	78	<code>\downfootline</code> ($\down$)	52
<code>\backsimeq</code> ($\backsimeq$)	54	<code>\ncwgapcirclearrow</code> ($\curvearrowright$)	78	<code>\downfree</code> ($\down$)	52
<code>\backsimeq</code> ($\backsimeq$)	52	<code>\ncwleftararrow</code> ($\leftarrow$)	78	<code>\downharpoonccw</code> ($\curvearrowleft$)	75
<code>\backtriple sim</code> ($\approx$)	52	<code>\ncwneararrow</code> ($\nearrow$)	78	<code>\downharpooncw</code> ($\curvearrowright$)	75
<code>\nBarv</code> ($\overline{v}$)	54	<code>\ncwnwararrow</code> ($\nwarrow$)	78	<code>\downharpoonleft</code> ($\leftarrow$)	80
<code>\nbarV</code> ($\overline{V}$)	54	<code>\ncwopencirclearrow</code> ($\circlearrowright$)	78	<code>\downharpoonright</code> ($\rightarrow$)	80
<code>\nbdleftararrow</code> ($\leftarrow$)	78	<code>\ncwoverararrow</code> ($\overrightarrow{\hspace{0.5em}}$)	78	<code>\downlcurvearrow</code> ($\downcurvearrow$)	79
<code>\nbdneararrow</code> ($\nearrow$)	78	<code>\ncwrightararrow</code> ($\rightarrow$)	78	<code>\downleftcurvedarrow</code> ($\downleftcurvedarrow$)	79
<code>\nbdnwararrow</code> ($\nwarrow$)	78	<code>\ncwseararrow</code> ($\searrow$)	78	<code>\downlsquigarrow</code> ($\downlsquigarrow$)	79
<code>\nbdoverararrow</code> ($\overrightarrow{\hspace{0.5em}}$)	78	<code>\ncwswararrow</code> ($\swarrow$)	78	<code>\downlsquigarrow</code> ($\downlsquigarrow$)	74
<code>\nbdrightararrow</code> ($\rightarrow$)	78	<code>\ncwunderararrow</code> ($\underrightarrow{\hspace{0.5em}}$)	78	<code>\downmapsto</code> ($\mapsto$)	78
<code>\nbdseararrow</code> ($\searrow$)	78	<code>\ndasharrow</code> ($\dashrightarrow$)	79	<code>\downmapsto</code> ($\mapsto$)	78
<code>\nbdswararrow</code> ($\swarrow$)	78	<code>\ndasharrow</code> ($\dashrightarrow$)	75	<code>\downmapsto</code> ($\mapsto$)	74
<code>\nbdunderararrow</code> ($\underrightarrow{\hspace{0.5em}}$)	78	<code>\ndasheddownarrow</code> ($\downdownarrows$)	74	<code>\downmodels</code> ($\models$)	52
<code>\nblackwhitespoon</code> ($\spoon$)	87	<code>\ndashedleftarrow</code> ($\leftarrow$)	74	<code>\downmodels</code> ($\models$)	54
<code>\NBSP</code> (NBSP)	126	<code>\ndashednearrow</code> ($\nearrow$)	74	<code>\downmodels</code> ($\models$)	52
<code>\NBSP</code> (NBSP)	126	<code>\ndashednwarrow</code> ($\nwarrow$)	74	<code>\downpitchfork</code> ($\pitchfork$)	88
<code>\nBumpeq</code> ($\approx$)	49	<code>\ndashedrightarrow</code> ($\rightarrow$)	74	<code>\downpitchfork</code> ($\pitchfork$)	86
<code>\nBumpeq</code> ($\approx$)	54	<code>\ndashedsearrow</code> ($\searrow$)	74	<code>\downrcurvearrow</code> ($\downrcurvearrow$)	79
<code>\nBumpeq</code> ($\approx$)	52	<code>\ndashedswarrow</code> ($\swarrow$)	74	<code>\downrightcurvedarrow</code> ($\downrightcurvedarrow$)	79
<code>\nBumpeq</code> ($\approx$)	57	<code>\ndasheduparrow</code> ($\uparrow$)	74	<code>\downrightcurvedarrow</code> ($\downrightcurvedarrow$)	79
<code>\nbumpeq</code> ($\approx$)	49	<code>\ndashleftarrow</code> ($\leftarrow$)	79	<code>\downrsquigarrow</code> ($\downrsquigarrow$)	79
<code>\nbumpeq</code> ($\approx$)	54	<code>\ndashleftarrow</code> ($\leftarrow$)	75	<code>\downrsquigarrow</code> ($\downrsquigarrow$)	74
<code>\nbumpeq</code> ($\approx$)	52	<code>\ndashrightarrow</code> ($\rightarrow$)	79	<code>\downspoon</code> ($\spoon$)	87
<code>\nbumpeq</code> ($\approx$)	57	<code>\ndashrightarrow</code> ($\rightarrow$)	75	<code>\downspoon</code> ($\spoon$)	86
<code>\nbumpeq</code> ($\approx$)	54	<code>\nDashV</code> ($\dashv$)	50	<code>\downuparrows</code> ($\Uparrow$)	78
<code>\ncirceq</code> ($\approx$)	54	<code>\nDashV</code> ($\dashv$)	54	<code>\downuparrows</code> ($\Uparrow$)	74
<code>\ncirceq</code> ($\approx$)	52	<code>\nDashv</code> ($\dashv$)	50	<code>\downupcurvearrow</code> ($\downupcurvearrow$)	79
<code>\ncirclearrowleft</code> ($\Leftarrow$)	78	<code>\nDashv</code> ($\dashv$)	54	<code>\downupharpoons</code> ($\Updownarrow$)	80
<code>\ncirclearrowleft</code> ($\Leftarrow$)	75	<code>\nDashV</code> ($\dashv$)	50	<code>\downupharpoons</code> ($\Updownarrow$)	75
<code>\ncirclearrowright</code> ($\Rightarrow$)	78	<code>\nDashV</code> ($\dashv$)	54	<code>\downupharpoonsleftright</code>	
<code>\ncirclearrowright</code> ($\Rightarrow$)	75	<code>\ndashv</code> ($\dashv$)	50	<code>\downupharpoonsleftright</code>	80
<code>\ncirmid</code> ($\mid$)	87	<code>\ndashv</code> ($\dashv$)	54	<code>\downupsquigarrow</code> ($\downupsquigarrow$)	79
<code>\nclosedequal</code> ($\approx$)	52	<code>\ndashv</code> ($\dashv$)	52	<code>\downVDash</code> ($\Vdash$)	54
<code>\nclosure</code> (ϕ)	54, 88	<code>\ndashVv</code> ($\dashv$)	50	<code>\downVDash</code> ($\Vdash$)	54
<code>\ncong</code> ($\neq$)	50	<code>\ndashVv</code> ($\dashv$)	54	<code>\downVDash</code> ($\Vdash$)	52
<code>\ncong</code> ($\neq$)	49	<code>\nDdashv</code> ($\dashv$)	54	<code>\downvDash</code> ($\dashv$)	54
<code>\ncong</code> ($\neq$)	55	<code>\nDdownarrow</code> ($\Downarrow$)	78	<code>\downvDash</code> ($\dashv$)	54
<code>\ncong</code> ($\neq$)	54	<code>\nddtstile</code> ($\equiv$)	58	<code>\downvDash</code> ($\dashv$)	52
<code>\ncong</code> ($\neq$)	52	<code>\ndiagdown</code> ($\searrow$)	52	<code>\downvDash</code> ($\dashv$)	52
<code>\ncong</code> ($\neq$)	57	<code>\ndiagup</code> ($\nearrow$)	52	<code>\downwavyarrow</code> ($\curvearrowright$)	78
<code>\ncongdot</code> ($\approx$)	57	<code>\ndivides</code> ($\div$)	52	<code>\ndtstile</code> ($\equiv$)	58
<code>\ncurlyeqprec</code> ($\curlyeqprec$)	50	<code>\nDoteq</code> ($\doteq$)	54	<code>\ndtstile</code> ($\equiv$)	58
<code>\ncurlyeqprec</code> ($\curlyeqprec$)	54	<code>\nDoteq</code> ($\doteq$)	52	<code>\ndttstile</code> ($\equiv$)	58
<code>\ncurlyeqprec</code> ($\curlyeqprec$)	52	<code>\ndoteq</code> ($\doteq$)	54	<code>\ndttstile</code> ($\equiv$)	58
<code>\ncurlyeqsucc</code> ($\curlyeqsucc$)	50	<code>\ndoteq</code> ($\doteq$)	52	<code>\ndualmap</code> ($\multimap$)	87
<code>\ncurlyeqsucc</code> ($\curlyeqsucc$)	54	<code>\ndoublefrown</code> ($\frown$)	87	<code>\NE</code> ($\neq$)	125
<code>\ncurlyeqsucc</code> ($\curlyeqsucc$)	52	<code>\ndoublefrown</code> ($\frown$)	87	<code>\ne</code>	<i>see</i> <code>\neq</code>
<code>\ncurvearrowdownup</code> ($\Updownarrow$)	73	<code>\ndoublesmile</code> ($\smile$)	87	<code>\ne</code> ($\neq$)	54
<code>\ncurvearrowleft</code> ($\leftarrow$)	78	<code>\ndoublesmile</code> ($\smile$)	87	<code>\ne</code> ($\neq$)	52
<code>\ncurvearrowleft</code> ($\leftarrow$)	75	<code>\nDownarrow</code> ($\Downarrow$)	78	<code>\ne</code> ($\neq$)	57
<code>\ncurvearrowleftrightarrow</code> ($\leftrightarrow$)	73	<code>\nDownarrow</code> ($\Downarrow$)	74	<code>\Narrow</code> ($\nearrow$)	71
<code>\ncurvearrownesw</code> ($\nearrow$)	73	<code>\ndownarrow</code> ($\downarrow$)	78	<code>\Narrow</code> ($\nearrow$)	80
<code>\ncurvearrownwse</code> ($\nwarrow$)	73	<code>\ndownarrow</code> ($\downarrow$)	74	<code>\Narrow</code> ($\nearrow$)	76
<code>\ncurvearrowright</code> ($\rightarrow$)	78	<code>\ndownarrowtail</code> ($\searrow$)	78	<code>\Narrow</code> ($\nearrow$)	72
<code>\ncurvearrowright</code> ($\rightarrow$)	75	<code>\ndownarrowtail</code> ($\searrow$)	74	<code>\Narrow</code> ($\nearrow$)	82
<code>\ncurvearrowrightleft</code> ($\leftrightarrow$)	73	<code>\ndownAssert</code> ($\Downarrow$)	54	<code>\nearrow</code> ($\nearrow$)	71

$\nearrow$	70, 218	$\nequiv$	55	$\ng$	151
$\nearrow$	76	$\nequiv$	54	$\ng$	15
$\nearrow$	72	$\nequiv$	52	$\nge$	67
$\nearrow$	85	$\nequiv$	57	$\ngeq$	63
$\nearrow$	82	$\nequiv$	52	$\ngeq$	62, 63
$\nearrow$	80	$\nequiv$	77	$\ngeq$	66
$\nearrow$	76	$\nequiv$	72	$\ngeq$	65
$\nearrow$	72	$\nequiv$	86	$\ngeq$	64
$\nearrow$	76	$\nequiv$	76	$\ngeq$	66, 67
$\nearrow$	86	$\nequiv$	72	$\ngeq$	65, 69
$\nearrow$	51	$\nequiv$	218	$\ngeq$	64, 68
$\nearrow$	51	$\nequiv$	76	$\ngeq$	65
$\neg$	115	$\nequiv$	72	$\ngeq$	64
$\neg$	116	$\nequiv$	82	$\ngeq$	63
$\neg$	116	$\nequiv$	76	$\ngeq$	62
$\neg$	117	$\nequiv$	72	$\ngeq$	66
negation	see $\neg$ and $\sim$	$\nequiv$	31	$\ngeq$	65
$\nearrow$	75	$\nequiv$	52	$\ngeq$	64
$\nearrow$	75	$\nequiv$	77	$\ngeq$	66
$\nearrow$	79	$\nequiv$	79	$\ngeq$	62
$\nearrow$	79	$\nequiv$	75	$\ngeq$	66
$\nearrow$	77	$\nequiv$	79	$\ngeq$	66
$\nearrow$	72	$\nequiv$	75	$\ngeq$	64
$\nearrow$	72	$\nequiv$	79	$\ngeq$	66
$\nearrow$	51	$\nequiv$	75	$\ngeq$	65
$\nearrow$	51	$\nequiv$	51	$\ngeq$	64
$\nearrow$	76	$\nequiv$	51	$\ngeq$	65
$\nearrow$	72	$\nequiv$	182	$\ngeq$	65
$\nearrow$	82	$\nequiv$	154	$\ngeq$	66
$\nearrow$	82	$\nequiv$	127	$\ngeq$	66
$\nearrow$	86	$\nequiv$	127	$\ngeq$	79
Ψ	123	$\nequiv$	184	$\ngeq$	75
Ψ	122	$\nequiv$	129	$\ngeq$	84
Ψ	124	$\nequiv$	129	$\ngeq$	63
Ψ	122	$\nequiv$	51	$\ngeq$	65
$\neq$	50	$\nequiv$	51	$\ngeq$	64
$\neq$	62	$\nequiv$	51	$\ngeq$	66
$\neq$	55	$\nequiv$	new (old-arrows package option)	$\ngeq$	66
$\neq$	54	$\nequiv$	85, 86	$\ngeq$	65
$\neq$	52	$\nequiv$	$\newextarrow$	$\ngeq$	64
$\neq$	57	$\nequiv$	109	$\ngeq$	65
$\neq$	52	$\nequiv$	177	$\ngeq$	63
$\neq$	52	$\nequiv$	123	$\ngeq$	62
$\neq$	52	$\nequiv$	122	$\ngeq$	66
$\neq$	54	$\nequiv$	20	$\ngeq$	65
$\neq$	52	$\nequiv$	93	$\ngeq$	64
$\neq$	54	$\nequiv$	93	$\ngeq$	66
$\neq$	52	$\nequiv$	94	$\ngeq$	66
$\neq$	87	$\nequiv$	94	$\ngeq$	63
$\neq$	54	$\nequiv$	93	$\ngeq$	63
$\neq$	52	$\nequiv$	94	$\ngeq$	65
$\neq$	57	$\nequiv$	54	$\ngeq$	65
$\neq$	63	$\nequiv$	52	$\ngeq$	65
$\neq$	65	$\nequiv$	57	$\ngeq$	64
$\neq$	64	$\nequiv$	54, 88	$\ngeq$	66
$\neq$	66	$\nequiv$	87	$\ngeq$	65
$\neq$	63	$\nequiv$	54, 88	$\ngeq$	64
$\neq$	65	$\nequiv$	87	$\ngeq$	65
$\neq$	64	$\nequiv$	87	$\ngeq$	64
$\neq$	66	$\nequiv$	54, 88	$\ngeq$	65
$\neq$	87	$\nequiv$	87	$\ngeq$	64
$\neq$	54	$\nequiv$	87	$\ngeq$	65
$\neq$	52	$\nequiv$	125	$\ngeq$	64
$\neq$	52	$\nequiv$	151	$\ngeq$	65
$\neq$	49	$\nequiv$	15	$\ngeq$	65

<code>\ngtrless ()</code>	63	<code>\nisd (∋)</code>	55	<code>\leftpitchfork (≠)</code> ...	88
<code>\ngtrless (≡)</code>	65	<code>\nisd (⊃)</code>	56	<code>\leftpitchfork (≠)</code> ...	86
<code>\ngtrless (≡)</code>	64	<code>\nisigma (σ)</code>	19	<code>\leftcurvedarrow (↷)</code> ..	78
<code>\ngtrless (≡)</code>	66	<code>\nitheta (θ)</code>	19	<code>\Lefttrightarrow (↔)</code> ..	81
<code>\ngtrsim (≳)</code>	63	<code>\niupsilon (υ)</code>	19	<code>\Lefttrightarrow (↔)</code> ..	71
<code>\ngtrsim ()</code>	63	<code>\niv (L)</code>	95	<code>\Lefttrightarrow (↔)</code> ..	70
<code>\ngtrsim (≳)</code>	65	<code>\nj (j)</code>	19	<code>\Lefttrightarrow (↔)</code> ..	81
<code>\ngtrsim (≳)</code>	66	<code>nkarta (package)</code> ...	191, 231	<code>\Lefttrightarrow (↔)</code> ..	78
<code>\nhateq (≠)</code>	54	<code>\nlcirclearrowdown (⬇)</code>	74	<code>\Lefttrightarrow (↔)</code> ..	74
<code>\nhateq (≠)</code>	52	<code>\nlcirclearrowleft (↶)</code>	74	<code>\Lefttrightarrow (↔)</code> ..	84
<code>\nHdownarrow (↓)</code>	81	<code>\nlcirclearrowright (↷)</code>	74	<code>\lefttrightarrow (↔)</code> ..	71
<code>\nHdownarrow (↓)</code>	84	<code>\nlcirclearrowup (⬆)</code> ..	74	<code>\lefttrightarrow (↔)</code> 28, 70	
<code>\nhknearrow (↗)</code>	79	<code>\nlcurvearrowdown (↘)</code> ..	74	<code>\lefttrightarrow (↔)</code> ..	81
<code>\nhknwarrow (↖)</code>	79	<code>\nlcurvearrowleft (↵)</code> ..	74	<code>\lefttrightarrow (↔)</code> ..	77
<code>\nhksearrow (↗)</code>	79	<code>\nlcurvearrowne (↗)</code> ...	74	<code>\lefttrightarrow (↔)</code> ..	74
<code>\nhkswarrow (↖)</code>	79	<code>\nlcurvearrownw (↖)</code> ...	74	<code>\lefttrightarrow (↔)</code> ..	84
<code>\nhookdownarrow (⤵)</code> ...	78	<code>\nlcurvearrowright (↗)</code> ..	74	<code>\lefttrightarrow (↔)</code> ..	78
<code>\nhookleftarrow (↠)</code> ...	78	<code>\nlcurvearrowse (↘)</code> ...	74	<code>\lefttrightarrow (↔)</code> ..	74
<code>\nhookleftarrow (↠)</code> ...	75	<code>\nlcurvearrowsw (↙)</code> ...	74	<code>\lefttrightarrow (↔)</code> ..	84
<code>\nhooknearrow (↗)</code>	78	<code>\nlcurvearrowup (↶)</code> ...	74	<code>\lefttrightarrow (↔)</code> ..	74
<code>\nhooknwarrow (↖)</code>	78	<code>\nle (≠)</code>	67	<code>\lefttrightarrow (↔)</code> ..	87
<code>\nhookrightarrow (↠)</code> ..	78	<code>\nleadsto (↠)</code>	79	<code>\lefttrightarrow (↔)</code> ..	78
<code>\nhookrightarrow (↠)</code> ..	75	<code>\nleadsto (↠)</code>	75	<code>\leftrightharpoondownup</code>	
<code>\nhooksearrow (↘)</code>	78	<code>\nLeftarrow (⇐)</code>	71	<code>(↔)</code>	80
<code>\nhookswarrow (↖)</code>	78	<code>\nLeftarrow (⇐)</code>	70	<code>\leftrightharpoondownup</code>	
<code>\nhookuparrow (⤴)</code>	78	<code>\nLeftarrow (⇐)</code>	81	<code>(↔)</code>	75
<code>\nhpar (‖)</code>	57	<code>\nLeftarrow (⇐)</code>	77	<code>\leftrightharpoons (⇌)</code>	80
<code>\nHuparrow (↑)</code>	81	<code>\nLeftarrow (⇐)</code>	74	<code>\leftrightharpoons (⇌)</code>	75
<code>\nHuparrow (↑)</code>	84	<code>\nLeftarrow (⇐)</code>	84	<code>\leftrightharpoonupdown</code>	
<code>\nhVvert (≡)</code>	33	<code>\nleftarrow (←)</code>	71	<code>(↔)</code>	80
<code>\ni (∋)</code>	93, 216	<code>\nleftarrow (←)</code>	70	<code>\leftrightharpoonupdown</code>	
<code>\ni (∋)</code>	53	<code>\nleftarrow (←)</code>	81	<code>(↔)</code>	75
<code>\ni (∋)</code>	94	<code>\nleftarrow (←)</code>	77	<code>\nLeftrightline (≠)</code> ...	52
<code>\ni (∋)</code>	93	<code>\nleftarrow (←)</code>	74	<code>\nLeftrightline (≠)</code> ...	52
<code>\ni (∋)</code>	56, 57	<code>\nleftarrow (←)</code>	84	<code>\nleftrightspoon (↯)</code> ..	87
<code>\nialpha (α)</code>	19	<code>\nleftarrowtail (↠)</code> ...	77	<code>\nleftrightsquigarrow (↠)</code> ..	78
<code>\nibar</code>	<i>see</i> \ownsbar	<code>\nleftarrowtail (↠)</code> ...	74	<code>\nleftrightsquigarrow (↠)</code> ..	75
<code>\nibeta (β)</code>	19	<code>\nleftAssert (≡)</code>	54	<code>\nleftrightwavearrow (↠)</code>	78
<code>\NibLeft (↶)</code>	132	<code>\nleftassert (≡)</code>	54	<code>\nlefttrsquigarrow (↠)</code> ..	78
<code>\NibRight (↷)</code>	132	<code>\nleftbkarrow (↶)</code>	77	<code>\nlefttrsquigarrow (↠)</code> ..	74
<code>nibs</code>	132	<code>\nleftblackspoon (↯)</code> ..	87	<code>\nleftspoon (↯)</code>	87
<code>\NibSolidLeft (↶)</code>	132	<code>\nleftcurvedarrow (↶)</code> ..	79	<code>\nleftspoon (↯)</code>	86
<code>\NibSolidRight (↷)</code>	132	<code>\nleftdowncurvedarrow (↶)</code> ..	78	<code>\nleftsquigarrow (↠)</code> ..	78
<code>nicefrac (package)</code>	117, 231, 232	<code>\nleftfilledspoon (↯)</code> ..	86	<code>\nleftupcurvedarrow (↶)</code>	79
<code>niceframe (package)</code> ..	196–199, 202	<code>\nleftfootline (≡)</code> ...	54	<code>\nleftVDash (≡)</code>	54
<code>\NiceReapey (≡)</code>	184	<code>\nleftfootline (≡)</code> ...	52	<code>\nleftVDash (≡)</code>	54
<code>\nichi (χ)</code>	19	<code>\nleftfree (≡)</code>	52	<code>\nleftVDash (≡)</code>	52
<code>\niepsilon (ε)</code>	19	<code>\nleftharpoonccw (↠)</code> ..	75	<code>\nleftvDash (≡)</code>	54
<code>\nigamma (γ)</code>	19	<code>\nleftharpooncw (↠)</code> ...	75	<code>\nleftvdash (≡)</code>	54
<code>\niiota (ι)</code>	19	<code>\nleftharpoondown (↠)</code> ..	80	<code>\nleftvdash (≡)</code>	52
<code>\nilambda (λ)</code>	19	<code>\nleftharpoonup (↠)</code> ...	80	<code>\nleftwavearrow (↠)</code> ...	78
<code>\nimageof (↗)</code>	87	<code>\nleftlcurvedarrow (↶)</code> ..	78	<code>\nleq (≤)</code>	63
<code>\nin (∈)</code>	54, 94	<code>\nleftleftarrows (↔)</code> ..	77	<code>\nleq (≤)</code>	62, 63
<code>\nin (∈)</code>	93	<code>\nleftleftarrows (↔)</code> ..	74	<code>\nleq (≤)</code>	66
<code>\Ninja (🥷)</code>	184	<code>\nleftlsquigarrow (↠)</code> ..	78	<code>\nleq (≤)</code>	65
<code>\niobar (∋)</code>	56	<code>\nleftlsquigarrow (↠)</code> ..	74	<code>\nleq (≤)</code>	64
<code>\niomega (ω)</code>	19	<code>\nLeftmapsto (↠)</code>	77	<code>\nleq (≤)</code>	67
<code>\nippi (φ)</code>	19	<code>\nLeftmapsto (↠)</code>	77	<code>\nleqclosed (≡)</code>	65, 69
<code>\niplus (⊃)</code>	49	<code>\nLeftmapsto (↠)</code>	74	<code>\nleqclosed (≡)</code>	64, 68
<code>\niplus (⊃)</code>	55	<code>\nleftModels (≡)</code>	52	<code>\nleqdot (≡)</code>	65
<code>\nis (∋)</code>	56	<code>\nleftmodels (≡)</code>	54	<code>\nleqdot (≡)</code>	64
		<code>\nleftmodels (≡)</code>	52		

<code>\nleqq</code> ($\leqslant$)	63	<code>\nlll</code> ($\lll$)	64	<code>\nnelcurvearrow</code> ($\curvearrowright$)	79
<code>\nleqq</code> ($\leqslant$)	62	<code>\nlongdashv</code> ($\dashv$)	54	<code>\nnelsquigarrow</code> ($\rightsquigarrow$)	74
<code>\nleqq</code> ($\leqslant$)	66	<code>\nlongleadsto</code> ($\leadsto$)	79	<code>\nnemapsto</code> ($\mapsto$)	74
<code>\nleqq</code> ($\leqslant$)	65	<code>\nLongleftarrow</code> ($\Longleftarrow$)	78	<code>\nneModels</code> ($\models$)	52
<code>\nleqq</code> ($\leqslant$)	64	<code>\nlongleftarrow</code> ($\leftarrow$)	78	<code>\nnemodels</code> ($\models$)	52
<code>\nleqq</code> ($\leqslant$)	67	<code>\nlongleftfootline</code> ($\leftarrow$)	54	<code>\nnenearrows</code> ($\nearrow$)	78
<code>\nleqslant</code> ($\leqslant$)	62	<code>\nLongleftrightharrow</code> ($\Longleftrightarrow$)	78	<code>\nnenearrows</code> ($\nearrow$)	74
<code>\nleqslant</code> ($\leqslant$)	66	<code>\nlongleftrightharrow</code> ($\leftrightarrow$)	78	<code>\nnepitchfork</code> ($\pitchfork$)	86
<code>\nleqslant</code> ($\leqslant$)	65	<code>\nlongleftsquigarrow</code> ($\leftrightsquigarrow$)	78	<code>\nnercurvearrow</code> ($\curvearrowleft$)	79
<code>\nleqslant</code> ($\leqslant$)	64	<code>\nlongleftsquigarrow</code> ($\rightsquigarrow$)	79	<code>\nnersquigarrow</code> ($\rightsquigarrow$)	74
<code>\nleqslant</code> ($\leqslant$)	67	<code>\nlongleftwvearrow</code> ($\leftleftarrows$)	78	<code>\nnespoon</code> ($\spoon$)	86
<code>\nleqslantdot</code> ($\leqslant$)	65	<code>\nlongleftwvearrow</code> ($\rightsquigarrow$)	78	<code>\nNeswarrow</code> ($\nearrow$)	78
<code>\nleqslantdot</code> ($\leqslant$)	64	<code>\nLongmapsfrom</code> ($\Longmapsto$)	54, 78	<code>\nNeswarrow</code> ($\nearrow$)	74
<code>\nleqslcc</code> ($\leqslant$)	65	<code>\nlongmapsfrom</code> ($\mapsto$)	54, 78	<code>\nneswarrow</code> ($\nearrow$)	78
<code>\nlescc</code> ($\leqslant$)	65	<code>\nLongmapsto</code> ($\mapsto$)	78	<code>\nneswarrow</code> ($\nearrow$)	74
<code>\nlesdot</code> ($\leqslant$)	65	<code>\nlongmapsto</code> ($\mapsto$)	78	<code>\nneswarrows</code> ($\nearrow$)	78
<code>\nlesg</code> ($\leqslant$)	65	<code>\nLongrightarrow</code> ($\longrightarrow$)	78	<code>\nneswarrows</code> ($\nearrow$)	74
<code>\nless</code> ($\less$)	63	<code>\nlongrightarrow</code> ($\rightarrow$)	78	<code>\nneswcurvearrow</code> ($\curvearrowright$)	79
<code>\nless</code> ($\less$)	62	<code>\nlongrightfootline</code> ($\rightarrow$)	54	<code>\nneswharpoonnwse</code> ($\nwse$)	80
<code>\nless</code> ($\less$)	66	<code>\nlongrightsquigarrow</code> ($\rightsquigarrow$)	79	<code>\nneswharpoonnwse</code> ($\nwse$)	75
<code>\nless</code> ($\less$)	65	<code>\nlongrightsquigarrow</code> ($\rightsquigarrow$)	79	<code>\nneswharpoons</code> ($\wharpoonright$)	80
<code>\nless</code> ($\less$)	64	<code>\nlongrightwvearrow</code> ($\rightarrow$)	78	<code>\nneswharpoons</code> ($\wharpoonright$)	75
<code>\nless</code> ($\less$)	67	<code>\nltcc</code> ($\ll$)	65	<code>\nneswharpoonsenw</code> ($\nwse$)	80
<code>\nlessapprox</code> ($\lessapprox$)	63	<code>\nMapsdown</code> ($\Downarrow$)	79	<code>\nneswharpoonsenw</code> ($\nwse$)	75
<code>\nlessapprox</code> ($\lessapprox$)	63	<code>\nmapsdown</code> ($\Downarrow$)	79	<code>\nNeswline</code> ($\nwse$)	52
<code>\nlessapprox</code> ($\lessapprox$)	65	<code>\nmapsdown</code> ($\Downarrow$)	79	<code>\nneswline</code> ($\nwse$)	52
<code>\nlesscc</code> ($\less$)	65	<code>\nMapsfrom</code> ($\Uparrow$)	79	<code>\nneVdash</code> ($\Vdash$)	52
<code>\nlessclosed</code> ($\less$)	65, 69	<code>\nmapsfrom</code> ($\Uparrow$)	79	<code>\nnevDash</code> ($\dashv$)	52
<code>\nlessclosed</code> ($\less$)	64, 68	<code>\nMapsto</code> ($\mapsto$)	79	<code>\nni</code> ($\ni$)	54
<code>\nlessdot</code> ($\lessdot$)	65	<code>\nmapsto</code> ($\mapsto$)	79	<code>\nni</code> ($\ni$)	94
<code>\nlessdot</code> ($\lessdot$)	64	<code>\nmapsto</code> ($\mapsto$)	75	<code>\nni</code> ($\ni$)	57
<code>\nlessdot</code> ($\lessdot$)	64	<code>\nmapsto</code> ($\mapsto$)	79	<code>\nnststile</code> ($\sqsubseteq$)	58
<code>\nlesseqgtr</code> ($\lessgtr$)	65	<code>\nMapsup</code> ($\Uparrow$)	79	<code>\nntstile</code> ($\sqsubseteq$)	58
<code>\nlesseqgtr</code> ($\lessgtr$)	64	<code>\nmapsup</code> ($\Uparrow$)	79	<code>\nnttstile</code> ($\sqsubseteq$)	58
<code>\nlesseqgtrslant</code> ($\lessgtr$)	65	<code>\nmid</code> ($\mid$)	49	<code>\nNwarrow</code> ($\nwarrow$)	78
<code>\nlesseqgtrslant</code> ($\lessgtr$)	64	<code>\nmid</code> ($\mid$)	55	<code>\nNwarrow</code> ($\nwarrow$)	74
<code>\nlesseqqgtr</code> ($\lessgtr$)	65	<code>\nmid</code> ($\mid$)	54	<code>\nnwarrow</code> ($\nwarrow$)	71
<code>\nlesseqqgtr</code> ($\lessgtr$)	64	<code>\nmid</code> ($\mid$)	52	<code>\nnwarrow</code> ($\nwarrow$)	80
<code>\nlesseqslantgtr</code> ($\lessgtr$)	65	<code>\nmid</code> ($\mid$)	57	<code>\nnwarrow</code> ($\nwarrow$)	78
<code>\nlessgtr</code> ($\lessgtr$)	63	<code>\nmidcir</code> ($\mid$)	87	<code>\nnwarrow</code> ($\nwarrow$)	74
<code>\nlessgtr</code> ($\lessgtr$)	65	<code>\nmodels</code> ($\models$)	54	<code>\nnwarrowtail</code> ($\nwarrow$)	78
<code>\nlessgtr</code> ($\lessgtr$)	64	<code>\nmodels</code> ($\models$)	52	<code>\nnwarrowtail</code> ($\nwarrow$)	74
<code>\nlessgtr</code> ($\lessgtr$)	67	<code>\nmultimap</code> ($\multimap$)	87	<code>\nnwbkarrow</code> ($\nwarrow$)	78
<code>\nlessssim</code> ($\lessssim$)	63	<code>\nmultimap</code> ($\multimap$)	86	<code>\nnwfilledspoon</code> ($\nwarrow$)	86
<code>\nlessssim</code> ($\lessssim$)	63	<code>\nmultimapinv</code> ($\multimap$)	87	<code>\nnwfootline</code> ($\nwarrow$)	52
<code>\nlessssim</code> ($\lessssim$)	65	<code>\NN</code> ($\mathbb{N}$)	125	<code>\nnwfree</code> ($\nwarrow$)	52
<code>\nlessssim</code> ($\lessssim$)	67	<code>\nndtstile</code> ($\sqsubseteq$)	58	<code>\nnwharpoonccw</code> ($\nwarrow$)	75
<code>\nlhookdownarrow</code> ($\downarrow$)	74	<code>\nNearrow</code> ($\nearrow$)	78	<code>\nnwharpoonccw</code> ($\nwarrow$)	75
<code>\nlhookleftarrow</code> ($\leftarrow$)	74	<code>\nNearrow</code> ($\nearrow$)	73	<code>\nnwharpooncw</code> ($\nwarrow$)	75
<code>\nlhooknearrow</code> ($\nearrow$)	74	<code>\nnearrow</code> ($\nearrow$)	71	<code>\nnwharpoonne</code> ($\nwarrow$)	80
<code>\nlhooknwarrow</code> ($\nwarrow$)	73	<code>\nnearrow</code> ($\nearrow$)	80	<code>\nnwharpoons</code> ($\nwarrow$)	80
<code>\nlhookrightarrow</code> ($\rightarrow$)	73	<code>\nnearrow</code> ($\nearrow$)	78	<code>\nnwcurvearrow</code> ($\curvearrowright$)	79
<code>\nlhooksearrow</code> ($\nwarrow$)	73	<code>\nnearrow</code> ($\nearrow$)	73	<code>\nnwlsquigarrow</code> ($\rightsquigarrow$)	74
<code>\nlhookswarrow</code> ($\swarrow$)	73	<code>\nnearrowtail</code> ($\nearrow$)	78	<code>\nnwmapsto</code> ($\mapsto$)	74
<code>\nlhookuparrow</code> ($\uparrow$)	73	<code>\nnearrowtail</code> ($\nearrow$)	74	<code>\nnwModels</code> ($\models$)	52
<code>\nll</code> ($\ll$)	63	<code>\nnebkarrow</code> ($\nwarrow$)	78	<code>\nnwmodels</code> ($\models$)	52
<code>\nll</code> ($\ll$)	65	<code>\nnefilledspoon</code> ($\nwarrow$)	86	<code>\nnwnwarrows</code> ($\nwarrow$)	78
<code>\nll</code> ($\ll$)	64	<code>\nnefootline</code> ($\nwarrow$)	52	<code>\nnwnwarrows</code> ($\nwarrow$)	74
<code>\nll</code> ($\ll$)	67	<code>\nnefree</code> ($\nwarrow$)	52	<code>\nnwpitchfork</code> ($\pitchfork$)	86
<code>\nLleftarrow</code> ($\Lleftarrow$)	78	<code>\nneharpoonccw</code> ($\nwarrow$)	75	<code>\nnwrcurvearrow</code> ($\nwarrow$)	79
<code>\nLleftarrow</code> ($\Lleftarrow$)	73	<code>\nneharpooncw</code> ($\nwarrow$)	75	<code>\nnwrsquigarrow</code> ($\rightsquigarrow$)	74
<code>\nlll</code> ($\lll$)	65	<code>\nneharpoonnw</code> ($\nwarrow$)	80	<code>\nNwsearrow</code> ($\nwse$)	78
		<code>\nneharpoonse</code> ($\nwarrow$)	80	<code>\nNwsearrow</code> ($\nwse$)	74

$\backslash$ nnwsearrow ($\nwarrow$)	78	$\backslash$ notowns	see $\backslash$ notowner and	$\backslash$ nrcurvearrowne ($\nearrow$)	74
$\backslash$ nnwsearrow ($\nwarrow$)	74	$\backslash$ notni		$\backslash$ nrcurvearrownw ($\nwarrow$)	74
$\backslash$ nnwsearrows ($\nwarrow$)	78	$\backslash$ notperp ($\perp$)	50	$\backslash$ nrcurvearrowright ($\nearrow$)	74
$\backslash$ nnwsearrows ($\nwarrow$)	74	$\backslash$ notslash ($\not\backslash$)	124	$\backslash$ nrcurvearrowse ($\searrow$)	74
$\backslash$ nnwsecurvearrow ($\searrow$)	79	$\backslash$ notsmallin ($\notin$)	94	$\backslash$ nrcurvearrowsw ($\swarrow$)	74
$\backslash$ nnwseharpoonnesw ($\nwarrow$)	80	$\backslash$ notsmallowns ($\nexists$)	94	$\backslash$ nrcurvearrowup ($\nearrow$)	74
$\backslash$ nnwseharpoonnesw ($\nwarrow$)	75	$\backslash$ nottop ($\top$)	93	$\backslash$ nRelbar ($\neq$)	52
$\backslash$ nnwseharpoons ($\bowtie$)	80	$\backslash$ nottop ($\top$)	117	$\backslash$ nrelbar ($\neq$)	52
$\backslash$ nnwseharpoons ($\bowtie$)	75	$\backslash$ NoTumbler ($\boxtimes$)	170	$\backslash$ nrestriction ($\vdash$)	80
$\backslash$ nnwseharpoonswne ($\nwarrow$)	80	$\backslash$ novelty (N)	174	$\backslash$ nrestriction ($\vdash$)	75
$\backslash$ nnwseharpoonswne ($\nwarrow$)	75	$\backslash$ noway ($\ominus$)	170	$\backslash$ nrhookdownarrow ($\downdownarrows$)	74
$\backslash$ nNwsepline ($\nwarrow$)	52	$\backslash$ nowns ($\nexists$)	54, 94	$\backslash$ nrhookleftarrow ($\leftleftarrows$)	74
$\backslash$ nnwseline ($\times$)	52	$\backslash$ nowns ($\exists$)	94	$\backslash$ nrhooknearrow ($\nearrow$)	74
$\backslash$ nnwspoon ($\propto$)	86	$\backslash$ nowns ($\nexists$)	93	$\backslash$ nrhooknwarrow ($\nwarrow$)	74
$\backslash$ nnwVdash ($\Vdash$)	52	$\backslash$ nparallel ($\parallel$)	49	$\backslash$ nrhookrightarrow ($\rightarrow$)	74
$\backslash$ nnwvdash ($\vee$)	52	$\backslash$ nparallel ($\parallel$)	55	$\backslash$ nrhooksearrow ($\nwarrow$)	74
no entry	see $\backslash$ noway	$\backslash$ nparallel ($\parallel$)	54	$\backslash$ nrhookswarrow ($\swarrow$)	74
$\backslash$ NoBleech ($\triangle$)	170	$\backslash$ nparallel ($\parallel$)	52	$\backslash$ nrhookuparrow ($\uparrow$)	74
$\backslash$ NoChemicalCleaning ($\odot$)	170	$\backslash$ nparallel ($\parallel$)	57	$\backslash$ nRightarrow ($\Rightarrow$)	71
nointegrals (wasysym package option)	39	$\backslash$ nparallelslant ($\#$)	59	$\backslash$ nRightarrow ($\Rightarrow$)	70
$\backslash$ NoIroning ($\triangle$)	170	$\backslash$ nperp ($\perp$)	54	$\backslash$ nRightarrow ($\Rightarrow$)	81
non-commutative division	110	$\backslash$ nperp ($\perp$)	52	$\backslash$ nRightarrow ($\Rightarrow$)	78
nonbreaking space	126	$\backslash$ npitchfork ($\pitchfork$)	88	$\backslash$ nRightarrow ($\Rightarrow$)	74
NOR gates	126	$\backslash$ npitchfork ($\pitchfork$)	86	$\backslash$ nRightarrow ($\Rightarrow$)	84
$\backslash$ NORD (∇)	126	$\backslash$ nplus ($\oplus$)	29	$\backslash$ nrightarrow ($\rightarrow$)	71
$\backslash$ norigof (∇)	87	$\backslash$ nplus ($\oplus$)	32	$\backslash$ nrightarrow ($\rightarrow$)	70
$\backslash$ NOR1 (∇)	126	$\backslash$ npolint ($\int$)	45	$\backslash$ nrightarrow ($\rightarrow$)	81
norm	see $\backslash$ lVert and $\backslash$ rVert	$\backslash$ npolintsl ($\int$)	46	$\backslash$ nrightarrow ($\rightarrow$)	78
normal runes	151	$\backslash$ npolintup ($\int$)	46	$\backslash$ nrightarrow ($\rightarrow$)	74
$\backslash$ NORr (∇)	126	$\backslash$ nprec ($\prec$)	50	$\backslash$ nrightarrow ($\rightarrow$)	84
$\backslash$ NorthNode (∇)	124	$\backslash$ nprec ($\prec$)	49	$\backslash$ nrightarrowtail ($\rightarrowtail$)	78
$\backslash$ NORu (∇)	126	$\backslash$ nprec ($\prec$)	55	$\backslash$ nrightarrowtail ($\rightarrowtail$)	74
$\backslash$ Norway (∇)	182	$\backslash$ nprec ($\prec$)	54	$\backslash$ nrightAssert ($\#$)	54
$\backslash$ NoSun ($\bullet$)	171	$\backslash$ nprec ($\prec$)	52	$\backslash$ nrightassert ($\#$)	54
$\backslash$ Not ($\neg$)	56	$\backslash$ nprec ($\prec$)	57	$\backslash$ nrightbkarrow ($\nrightarrow$)	78
not	see $\backslash$ neg	$\backslash$ nprecapprox ($\approx$)	50	$\backslash$ nrightblackspoon ($\nrightarrow$)	87
$\backslash$ not	50, 216	$\backslash$ nprecapprox ($\approx$)	49	$\backslash$ nrightcurvedarrow ($\rightarrow$)	78
not equal ($\neq$ vs. $\neq$)	50	$\backslash$ nprecapprox ($\approx$)	54	$\backslash$ nrightdowncurvedarrow ($\searrow$)	78
$\backslash$ notasymp ($\asymp$)	50	$\backslash$ nprecapprox ($\approx$)	52	$\backslash$ nrightfilledspoon ($\rightarrow$)	86
$\backslash$ notbackslash ($\backslash$)	124	$\backslash$ npreccurlyeq ($\curlyeq$)	50	$\backslash$ nrightfootline ($\rightarrow$)	54
$\backslash$ notbot ($\bot$)	93	$\backslash$ npreccurlyeq ($\curlyeq$)	49	$\backslash$ nrightfootline ($\rightarrow$)	52
$\backslash$ notbot ($\bot$)	117	$\backslash$ npreccurlyeq ($\curlyeq$)	54	$\backslash$ nrightfree ($\rightarrow$)	52
$\backslash$ notchar (∇)	56	$\backslash$ npreccurlyeq ($\curlyeq$)	52	$\backslash$ nrightharpoonccw ($\rightarrow$)	75
$\backslash$ NotCongruent ($\ncong$)	113	$\backslash$ npreccurlyeq ($\curlyeq$)	57	$\backslash$ nrightharpooncw ($\rightarrow$)	75
$\backslash$ notdivides ($\nmid$)	50	$\backslash$ npreceq ($\preceq$)	50	$\backslash$ nrightharpoondown ($\rightarrow$)	80
$\backslash$ notequiv ($\ncong$)	50	$\backslash$ npreceq ($\preceq$)	49	$\backslash$ nrightharpoonup ($\rightarrow$)	80
$\backslash$ notin ($\notin$)	93	$\backslash$ npreceq ($\preceq$)	55	$\backslash$ nrightlcurvearrow ($\rightarrow$)	78
$\backslash$ notin ($\notin$)	93	$\backslash$ npreceq ($\preceq$)	54	$\backslash$ nrightleftarrows ($\rightleftarrows$)	78
$\backslash$ notin ($\notin$)	94	$\backslash$ npreceq ($\preceq$)	52	$\backslash$ nrightleftarrows ($\rightleftarrows$)	73
$\backslash$ notin ($\notin$)	54	$\backslash$ npreceqq ($\preceqq$)	49	$\backslash$ nrightleftcurvearrow ($\rightarrow$)	78
$\backslash$ notin ($\notin$)	94	$\backslash$ npreceqq ($\preceqq$)	54	$\backslash$ nrightleftharpoons ($\rightleftharpoons$)	80
$\backslash$ notin ($\notin$)	93	$\backslash$ nprecsim ($\sim$)	50	$\backslash$ nrightleftharpoons ($\rightleftharpoons$)	75
$\backslash$ notin ($\notin$)	57	$\backslash$ nprecsim ($\sim$)	49	$\backslash$ nrightleftsquigarrow ($\rightarrow$)	78
$\backslash$ notni ($\nexists$)	93	$\backslash$ nprecsim ($\sim$)	54	$\backslash$ nrightleftsquigarrow ($\rightarrow$)	78
$\backslash$ notowner ($\nexists$)	93	$\backslash$ nprecsim ($\sim$)	52	$\backslash$ nrightlsquigarrow ($\rightarrow$)	78
		$\backslash$ NR (∇)	125	$\backslash$ nrightlsquigarrow ($\rightarrow$)	73
		$\backslash$ nrcirclearrowdown ($\Downarrow$)	74	$\backslash$ nRightmapsto ($\mapsto$)	78
		$\backslash$ nrcirclearrowleft ($\Leftarrow$)	74	$\backslash$ nrightmapsto ($\mapsto$)	78
		$\backslash$ nrcirclearrowright ($\Rightarrow$)	74	$\backslash$ nrightmapsto ($\mapsto$)	73
		$\backslash$ nrcirclearrowup ($\Uparrow$)	74	$\backslash$ nrightModels ($\#$)	52
		$\backslash$ nrcurvearrowdown ($\searrow$)	74	$\backslash$ nrightmodels ($\#$)	54
		$\backslash$ nrcurvearrowleft ($\nwarrow$)	74		

<code>\nsucccurlyeq</code> (≋)	52	<code>\nswarrows</code> (↔)	78	<code>\ntwoheaduparrow</code> (↗)	74
<code>\nsucccurlyeq</code> (≋)	57	<code>\nswarrows</code> (↔)	74	<code>\Nu</code> (N)	90
<code>\nsucceq</code> (≧)	50	<code>\nswdash</code> (↗)	52	<code>\nu</code> (ν)	90
<code>\nsucceq</code> (≧)	49	<code>\nswdash</code> (↗)	52	nuclear power plant <i>see</i> <code>\SNPP</code>	
<code>\nsucceq</code> (≧)	55	<code>\NT</code> (N)	125	<code>\nucleus</code> (☉)	129
<code>\nsucceq</code> (≧)	54	<code>\ntdtstyle</code> (≡)	58	<code>\Nudelholz</code> (☞)	184
<code>\nsucceq</code> (≧)	52	<code>ntheorem</code> (package)	115	<code>\NUL</code> (N)	126
<code>\nsucceq</code> (≧)	57	<code>\nthickapprox</code> (≈)	49	<code>\NUL</code> (N)	126
<code>\nsucceqq</code> (≧)	49	<code>\nto</code> (→)	79	null infinity . . . <i>see</i> alphabets, math	
<code>\nsucceqq</code> (≧)	54	<code>\nto</code> (→)	75	null set	114–117
<code>\nsuccsim</code> (≋)	50	<code>\ntriangleeq</code> (≧)	69	number sets . . . <i>see</i> alphabets, math	
<code>\nsuccsim</code> (≋)	49	<code>\ntriangleeq</code> (≧)	68	number sign <i>see</i> <code>\textnumero</code>	
<code>\nsuccsim</code> (≋)	54	<code>\ntriangleleft</code> (◁)	67	numbers <i>see</i> numerals	
<code>\nsuccsim</code> (≋)	52	<code>\ntriangleleft</code> (◁)	67	numerals 27, 113, 121, 134, 168, 175, 176, 191–192, 209	
<code>\nSupset</code> (⊃)	60	<code>\ntriangleleft</code> (◁)	69	circled 134, 175, 176, 209	
<code>\nSupset</code> (⊃)	60	<code>\ntriangleleft</code> (◁)	69	Epi-Olmec	150
<code>\nSupset</code> (⊃)	61	<code>\ntriangleleft</code> (◁)	69	Isthmian	150
<code>\nSupset</code> (⊃)	61	<code>\ntriangleleft</code> (◁)	69	LCD	121
<code>\nsupset</code> (⊃)	60	<code>\ntriangleleft</code> (◁)	64, 68	Linear B	146
<code>\nsupset</code> (⊃)	61	<code>\ntrianglelefteq</code> (≧)	67	Mayan	113
<code>\nsupset</code> (⊃)	61	<code>\ntrianglelefteq</code> (≧)	67	old-style	27
<code>\nsupset</code> (⊃)	61	<code>\ntrianglelefteq</code> (≧)	69	segmented	121
<code>\nsupset</code> (⊃)	61	<code>\ntrianglelefteq</code> (≧)	69	<code>\NumLock</code> (Num)	125
<code>\nsupset</code> (⊃)	62	<code>\ntrianglelefteq</code> (≧)	69	<code>\nUparrow</code> (↑)	78
<code>\nsupseteq</code> (⊃)	60	<code>\ntrianglelefteq</code> (≧)	64, 68	<code>\nUparrow</code> (↑)	74
<code>\nsupseteq</code> (⊃)	60	<code>\ntrianglelefteq</code> (≧)	67	<code>\nuparrow</code> (↑)	78
<code>\nsupseteq</code> (⊃)	61	<code>\ntrianglelefteq</code> (≧)	67	<code>\nuparrow</code> (↑)	74
<code>\nsupseteq</code> (⊃)	61	<code>\ntrianglelefteq</code> (≧)	67	<code>\nuparrowtail</code> (↗)	78
<code>\nsupseteq</code> (⊃)	61	<code>\ntrianglelefteq</code> (≧)	67	<code>\nuparrowtail</code> (↗)	74
<code>\nsupseteq</code> (⊃)	61	<code>\ntrianglelefteq</code> (≧)	69	<code>\nupAssert</code> (≧)	54
<code>\nsupseteq</code> (⊃)	62	<code>\ntrianglelefteq</code> (≧)	64, 68	<code>\nupassert</code> (≧)	54
<code>\nsupseteqq</code> (≧)	60	<code>\ntrianglelefteq</code> (≧)	67	<code>\nupbkarrow</code> (↗)	78
<code>\nsupseteqq</code> (≧)	60	<code>\ntrianglelefteq</code> (≧)	67	<code>\nupblackspoon</code> (☞)	87
<code>\nsupseteqq</code> (≧)	61	<code>\ntrianglelefteq</code> (≧)	69	<code>\nUpdownarrow</code> (↕)	78
<code>\nsupseteqq</code> (≧)	61	<code>\ntrianglelefteq</code> (≧)	69	<code>\nUpdownarrow</code> (↕)	74
<code>\nsupseteqq</code> (≧)	61	<code>\ntrianglelefteq</code> (≧)	69	<code>\nupdownarrow</code> (↕)	78
<code>\nsupseteqq</code> (≧)	61	<code>\ntrianglelefteq</code> (≧)	64, 68	<code>\nupdownarrow</code> (↕)	74
<code>\nsupseteqq</code> (≧)	62	<code>\ntrianglelefteq</code> (≧)	69	<code>\nupdownarrows</code> (↕)	78
<code>\nSwarrow</code> (↗)	78	<code>\ntrianglelefteq</code> (≧)	69	<code>\nupdownarrows</code> (↕)	74
<code>\nSwarrow</code> (↗)	74	<code>\ntrianglelefteq</code> (≧)	67	<code>\nupdowncurvearrow</code> (↗)	79
<code>\nswarrow</code> (↙)	77	<code>\ntrianglelefteq</code> (≧)	67	<code>\nupdownharpoonleftright</code> (↗)	80
<code>\nswarrow</code> (↙)	74	<code>\ntriplefrown</code> (⋈)	87	<code>\nupdownharpoonleftright</code> (↗)	75
<code>\nswarrowtail</code> (↙)	78	<code>\ntriplesim</code> (≋)	54	<code>\nupdownharpoonrightleft</code> (↗)	80
<code>\nswarrowtail</code> (↙)	74	<code>\ntriplesim</code> (≋)	52	<code>\nupdownharpoonrightleft</code> (↗)	75
<code>\nswbkarrow</code> (↙)	78	<code>\ntriplesmile</code> (☺)	87	<code>\nUpdownline</code> (≡)	52
<code>\nswfilledspoon</code> (☞)	86	<code>\ntststyle</code> (≡)	58	<code>\nupdownline</code> (≡)	52
<code>\nswfootline</code> (↙)	52	<code>\nttstyle</code> (≡)	58	<code>\nupdownsquigarrow</code> (≋)	79
<code>\nswfree</code> (↙)	52	<code>\ntttstyle</code> (≡)	58	<code>\nupdownwavearrow</code> (↗)	78
<code>\nswharpoonccw</code> (↙)	75	<code>\ntwoheaddownarrow</code> (↕)	78	<code>\nupfilledspoon</code> (☞)	86
<code>\nswharpooncw</code> (↙)	75	<code>\ntwoheaddownarrow</code> (↕)	74	<code>\nupfootline</code> (≡)	52
<code>\nswharpoonnw</code> (↙)	80	<code>\ntwoheadleftarrow</code> (←)	49	<code>\nupfree</code> (≡)	52
<code>\nswharpoonse</code> (↙)	80	<code>\ntwoheadleftarrow</code> (←)	78	<code>\nupharpoonccw</code> (↙)	75
<code>\nswlcurvearrow</code> (↙)	79	<code>\ntwoheadleftarrow</code> (←)	74		
<code>\nswlsquigarrow</code> (↙)	74	<code>\ntwoheadnearrow</code> (↗)	78		
<code>\nswmapsto</code> (↗)	74	<code>\ntwoheadnearrow</code> (↗)	74		
<code>\nswModels</code> (↗)	52	<code>\ntwoheadnearrow</code> (↗)	78		
<code>\nswmodels</code> (↗)	52	<code>\ntwoheadnearrow</code> (↗)	74		
<code>\nswnearrows</code> (↗)	78	<code>\ntwoheadnearrow</code> (↗)	74		
<code>\nswnearrows</code> (↗)	74	<code>\ntwoheadnearrow</code> (↗)	74		
<code>\nswnecurvearrow</code> (↗)	79	<code>\ntwoheadnearrow</code> (↗)	74		
<code>\nswneharpoons</code> (↗)	80	<code>\ntwoheadnearrow</code> (↗)	74		
<code>\nswneharpoons</code> (↗)	75	<code>\ntwoheadnearrow</code> (↗)	74		
<code>\nswpitchfork</code> (↗)	86	<code>\ntwoheadnearrow</code> (↗)	74		
<code>\nswrcurvearrow</code> (↗)	79	<code>\ntwoheadnearrow</code> (↗)	74		
<code>\nswrsquigarrow</code> (↗)	74	<code>\ntwoheadnearrow</code> (↗)	74		
<code>\nswspoon</code> (↗)	86	<code>\ntwoheadnearrow</code> (↗)	74		

$\backslash$ nupharpooncw ($\dagger$)	75	$\backslash$ nVDash ($\nmid$)	57	$\backslash$ narrowcorner ($\nearrow$)	80
$\backslash$ nupharpoonleft ($\dagger$)	80	$\backslash$ nVdash ($\nmid$)	50	$\backslash$ narrowtail ($\nearrow$)	76
$\backslash$ nupharpoonright ($\dagger$)	80	$\backslash$ nVdash ($\nmid$)	49	$\backslash$ narrowtail ($\searrow$)	72
$\backslash$ nuplcurvearrow ($\curvearrowright$)	79	$\backslash$ nVdash ($\nmid$)	55	$\backslash$ nwbkarrow ($\nwarrow$)	76
$\backslash$ nupleftcurvedarrow ($\curvearrowleft$)	79	$\backslash$ nVdash ($\nmid$)	54	$\backslash$ nwedgeq ($\napprox$)	54
$\backslash$ nuplsquigarrow ($\simeq$)	79	$\backslash$ nVdash ($\nmid$)	52	$\backslash$ nwfilledspoon ($\searrow$)	86
$\backslash$ nuplsquigarrow ($\simeq$)	74	$\backslash$ nVdash ($\nmid$)	57	$\backslash$ nwfootline ($\searrow$)	51
$\backslash$ nUpmapsto ($\Uparrow$)	78	$\backslash$ nvDash ($\nmid$)	50	$\backslash$ nwfree ($\searrow$)	51
$\backslash$ nupmapsto ($\Updownarrow$)	78	$\backslash$ nvDash ($\nmid$)	49	$\backslash$ nwharpoonccw ($\nwarrow$)	75
$\backslash$ nupmapsto ($\Updownarrow$)	74	$\backslash$ nvDash ($\nmid$)	55	$\backslash$ nwharpooncw ($\nwarrow$)	75
$\backslash$ nupModels ($\Updownarrow$)	52	$\backslash$ nvDash ($\nmid$)	54	$\backslash$ nwharpoone ($\nwarrow$)	79
$\backslash$ nupmodels ($\Updownarrow$)	54	$\backslash$ nvDash ($\nmid$)	52	$\backslash$ nwharpoonsw ($\nwarrow$)	79
$\backslash$ nupmodels ($\Updownarrow$)	52	$\backslash$ nvDash ($\nmid$)	57	$\backslash$ nwhiteblackspoon ($\searrow$)	87
$\backslash$ nuppitchfork ($\pitchfork$)	88	$\backslash$ nvDash ($\nmid$)	50	$\backslash$ nwlcurvearrow ($\curvearrowleft$)	77
$\backslash$ nuppitchfork ($\pitchfork$)	86	$\backslash$ nvDash ($\nmid$)	49	$\backslash$ nwlsquigarrow ($\curvearrowleft$)	72
$\backslash$ nuprcurvearrow ($\curvearrowright$)	79	$\backslash$ nvDash ($\nmid$)	55	$\backslash$ nwmmapsto ($\nwarrow$)	72
$\backslash$ nuprightcurvearrow ($\curvearrowright$)	79	$\backslash$ nvDash ($\nmid$)	54	$\backslash$ nwModels ($\nwarrow$)	51
$\backslash$ nupsquigarrow ($\simeq$)	79	$\backslash$ nvDash ($\nmid$)	52	$\backslash$ nwmodels ($\nwarrow$)	51
$\backslash$ nupsquigarrow ($\simeq$)	74	$\backslash$ nvDash ($\nmid$)	57	$\backslash$ nwnwarrows ($\nwarrow$)	76
$\backslash$ nupspoon ($\P$)	87	$\backslash$ nvDash ($\nmid$)	54	$\backslash$ nwnwarrows ($\nwarrow$)	72
$\backslash$ nupspoon ($\P$)	86	$\backslash$ nveeq ($\napprox$)	54	$\backslash$ nwovnearrow ($\nearrow$)	82
$\backslash$ nupuparrows ($\Updownarrow$)	78	$\backslash$ nvifty (ϕ)	114	$\backslash$ nwpitchfork ($\pitchfork$)	86
$\backslash$ nupuparrows ($\Updownarrow$)	74	$\backslash$ nVleftarrow ($\Leftarrow$)	81	$\backslash$ nwrcurvearrow ($\curvearrowright$)	77
$\backslash$ nupVDash ($\pm$)	54	$\backslash$ nVleftarrow ($\Leftarrow$)	84	$\backslash$ nwrsquigarrow ($\searrow$)	72
$\backslash$ nupVdash ($\pm$)	54	$\backslash$ nvLeftarrow ($\Leftarrow$)	84	$\backslash$ Nwsearrow ($\nwarrow$)	76
$\backslash$ nupVdash ($\pm$)	52	$\backslash$ nvleftarrow ($\Leftarrow$)	84	$\backslash$ Nwsearrow ($\nwarrow$)	72
$\backslash$ nupvDash ($\pm$)	54	$\backslash$ nVleftarrowtail ($\Leftarrow$)	84	$\backslash$ nwsearrow ($\nwarrow$)	218
$\backslash$ nupvdash ($\pm$)	54	$\backslash$ nvleftarrowtail ($\Leftarrow$)	84	$\backslash$ nwsearrow ($\nwarrow$)	76
$\backslash$ nupvdash ($\pm$)	52	$\backslash$ nVleftrightarrow ($\Leftrightarrow$)	84	$\backslash$ nwsearrow ($\nwarrow$)	72
$\backslash$ nupwavearrow ($\sim$)	78	$\backslash$ nvLeftrightarrow ($\Leftrightarrow$)	84	$\backslash$ nwsearrow ($\nwarrow$)	82
$\backslash$ Nursey ($\S$)	184	$\backslash$ nvleftrightarrow ($\Leftrightarrow$)	84	$\backslash$ nwsearrows ($\nwarrow$)	76
$\backslash$ nuup (ν)	91	$\backslash$ nvlongdash ($\dashv$)	54	$\backslash$ nwsearrows ($\nwarrow$)	72
$\backslash$ nUparrow ($\Uparrow$)	78	$\backslash$ nVrightarrow ($\Rightarrow$)	81	$\backslash$ nwseipipto ($\searrow$)	31
$\backslash$ nvdownwavearrow ($\sim$)	78	$\backslash$ nVrightarrow ($\Rightarrow$)	84	$\backslash$ nwsecrossing ($\searrow$)	51
$\backslash$ nvargEQ ($\napprox$)	63	$\backslash$ nvRightarrow ($\Rightarrow$)	84	$\backslash$ nwsecurvewarrow ($\searrow$)	77
$\backslash$ nvhookdownarrow ($\searrow$)	78	$\backslash$ nvrightarrow ($\Rightarrow$)	84	$\backslash$ nwseharpoonnesw ($\nwarrow$)	79
$\backslash$ nvhookleftarrow ($\nwarrow$)	78	$\backslash$ nvrightarrowtail ($\Rightarrow$)	84	$\backslash$ nwseharpoonnesw ($\nwarrow$)	75
$\backslash$ nvhooknearrow ($\nearrow$)	78	$\backslash$ nvrightarrowtail ($\Rightarrow$)	84	$\backslash$ nwseharpoons ($\nwarrow$)	79
$\backslash$ nvhooknwarrow ($\nwarrow$)	78	$\backslash$ nVtwoheadleftarrow ($\Leftarrow$)	84	$\backslash$ nwseharpoons ($\nwarrow$)	75
$\backslash$ nvhookrightarrow ($\searrow$)	78	$\backslash$ nvtwoheadleftarrow ($\Leftarrow$)	84	$\backslash$ nwseharpoonswne ($\nwarrow$)	79
$\backslash$ nvhooksearrow ($\nwarrow$)	78	$\backslash$ nvtwoheadleftarrowtail ($\Leftarrow$)	84	$\backslash$ nwseharpoonswne ($\nwarrow$)	75
$\backslash$ nvhookswarrow ($\nwarrow$)	78	$\backslash$ nvtwoheadleftarrowtail ($\Leftarrow$)	84	$\backslash$ Nwseline ($\nwarrow$)	51
$\backslash$ nvhookuparrow ($\dagger$)	78	$\backslash$ nvtwoheadleftarrowtail ($\Leftarrow$)	84	$\backslash$ nwseline ($\nwarrow$)	51
$\backslash$ nvvarisinobar ($\nmid$)	57	$\backslash$ nvtwoheadrightarrow ($\Rightarrow$)	84	$\backslash$ nwspoon ($\nwarrow$)	86
$\backslash$ nvvarleftrighthwavearrow ($\nwarrow$)	78	$\backslash$ nvtwoheadrightarrow ($\Rightarrow$)	84	$\backslash$ nwVdash ($\nmid$)	51
$\backslash$ nvvarleftwvewarrow ($\nwarrow$)	78	$\backslash$ nvtwoheadrightarrowtail ($\Rightarrow$)	84	$\backslash$ nwvdash ($\nmid$)	51
$\backslash$ nvvarleq ($\nmid$)	63	$\backslash$ nvtwoheadrightarrowtail ($\Rightarrow$)	84		
$\backslash$ nvvarniobar ($\nmid$)	57	$\backslash$ nvtwoheadrightarrowtail ($\Rightarrow$)	84		
$\backslash$ nvvarparallel ($\nmid$)	49	$\backslash$ nvVdash ($\nmid$)	50		
$\backslash$ nvvarparallelin ($\nmid$)	49	$\backslash$ nvVdash ($\nmid$)	54		
$\backslash$ nvvarrightwvewarrow ($\nwarrow$)	78	$\backslash$ Nwarrow ($\nwarrow$)	71		
$\backslash$ nvvartriangleleft ($\triangleleft$)	69	$\backslash$ Nwarrow ($\nwarrow$)	80		
$\backslash$ nvvartriangleright ($\triangleright$)	69	$\backslash$ Nwarrow ($\nwarrow$)	76		
$\backslash$ nvvarupdownwvewarrow ($\nwarrow$)	78	$\backslash$ Nwarrow ($\nwarrow$)	72		
$\backslash$ nvvarupwvewarrow ($\nwarrow$)	78	$\backslash$ Nwarrow ($\nwarrow$)	82		
$\backslash$ nVbar ($\nmid$)	54	$\backslash$ narrow ($\nwarrow$)	71		
$\backslash$ nvBar ($\nmid$)	54	$\backslash$ narrow ($\nwarrow$)	70, 218		
$\backslash$ nVDash ($\nmid$)	50	$\backslash$ narrow ($\nwarrow$)	76		
$\backslash$ nVDash ($\nmid$)	49	$\backslash$ narrow ($\nwarrow$)	72		
$\backslash$ nVDash ($\nmid$)	55	$\backslash$ narrow ($\nwarrow$)	85		
$\backslash$ nVDash ($\nmid$)	54	$\backslash$ narrow ($\nwarrow$)	82		
$\backslash$ nVDash ($\nmid$)	52				

O

$\backslash$ O ($\emptyset$)	15
$\backslash$ o ($\emptyset$)	15
$\backslash$ o ($\emptyset$)	90
$\backslash$ o ($\emptyset$)	151
$\backslash$ oast ($\otimes$)	35
$\backslash$ oast ($\otimes$)	35
$\backslash$ oasterisk ($\otimes$)	34
$\backslash$ obackslash ($\oslash$)	34
$\backslash$ obackslash ($\oslash$)	35
$\backslash$ obackslash ($\oslash$)	35
$\backslash$ obar ($\oplus$)	29
$\backslash$ obar ($\oplus$)	36
$\backslash$ obar ($\oplus$)	37
$\backslash$ Obelus (---)	176
$\backslash$ obelus (---)	176

<code>\Obelus*</code> ($\div$)	176	<code>\oiint</code> ($\iint$)	42	open unit disk ($\mathbb{D}$)	<i>see</i>
<code>\obelus*</code> ($\div$)	176	<code>\oiint</code> ($\iint$)	44	alphabets, math	
<code>\oblong</code> ($\square$)	29	<code>\oiint</code> ($\iint$)	47	<code>\openJoin</code> ($\times$)	49
<code>\oblong</code> ($\square$)	36	<code>\oiint</code> ($\iint$)	43	<code>\openo</code> ($\circ$)	19
<code>\obot</code> ($\oplus$)	34	<code>\oiint</code> ($\iint$)	45	<code>\openo</code> ($\circ$)	19
<code>\obot</code> ($\oplus$)	36	<code>\ointclockwise</code> ($\oint$)	41	<code>\openo</code> ($\circ$)	19
<code>\obot</code> ($\oplus$)	37	<code>\ointctrackwise</code> ($\oint$)	41	<code>\opentimes</code> ($\times$)	49
<code>\obrbrak</code> ($_$)	117	<code>\ointsl</code> ($\oint$)	46	OpenType	152
<code>\obslash</code> ($\oslash$)	29	<code>\ointup</code> ($\oint$)	46	operators	28–30, 33–35
<code>\obslash</code> ($\oslash$)	36	<code>\oint</code> ($\oint$)	40	binary	29–37
<code>\obslash</code> ($\oslash$)	36	<code>\oint</code> ($\oint$)	39	logical	<i>see</i> logical
<code>\obslash</code> ($\oslash$)	37	<code>\oint</code> ($\oint$)	39	operators	
<code>\oc</code> ($\circ$)	28	<code>\oint</code> ($\oint$)	44	set	<i>see</i> set operators
<code>\ocirc</code> ($\odot$)	34	<code>\oint</code> ($\oint$)	43	unary	28
<code>\ocirc</code> ($\odot$)	35	<code>\oint</code> ($\oint$)	45	<code>\operp</code> ($\perp$)	37
<code>\ocirc</code> ($\odot$)	35	<code>\ointclockwise</code> ($\oint$)	41	<code>\oplus</code> ($\oplus$)	34
<code>\ocircle</code> ($\bigcirc$)	30	<code>\ointclockwise</code> ($\oint$)	42	<code>\oplus</code> ($\oplus$)	28, 29, 214
<code>\ocoasterisk</code> ($\otimes$)	34	<code>\ointclockwise</code> ($\oint$)	44	<code>\oplus</code> ($\oplus$)	36
<code>\ocommatopright</code> ($\mathbin{\circlearrowright}$)	103	<code>\ointclockwise</code> ($\oint$)	47	<code>\oplus</code> ($\oplus$)	35
<code>\octagon</code> ($\square$)	136	<code>\ointctrackwise</code> ($\oint$)	41	<code>\oplus</code> ($\oplus$)	35
octonions ($\mathbb{O}$)	<i>see</i> alphabets,	<code>\ointctrackwise</code> ($\oint$)	42	<code>\oplus</code> ($\oplus$)	37
math		<code>\ointctrackwise</code> ($\oint$)	44	<code>\opluslhrim</code> ($\oplus$)	33
<code>\Octosteel</code> ($\bullet$)	127	<code>\ointctrackwise</code> ($\oint$)	45	<code>\oplusrhrim</code> ($\oplus$)	33
<code>\od</code> ($\odot$)	23	<code>\ointctrackwise</code> ($\oint$)	46	<code>\opposbishops</code> ($\mathbin{\circlearrowright}$)	174
<code>\odash</code> ($\ominus$)	35	<code>\ointsl</code> ($\oint$)	46	<code>\Opposition</code> ($\mathbin{\circlearrowright}$)	124
<code>\odiv</code> ($\odiv$)	34	<code>\ointup</code> ($\oint$)	46	<code>\Opposition</code> ($\mathbin{\circlearrowright}$)	122
<code>\odiv</code> ($\odiv$)	37	<code>\olcross</code> ($\boxtimes$)	37	optical scaling	221
<code>\odot</code> ($\odot$)	34	old-arrows (package)	85, 86, 231	options	<i>see</i> package options
<code>\odot</code> ($\odot$)	29	old-style numerals	27	<code>\OR</code> ($\vee$)	125
<code>\odot</code> ($\odot$)	35	<code>\olddWinkey</code> ($\mathbin{\circlearrowright}$)	184	or	<i>see</i> <code>\vee</code>
<code>\odot</code> ($\odot$)	35	<code>\oldGclef</code> ($\mathbin{\circlearrowright}$)	154	OR gates	126
<code>\odot</code> ($\odot$)	37	<code>\oldstylenums</code>	27	<code>\orbit</code> ($\mathbin{\circlearrowright}$)	129
<code>\odotslashdot</code> ($\odot$)	37	<code>\oldWinkey</code> ($\mathbin{\circlearrowright}$)	184		
<code>\odplus</code> ($\oplus$)	34	<code>\oleft</code> ($\oplus$)	34	<code>\ORd</code> ($\mathbin{\circlearrowright}$)	126
<code>\OE</code> ($\mathbb{E}$)	15, 228	<code>\olessthan</code> ($\ominus$)	29	<code>\oright</code> ($\oplus$)	34
<code>\oe</code> ($\mathbb{e}$)	15, 228	<code>\olessthan</code> ($\ominus$)	36	<code>\oright</code> ($\oplus$)	36
<code>\oequal</code> ($\ominus$)	35	<code>\olessthan</code> ($\ominus$)	36	<code>\origof</code> ($\mathbin{\circlearrowright}$)	87
<code>\Ofen</code> ($\mathbin{\circlearrowright}$)	184	<code>\olessthan</code> ($\ominus$)	37	<code>\origof</code> ($\mathbin{\circlearrowright}$)	56
<code>\officiaaleuro</code> ($\mathbb{E}$)	26	Olschok, Marc	214	oriscus	<i>see</i> <code>musixgre</code>
<code>\offinterlineskip</code>	216	<code>\OM</code> (ω)	125		
ogonek (package)	24, 231, 232	<code>\Omega</code> (Ω)	90	<code>\ORl</code> ($\mathbin{\circlearrowright}$)	126
ogonek ($\mathbin{\circlearrowright}$)	<i>see</i> accents	<code>\Omega</code> (Ω)	90	<code>\OrnamentDiamondSolid</code> ($\mathbin{\circlearrowright}$)	141
<code>\ogreaterthan</code> ($\ominus$)	29	<code>\omega</code> (ω)	91	ornaments	135, 136, 141,
<code>\ogreaterthan</code> ($\ominus$)	36	<code>\Omicron</code> ($\mathbb{O}$)	90	196–197, 199–202	
<code>\ogreaterthan</code> ($\ominus$)	37	<code>\omicron</code> ($\mathbb{O}$)	90	<code>\ORr</code> ($\mathbin{\circlearrowright}$)	126
<code>\ohill</code> ($\mathbin{\circlearrowright}$)	23	<code>\ominus</code> ($\ominus$)	34	orthogonal to	<i>see</i> <code>\bot</code>
ohm	<i>see</i> <code>\textohm</code>	<code>\ominus</code> ($\ominus$)	29		
<code>\ohm</code> (Ω)	121	<code>\ominus</code> ($\ominus$)	36	<code>\ORu</code> ($\mathbin{\circlearrowright}$)	126
<code>\Ohne</code> ($\mathbin{\circlearrowright}$)	154	<code>\ominus</code> ($\ominus$)	35	<code>\oslash</code> ($\oslash$)	34
<code>\OHORN</code> ($\mathbb{O}$)	16	<code>\ominus</code> ($\ominus$)	35	<code>\oslash</code> ($\oslash$)	29
<code>\ohorn</code> ($\mathbb{O}$)	16	<code>\ominus</code> ($\ominus$)	37	<code>\oslash</code> ($\oslash$)	36
<code>\oiint</code> ($\iint$)	41	<code>\onlymove</code> ($\square$)	174	<code>\oslash</code> ($\oslash$)	35
<code>\oiint</code> ($\iint$)	44	<code>\oo</code> (∞)	176	<code>\oslash</code> ($\oslash$)	35
<code>\oiint</code> ($\iint$)	47	<code>\oo</code> (∞)	19	<code>\oslash</code> ($\oslash$)	37
<code>\oiint</code> ($\iint$)	45	<code>\oalign</code>	216	<code>\ostar</code> ($\mathbin{\circlearrowright}$)	35
<code>\oiintclockwise</code> ($\iint$)	41	<code>\open</code> ($\circ$)	24	<code>\osum</code> ($\mathbin{\circlearrowright}$)	44
<code>\oiintctrackwise</code> ($\iint$)	41			<code>\otf</code> files	152
<code>\oiintsl</code> ($\iint$)	46			<code>\Otimes</code> ($\otimes$)	37
<code>\oiintup</code> ($\iint$)	46				
<code>\oiint</code> ($\iint$)	40				
<code>\oiint</code> ($\iint$)	39				
<code>\oiint</code> ($\iint$)	41				

$\backslash\otimes$ ($\otimes$) 34
 $\backslash\otimes$ ($\otimes$) 29
 $\backslash\otimes$ ($\otimes$) 36
 $\backslash\otimes$ ($\otimes$) 35
 $\backslash\otimes$ ($\otimes$) 35
 $\backslash\otimes$ ($\otimes$) 37
 $\backslash\otimes\text{shat}$ ($\otimes$) 37
 $\backslash\otimes\text{slhrim}$ ($\otimes$) 33
 $\backslash\otimes\text{srhrim}$ ($\otimes$) 33
 $\backslash\otop$ ($\oplus$) 34
 $\backslash\otop$ ($\oplus$) 36
 $\backslash\otriangle$ ($\triangle$) 36
 $\backslash\otriangle$ ($\triangle$) 35, 68
 $\backslash\otriangle\text{leup}$ ($\triangle$) 34
 $\backslash\oturnedcomma$ ($\circ$) 103
outer joins 117
ovals . 139, 162–166, 191–192, 197, 207–208
 $\backslash\ovee$ ($\vee$) 29
 $\backslash\ovee$ ($\vee$) 36
 $\backslash\Oven$ ($\square$) 183
 $\backslash\oven$ ($\square$) 184
 $\backslash\overarc$ ($\square$) 23
 $\backslash\overbrace$ ($\overbrace{\square}$) 106
 $\backslash\overbrace$ ($\overbrace{\square}$) 105
 $\backslash\overbrace$ ($\overbrace{\square}$) 105
 $\backslash\overbrace$ ($\overbrace{\square}$) 106
 $\backslash\overbrace$ ($\overbrace{\square}$) 105
 $\backslash\overbrace$ ($\overbrace{\square}$) 104
 $\backslash\overbracket$ ($\overbracket{\square}$) 106
 $\backslash\overbracket$ ($\overbracket{\square}$) 105
 $\backslash\overbracket$ ($\overbracket{\square}$) .. 219, 220
 $\backslash\overbridge$ ($\square$) 22
 $\backslash\overgroup$ ($\overgroup{\square}$) 106
 $\backslash\overgroup$ ($\overgroup{\square}$) 105
 $\backslash\overgroup$ ($\overgroup{\square}$) 105
 $\backslash\overleftarrow$ ($\overleftarrow{\square}$) 105
 $\backslash\overleftarrow$ ($\overleftarrow{\square}$) . 85, 104
 $\backslash\overleftharp$ ($\overleftharp{\square}$) 85
 $\backslash\overleftharpoon$ ($\overleftharpoon{\square}$) .. 85
 $\backslash\overleftharpoon$ ($\overleftharpoon{\square}$) .. 105
 $\backslash\overleftharpoon$ ($\overleftharpoon{\square}$) .. 105
 $\backslash\overleftharpoon$ ($\overleftharpoon{\square}$) ... 105
 $\backslash\overleftrightharpoon$ ($\overleftrightharpoon{\square}$) 105
 $\backslash\overleftrightharpoon$ ($\overleftrightharpoon{\square}$) 85, 104
 $\backslash\overleftarrow\text{swishingghost}$ ($\overleftarrow{\square}$) 110
 $\backslash\overleftarrow\text{witchonbroom}$ ($\overleftarrow{\square}$) 110
 $\backslash\overleftarrow\text{witchonbroom*}$ ($\overleftarrow{\square}$) 110
 $\backslash\overline$ ($\overline{\square}$) .. 28, 102, 104
 $\backslash\overline\text{line}\text{segment}$ ($\overline{\square}$) .. 105
 $\backslash\overline\text{line}\text{segment}$ ($\overline{\square}$) .. 105
 $\backslash\overparen$ ($\overparen{\square}$) 105

$\backslash\overparen$ ($\overparen{\square}$) . 219, 220
 $\backslash\Overrightarrow$ ($\overrightarrow{\square}$) ... 104
 $\overrightarrow$ (package) . 104, 231
 $\backslash\overrightarrow$ ($\overrightarrow{\square}$) 105
 $\backslash\overrightarrow$ ($\overrightarrow{\square}$) 85, 104
 $\backslash\overrightarrow\text{tharp}$ ($\overrightarrow{\square}$) 85
 $\backslash\overrightarrow\text{tharpdown}$ ($\overrightarrow{\square}$) . 85
 $\backslash\overrightarrow\text{tharpoon}$ ($\overrightarrow{\square}$) .. 105
 $\backslash\overrightarrow\text{tharpoon}$ ($\overrightarrow{\square}$) .. 105
 $\backslash\overrightarrow\text{tharpoon}$ ($\overrightarrow{\square}$) .. 105
 $\backslash\overrightarrow\text{swishingghost}$ ($\overrightarrow{\square}$) 110
 $\backslash\overrightarrow\text{witchonbroom}$ ($\overrightarrow{\square}$) 110
 $\backslash\overrightarrow\text{witchonbroom*}$ ($\overrightarrow{\square}$) 110
 $\backslash\overring$ ($\circ$) 24
 $\backslash\overscript\text{leftarrow}$ ($\overleftarrow{\square}$) 109
 $\backslash\overscript\text{leftrightarrow}$ ($\overrightarrow{\square}$) 109
 $\backslash\overscript\text{rightarrow}$ ($\overrightarrow{\square}$) 109
 $\backslash\overset$ 215
 $\backslash\overt$ ($\oplus$) 35
 $\backslash\overt$ ($\oplus$) 35
 $\backslash\ovhook$ ($\square$) 103
 $\backslash\ovoid$ ($\circ$) 34
 $\backslash\owedge$ ($\triangle$) 29
 $\backslash\owedge$ ($\triangle$) 36
 $\backslash\owns$ *see* $\backslash\text{ni}$
 $\backslash\owns$ ($\triangle$) 93
 $\backslash\owns$ ($\triangle$) 53, 94
 $\backslash\owns$ ($\triangle$) 94
 $\backslash\owns$ ($\triangle$) 93
 $\backslash\owns$ ($\triangle$) 57
 $\backslash\owns\text{bar}$ ($\triangle$) 93

P

P ($\mathbb{P}$) 151
 $\backslash\text{P}$ ($\mathbb{P}$) 15, 227
 $\backslash\text{P}$ ($\mathbb{P}$) 15
 $\backslash\text{p}$ ($\mathbb{P}$) 151
 $\backslash\text{p}$ ($\cdot$) 176
 p ($\mathbb{P}$) 151
 $\backslash\text{p@}$ 218
package options
a (esvect) 106
arrows (boisik) 81
b (esvect) 106
bbgreekl (mathbbol) . 120
boondox (emf) 122
c (esvect) 106
cal (emf) 122
calligra (emf) 122
chorus (emf) 122
cmr (emf) 122
crescent (fge) 103
d (esvect) 106
e (esvect) 106
f (esvect) 106

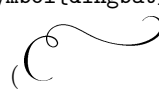
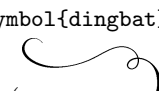
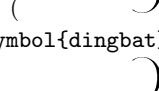
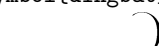
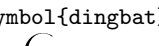
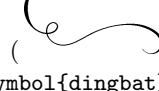
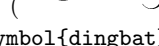
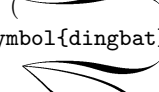
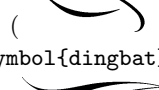
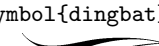
fourier (emf) 122
frcursive (emf) 122
g (esvect) 106
german (keystroke) .. 125
greek (babel) . 15, 90, 91, 148
h (esvect) 106
heartctrbull (bullcntr) . 173
integrals (wasysym) .. 39
largectrbull (bullcntr) . 173
mathcal (euscript) ... 119
mathscr (euscript) ... 119
mathscr (urwchancal) . 119
miamia (emf) 122
new (old-arrows) .. 85, 86
nointegrals (wasysym) 39
polutonikogreek (babel) 15, 90, 91
rsfs (emf) 122
sans (dsfont) 119
scaled (CountriesOfEurope) 183
scr (rsfso) 119
smallctrbull (bullcntr) 173
smartctrbull (bullcntr) 173
upint (stix) ... 38, 45, 47
utf8x (inputenc) 229
varg (txfonts/pxfonts) 92
packages
abraces 107, 231, 232
accents 102, 219, 231, 232
actuarialangle .. 107, 219, 231
adorn 131, 135, 136, 141, 231, 232
adfsymbols 130, 133, 135, 140, 231
allrunes 151, 231
 $\mathcal{AMS}$ 12, 15, 29, 39, 48, 49, 60, 62, 67, 70, 85, 89, 90, 92, 93, 95, 96, 102, 104, 107, 111, 114, 115, 120, 211, 212, 230
amsbsy 225
amsfonts 115, 119
amsmath 12, 89, 102, 215, 224
amssymb .. 12, 102, 115, 119, 148, 231
amstext 216, 218
apl 125, 231
ar 121, 231
arcs 23, 231
arev .. 131–134, 141, 152, 183, 231
ascii 126, 226, 231
astrosym 193, 231
babel ... 15, 90, 91, 148
bartel-chess-fonts 209, 210, 231
bbding 130–133, 135, 139, 141, 212, 231
bbm 119, 231

bbold 119, 231
bclogo 185, 186, 231, 232
begriff 112, 231
bigints 42, 231, 232
bm 225, 231, 232
boisik 32, 36, 44, 55, 61, 66, 69, 80, 81, 92, 94, 95, 103, 114, 117, 137, 140, 148, 152, 231
braket 96
bullcntr . . . 173, 231, 232
bullenum 173
calligra 119, 231, 232
calrsfs 119
cancel 104
ccicons 27, 231, 232
ccllicenses 27, 231
centernot 216
chancery 231
chemarr 108, 231
chemarrow . . 85, 108, 231
China2e . . 26, 89, 120, 179, 180
china2e . . . 119, 231, 232
clock 172, 231, 232
cmll 28, 34, 48, 59, 95, 231
colonequals . . 28, 59, 231
combelow . . . 24, 231, 232
cookingsymbols . 183, 231, 232
CountriesOfEurope . 181, 231, 232
cryst 207, 231
cypriot 147, 231, 232
dancers 203, 231
dblaccnt 219
dice 208, 231
dictsym 177, 231
dingbat 132, 141, 199, 212, 231
DotArrow . . 109, 231, 232
dozenal . . . 113, 173, 231
dsfont 119, 231
emf 122, 231, 232
epiolmec . . . 148, 150, 231, 232
epsdice 172, 231
esint 42, 231
esrelation . . 86, 109, 231
esvect 106, 231
eufrak 119
eurosym 26, 231
euscript 119, 231
extarrows 108, 231
extpfeil 109, 231
extraipa 22, 231
fc 16, 20
fclfont 231
fdsymbol 31, 32, 35, 43, 44, 53, 54, 61, 65, 69, 76–80, 87, 88, 92, 94, 98, 99, 103, 105, 111, 114, 116, 137, 140, 152, 231
feyn 128, 231
fge . . 85, 94, 103, 113, 118, 231
fixmath 225
fontawesome 25, 26, 123, 127, 131–134, 136, 140, 186, 189, 231, 232
fontenc . . . 12, 15, 16, 20, 226, 228
fontspec . . . 152, 229, 230
fourier 26, 59, 91, 95, 101, 106, 133, 136, 170, 231
frege 113, 231, 232
gensymb 121
go 176, 231
graphics 85, 214
graphicx . . . 24, 211, 214
greenpoint 191, 231
halloweenmath . . 37, 109, 110, 231, 232
hands 191, 231
harmony 154, 231
harpoon 85, 231, 232
hhcount 172, 173, 231, 232
hieroglf 143, 231
holtpolt 110, 231
ifsym . . 121, 139, 171, 212, 214, 231
igo 175, 231
inputenc 229
isoent 228
junicode 229, 231
keystroke 125, 231
knitting 181, 231, 232
knot 199, 202, 231
latexsym . . . 29, 48, 59, 70, 115, 211, 231
lilyglyphs . . 152, 155–162, 166–168
lilyglyphs 231
linearA 143, 231, 232
linearb 146, 147, 231, 232
logic 126
longdiv 104
magic 209, 231
manfnt 169, 231
marvosym 25, 113, 122, 125–127, 131, 134, 169, 170, 180, 212
mathabx 28, 30, 34, 40, 50, 60, 63, 67, 71, 72, 88, 93, 95–97, 102, 106, 113, 116, 123, 174, 211, 212, 231
mathbbol 119, 120
mathcomp 113
mathdesign 25, 33, 47, 94, 100, 118, 231
mathdots . . 102, 110, 112, 218, 231
mathrsfs 119, 231
mathspec 90
mathtools 28, 57, 85, 106, 108, 231
mbboard . . . 119, 120, 231
mdwmath . . . 107, 231, 232
metre . . . 23, 102, 176, 231
milstd 126, 231, 232
MnSymbol . . . 28, 30, 31, 35, 43, 50–52, 61, 64, 68, 72–75, 86, 87, 92, 93, 97, 102, 104, 105, 111, 114, 116, 136, 140, 152, 231
moonphase 193, 231
musixgre 154
musixlit 154
musixper 154
musixtex 231, 232
nath 95, 101, 231
nicefrac . . . 117, 231, 232
niceframe . . . 196–199, 202
nkarta 191, 231
ntheorem 115
ogonek 24, 231, 232
old-arrows 85, 86, 231
overrightarrow . . 104, 231
phaistos 142, 231
phonetic . . . 19, 23, 214, 231
pict2e 122
pifont . . . 16, 130–135, 140, 141, 191, 196, 207, 214, 231
pigpen 179, 231
pmbboxdraw 178, 231
polynom 104
prodint 48, 231
protosem 142, 231
psnfss 134
PSTricks 186
pxfonts 28, 30, 41, 49, 60, 63, 71, 88, 91–93, 115, 119, 140, 211, 226
recycle 180, 231
relsize 23
rotating 27, 125
rsfso 119, 231
rubikcube . . . 190, 231, 232
sarabian 148, 231, 232
savesym 211
semaphor . . . 205, 207, 231
semtrans 20, 24, 231
shuffle 34, 231
simplewick 220
simpsons 177, 231
skak 174, 175, 231
skull 174, 231
slashed 216
soyombo 180, 231, 232
starfont 124, 231, 232
staves 178, 231
steinmetz . . . 122, 231, 232
stix 33, 37, 38, 45, 46, 56, 57, 62, 66, 67, 69, 82–84, 89, 92–95, 99, 103, 105, 112, 114, 115, 117,

123, 124, 127, 137, 138, 141, 152, 172, 231, 232	par <i>see</i> \bindnasrepma, \invamp, and \parr	\partialvartrcircleleftint ($\circ$) 116
stmaryrd . . 29, 39, 49, 60, 67, 71, 85, 88, 95, 96, 212, 216, 230, 231	paragraph mark <i>see</i> \P	\partialvartrcircleleftint ($\circ$) 72
svrsymbols . 128, 231, 232	\parallel ($\parallel$) 48, 98	\partialvartrcircleleftint ($\circ$) 116
t4phonet . . . 20, 23, 231	\parallel ($\parallel$) 53	\partialvartrcircleleftint ($\circ$) 116
teubner 26, 112, 148, 177, 231, 232	\parallel ($\parallel$) 51	\partialvartrcircleleftint ($\circ$) 73
textcomp . 12, 14, 15, 20, 24–27, 70, 101, 117, 121, 152, 169, 211, 226, 228, 231	\parallel ($\parallel$) 56	\partialvartrcircleleftint ($\circ$) 116
textgreek 15, 91, 231, 232	\parallelogram ($\square$) 138	\partialvartrcircleleftint ($\circ$) 116
tfruppee 26, 231, 232	\parallelogramblack ($\blacksquare$) 138	\partialvartrcircleleftint ($\circ$) 116
TikZ 184–186, 190	parallelograms 137–138, 207–208	\partialvartrcircleleftint ($\circ$) 116
tikzsymbols 184, 185, 231, 232	\ParallelPort (mm) 125	\partialvartrcircleleftint ($\circ$) 116
timing 121	\parallelslant ($\parallel$) 59	\partialvartrcircleleftint ($\circ$) 116
tipa . . 17, 18, 20–23, 214, 231	\parr ($\P$) 34	\partialvartrcircleleftint ($\circ$) 116
tipx 18, 231	\parsim ($\P$) 56	\partialvartrcircleleftint ($\circ$) 116
trfsigns . . 59, 94, 109, 231	\partial (∂) 93	\partialvartrcircleleftint ($\circ$) 116
trsym 59, 231	\partial (∂) 93	\partialvartrcircleleftint ($\circ$) 116
turnstile 58, 231	\partial (∂) 95	\partialvartrcircleleftint ($\circ$) 116
txfonts 28, 30, 41, 49, 60, 63, 71, 88, 91–93, 115, 119, 140, 211, 213, 226, 231	\partialvartrcircleleftint ($\circ$) 67	\partialvartrcircleleftint ($\circ$) 116
typelcm 211	\partialvartrcircleleftint ($\circ$) 93	\partialvartrcircleleftint ($\circ$) 116
ucs 229	\partialvartrcircleleftint ($\circ$) 116	\partialvartrcircleleftint ($\circ$) 116
ulsy 34, 88, 214, 231	\partialvartrcircleleftint ($\circ$) 116	\partialvartrcircleleftint ($\circ$) 116
umranda 197, 231	\partialvartrcircleleftint ($\circ$) 116	\partialvartrcircleleftint ($\circ$) 116
umrandb 198, 231	\partialvartrcircleleftint ($\circ$) 116	\partialvartrcircleleftint ($\circ$) 116
underscore 14	\partialvartrcircleleftint ($\circ$) 116	\partialvartrcircleleftint ($\circ$) 116
undertilde 107, 231	\partialvartrcircleleftint ($\circ$) 116	\partialvartrcircleleftint ($\circ$) 116
units 117	\partialvartrcircleleftint ($\circ$) 116	\partialvartrcircleleftint ($\circ$) 116
universa . . . 140, 170, 231	\partialvartrcircleleftint ($\circ$) 116	\partialvartrcircleleftint ($\circ$) 116
upgreek 15, 91, 231	\partialvartrcircleleftint ($\circ$) 116	\partialvartrcircleleftint ($\circ$) 116
upquote 226	\partialvartrcircleleftint ($\circ$) 116	\partialvartrcircleleftint ($\circ$) 116
url 226	\partialvartrcircleleftint ($\circ$) 116	\partialvartrcircleleftint ($\circ$) 116
urwchancal 119, 231	\partialvartrcircleleftint ($\circ$) 116	\partialvartrcircleleftint ($\circ$) 116
ushort 107, 231, 232	\partialvartrcircleleftint ($\circ$) 116	\partialvartrcircleleftint ($\circ$) 116
vietnam 231	\partialvartrcircleleftint ($\circ$) 116	\partialvartrcircleleftint ($\circ$) 116
vtex 16, 20	\partialvartrcircleleftint ($\circ$) 116	\partialvartrcircleleftint ($\circ$) 116
wasysym . . 19, 25, 27, 30, 39, 49, 60, 63, 111, 115, 121, 122, 124, 127, 134– 136, 152, 169, 212, 231	\partialvartrcircleleftint ($\circ$) 116	\partialvartrcircleleftint ($\circ$) 116
webomints 196, 231	\partialvartrcircleleftint ($\circ$) 116	\partialvartrcircleleftint ($\circ$) 116
wsuipa . . 19, 22, 24, 212, 214, 219, 231	\partialvartrcircleleftint ($\circ$) 116	\partialvartrcircleleftint ($\circ$) 116
xfrac 117	\partialvartrcircleleftint ($\circ$) 116	\partialvartrcircleleftint ($\circ$) 116
yfonts 119, 120, 231	\partialvartrcircleleftint ($\circ$) 116	\partialvartrcircleleftint ($\circ$) 116
yhmash 103, 104, 107, 112, 218, 231	\partialvartrcircleleftint ($\circ$) 116	\partialvartrcircleleftint ($\circ$) 116
\PackingWaste (P) 180	\partialvartrcircleleftint ($\circ$) 116	\partialvartrcircleleftint ($\circ$) 116
Pakin, Scott . 1, 217, 219, 230	\partialvartrcircleleftint ($\circ$) 116	\partialvartrcircleleftint ($\circ$) 116
\Pallas (P) 124	\partialvartrcircleleftint ($\circ$) 116	\partialvartrcircleleftint ($\circ$) 116
\pan (P) 184	\partialvartrcircleleftint ($\circ$) 116	\partialvartrcircleleftint ($\circ$) 116
paperclip 185–186	\partialvartrcircleleftint ($\circ$) 116	\partialvartrcircleleftint ($\circ$) 116
\PaperLandscape (P) . . . 171	\partialvartrcircleleftint ($\circ$) 116	\partialvartrcircleleftint ($\circ$) 116
\PaperPortrait (P) 171	\partialvartrcircleleftint ($\circ$) 116	\partialvartrcircleleftint ($\circ$) 116

<code>\Pfund</code> ()	25	phonetic symbols	17–20	<code>{\pigpenfont N}</code> ()	179
<code>\PgDown</code> ()	125	<code>\phonon</code> ()	129	<code>{\pigpenfont O}</code> ()	179
<code>\PgUp</code> ()	125	<code>\photon</code> ()	121	<code>{\pigpenfont P}</code> ()	179
phaistos (package)	142, 231	photons	121, 128–129	<code>{\pigpenfont Q}</code> ()	179
Phaistos disk	142	<code>\PHoxBack</code> ()	142	<code>{\pigpenfont R}</code> ()	179
pharmaceutical prescription	<i>see</i>	<code>\PHpapyrus</code> ()	142	<code>{\pigpenfont S}</code> ()	179
<code>\textrecipe</code>		<code>\PHpedestrian</code> ()	142	<code>{\pigpenfont T}</code> ()	179
<code>\PHarrow</code> ()	142	<code>\PHplaneTree</code> ()	142	<code>{\pigpenfont U}</code> ()	179
<code>\phase</code> ()	122	<code>\PHplumedHead</code> ()	142	<code>{\pigpenfont V}</code> ()	179
phasor	122	<code>\PHram</code> ()	142	<code>{\pigpenfont W}</code> ()	179
<code>\PHbee</code> ()	142	<code>\PHrosette</code> ()	142	<code>{\pigpenfont X}</code> ()	179
<code>\PHbeehive</code> ()	142	<code>\PHsaw</code> ()	142	<code>{\pigpenfont Y}</code> ()	179
<code>\PHboomerang</code> ()	142	<code>\PHshield</code> ()	142	<code>{\pigpenfont Z}</code> ()	179
<code>\PHbow</code> ()	142	<code>\PHship</code> ()	142	pilcrow	<i>see</i> <code>\P</code>
<code>\PHbullLeg</code> ()	142	<code>\PHsling</code> ()	142	<code>\pionminus</code> (π^-)	129
<code>\PHcaptive</code> ()	142	<code>\PHsmallAxe</code> ()	142	<code>\pionnull</code> (π^0)	129
<code>\PHcarpentryPlane</code> ()	142	<code>\PHstrainer</code> ()	142	<code>\pionplus</code> (π^+)	129
<code>\PHcat</code> ()	142	<code>\PHtattooedHead</code> ()	142	pipe	<i>see</i> <code>\textpipe</code>
<code>\PHchild</code> ()	142	<code>\PHtiara</code> ()	142	<code>\Pisces</code> ()	122
<code>\PHclub</code> ()	142	<code>\PHtunny</code> ()	142	<code>\Pisces</code> ()	124
<code>\PHcolumn</code> ()	142	<code>\PHvine</code> ()	142	<code>\Pisces</code> ()	122
<code>\PHcomb</code> ()	142	<code>\PHwavyBand</code> ()	142	<code>\pisces</code> ()	122
<code>\PHdolium</code> ()	142	<code>\PHwoman</code> ()	142	<code>\Pisymbol</code>	191–210, 214
<code>\PHdove</code> ()	142	physical symbols	121	<code>\Pisymbol{astrosym}{0}</code> ()	
<code>\PHeagle</code> ()	142	<code>\Pi</code> (Π)	90		193
<code>\PHflute</code> ()	142	<code>\pi</code> (π)	90	<code>\Pisymbol{astrosym}{1}</code> ()	
<code>\PHgauntlet</code> ()	142	<code>\pi</code> (π)	91		193
<code>\PHgrater</code> ()	142	“pi” fonts	214	<code>\Pisymbol{astrosym}{2}</code> ()	
<code>\PHhelmet</code> ()	142	piano (<i>p</i>)	157, 168		193
<code>\PHhide</code> ()	142	<code>\Pickup</code> (ω)	126	<code>\Pisymbol{astrosym}{3}</code> ()	
<code>\PHhorn</code> ()	142	pict2e (package)	122		193
<code>\Phi</code> (Φ)	90	pifont (package)	16, 130–135, 140, 141, 191, 196, 207, 214, 231	<code>\Pisymbol{astrosym}{4}</code> ()	
<code>\phi</code> (ϕ)	90	pigpen (package)	179, 231		193
<code>\phimeson</code> (ϕ)	129	pigpen cipher	179	<code>\Pisymbol{astrosym}{5}</code> ()	
<code>\phimesonnull</code> (ϕ^0)	129	<code>{\pigpenfont A}</code> ()	179		193
<code>\phiup</code> (ϕ)	91	<code>{\pigpenfont B}</code> ()	179	<code>\Pisymbol{astrosym}{6}</code> ()	
<code>\PHlid</code> ()	142	<code>{\pigpenfont C}</code> ()	179		193
<code>\PHlily</code> ()	142	<code>{\pigpenfont D}</code> ()	179	<code>\Pisymbol{astrosym}{7}</code> ()	
<code>\PHmanacles</code> ()	142	<code>{\pigpenfont E}</code> ()	179		193
<code>\PHmattock</code> ()	142	<code>{\pigpenfont F}</code> ()	179	<code>\Pisymbol{astrosym}{8}</code> ()	
<code>\Phone</code> ()	141	<code>{\pigpenfont G}</code> ()	179		193
<code>\phone</code> ()	169	<code>{\pigpenfont H}</code> ()	179	<code>\Pisymbol{astrosym}{9}</code> ()	
<code>\PhoneHandset</code> ()	141	<code>{\pigpenfont I}</code> ()	179		193
phonetic (package)	19, 23, 214, 231	<code>{\pigpenfont J}</code> ()	179	<code>\Pisymbol{astrosym}{10}</code> ()	
		<code>{\pigpenfont K}</code> ()	179		193
		<code>{\pigpenfont L}</code> ()	179	<code>\Pisymbol{astrosym}{11}</code> ()	
		<code>{\pigpenfont M}</code> ()	179		193
				<code>\Pisymbol{astrosym}{12}</code> ()	
					193
				<code>\Pisymbol{astrosym}{13}</code> ()	
					193
				<code>\Pisymbol{astrosym}{14}</code>	
				()	193
				<code>\Pisymbol{astrosym}{15}</code> ()	
					193

\Pisymbol{cryst}{139} (↙) 207	\Pisymbol{cryst}{223} (⌞) 208	\Pisymbol{dancers}{25} (𐄢) 203
\Pisymbol{cryst}{140} (▣) 207	\Pisymbol{cryst}{224} (⌞) 208	\Pisymbol{dancers}{26} (𐄢) 203
\Pisymbol{cryst}{141} (𐄢) 207	\Pisymbol{cryst}{230} (𐄢) 208	\Pisymbol{dancers}{27} (𐄢) 203
\Pisymbol{cryst}{142} (⌞) 207	\Pisymbol{cryst}{231} (𐄢) 208	\Pisymbol{dancers}{28} (𐄢) 203
\Pisymbol{cryst}{143} (𐄢) 207	\Pisymbol{cryst}{232} (𐄢) 208	\Pisymbol{dancers}{29} (𐄢) 203
\Pisymbol{cryst}{145} (↖) 207	\Pisymbol{cryst}{233} (⌞) 208	\Pisymbol{dancers}{30} (𐄢) 203
\Pisymbol{cryst}{147} (↖) 207	\Pisymbol{cryst}{236} (𐄢) 208	\Pisymbol{dancers}{31} (𐄢) 203
\Pisymbol{cryst}{148} (↖) 207	\Pisymbol{cryst}{240} (⬥) 208	\Pisymbol{dancers}{32} (𐄢) 203
\Pisymbol{cryst}{149} (↖) 207	\Pisymbol{cryst}{241} (⌞) 208	\Pisymbol{dancers}{33} (𐄢) 203
\Pisymbol{cryst}{155} (𐄢) 207	\Pisymbol{cryst}{242} (𐄢) 208	\Pisymbol{dancers}{34} (𐄢) 204
\Pisymbol{cryst}{157} (𐄢) 207	\Pisymbol{cryst}{243} (⌞) 208	\Pisymbol{dancers}{35} (𐄢) 204
\Pisymbol{cryst}{158} (𐄢) 207	\Pisymbol{dancers}{0} (𐄢) 203	\Pisymbol{dancers}{36} (𐄢) 204
\Pisymbol{cryst}{159} (𐄢) 207	\Pisymbol{dancers}{1} (𐄢) 203	\Pisymbol{dancers}{37} (𐄢) 204
\Pisymbol{cryst}{175} (↘) 207	\Pisymbol{dancers}{2} (𐄢) 203	\Pisymbol{dancers}{38} (𐄢) 204
\Pisymbol{cryst}{177} (↘) 207	\Pisymbol{dancers}{3} (𐄢) 203	\Pisymbol{dancers}{39} (𐄢) 204
\Pisymbol{cryst}{178} (↘) 207	\Pisymbol{dancers}{4} (𐄢) 203	\Pisymbol{dancers}{40} (𐄢) 204
\Pisymbol{cryst}{179} (↘) 207	\Pisymbol{dancers}{5} (𐄢) 203	\Pisymbol{dancers}{41} (𐄢) 204
\Pisymbol{cryst}{185} (↘) 207	\Pisymbol{dancers}{6} (𐄢) 203	\Pisymbol{dancers}{42} (𐄢) 204
\Pisymbol{cryst}{187} (↘) 207	\Pisymbol{dancers}{7} (𐄢) 203	\Pisymbol{dancers}{43} (𐄢) 204
\Pisymbol{cryst}{188} (↘) 207	\Pisymbol{dancers}{8} (𐄢) 203	\Pisymbol{dancers}{44} (𐄢) 204
\Pisymbol{cryst}{189} (↘) 207	\Pisymbol{dancers}{9} (𐄢) 203	\Pisymbol{dancers}{45} (𐄢) 204
\Pisymbol{cryst}{195} (↘) 207	\Pisymbol{dancers}{10} (𐄢) 203	\Pisymbol{dancers}{46} (𐄢) 204
\Pisymbol{cryst}{197} (↘) 207	\Pisymbol{dancers}{11} (𐄢) 203	\Pisymbol{dancers}{47} (𐄢) 204
\Pisymbol{cryst}{198} (↘) 207	\Pisymbol{dancers}{12} (𐄢) 203	\Pisymbol{dancers}{48} (𐄢) 204
\Pisymbol{cryst}{199} (↘) 207	\Pisymbol{dancers}{13} (𐄢) 203	\Pisymbol{dancers}{49} (𐄢) 204
\Pisymbol{cryst}{202} (𐄢) 207	\Pisymbol{dancers}{14} (𐄢) 203	\Pisymbol{dancers}{50} (𐄢) 204
\Pisymbol{cryst}{203} (⌞) 207	\Pisymbol{dancers}{15} (𐄢) 203	\Pisymbol{dancers}{51} (𐄢) 204
\Pisymbol{cryst}{204} (⌞) 207	\Pisymbol{dancers}{16} (𐄢) 203	\Pisymbol{dancers}{52} (𐄢) 204
\Pisymbol{cryst}{210} (𐄢) 207	\Pisymbol{dancers}{17} (𐄢) 203	\Pisymbol{dancers}{53} (𐄢) 204
\Pisymbol{cryst}{212} (𐄢) 207	\Pisymbol{dancers}{18} (𐄢) 203	\Pisymbol{dancers}{54} (𐄢) 204
\Pisymbol{cryst}{213} (⌞) 207	\Pisymbol{dancers}{19} (𐄢) 203	\Pisymbol{dancers}{55} (𐄢) 204
\Pisymbol{cryst}{220} (𐄢) 208	\Pisymbol{dancers}{20} (𐄢) 203	
\Pisymbol{cryst}{221} (𐄢) 208	\Pisymbol{dancers}{21} (𐄢) 203	
	\Pisymbol{dancers}{22} (𐄢) 203	
	\Pisymbol{dancers}{23} (𐄢) 203	
	\Pisymbol{dancers}{24} (𐄢) 203	

<code>\Pisymbol{dancers}{242}</code> 	<code>\Pisymbol{dice3d}{107}</code> 	<code>\Pisymbol{dingbat}{97}</code> 
..... 205	 208	() 199
<code>\Pisymbol{dancers}{243}</code> 	<code>\Pisymbol{dice3d}{108}</code> 	<code>\Pisymbol{dingbat}{98}</code> 
..... 205	 208	() 199
<code>\Pisymbol{dancers}{244}</code> 	<code>\Pisymbol{dice3d}{109}</code> 	<code>\Pisymbol{dingbat}{99}</code> 
..... 205	 208	() 199
<code>\Pisymbol{dancers}{245}</code> 	<code>\Pisymbol{dice3d}{110}</code> 	<code>\Pisymbol{dingbat}{100}</code> 
..... 205	 208	() 199
<code>\Pisymbol{dancers}{246}</code> 	<code>\Pisymbol{dice3d}{111}</code> 	<code>\Pisymbol{dingbat}{101}</code> 
..... 205	 208	() 199
<code>\Pisymbol{dancers}{247}</code> 	<code>\Pisymbol{dice3d}{112}</code> 	<code>\Pisymbol{dingbat}{102}</code> 
..... 205	 208	() 199
<code>\Pisymbol{dancers}{248}</code> 	<code>\Pisymbol{dice3d}{113}</code> 	<code>\Pisymbol{dingbat}{103}</code> 
..... 205	 208	() 199
<code>\Pisymbol{dancers}{249}</code> 	<code>\Pisymbol{dice3d}{114}</code> 	<code>\Pisymbol{dingbat}{104}</code> 
..... 205	 208	() 199
<code>\Pisymbol{dancers}{250}</code> 	<code>\Pisymbol{dice3d}{115}</code> 	<code>\Pisymbol{fselch}{0}</code> () ..
..... 205	 208	 209
<code>\Pisymbol{dancers}{251}</code> 	<code>\Pisymbol{dice3d}{116}</code> 	<code>\Pisymbol{fselch}{1}</code> () ..
..... 205	 208	 209
<code>\Pisymbol{dancers}{252}</code> 	<code>\Pisymbol{dice3d}{117}</code> 	<code>\Pisymbol{fselch}{2}</code> () ..
..... 205	 208	 209
<code>\Pisymbol{dancers}{253}</code> 	<code>\Pisymbol{dice3d}{118}</code> 	<code>\Pisymbol{fselch}{3}</code> () ..
..... 205	 208	 209
<code>\Pisymbol{dancers}{254}</code> 	<code>\Pisymbol{dice3d}{119}</code> 	<code>\Pisymbol{fselch}{4}</code> () ..
..... 205	 208	 209
<code>\Pisymbol{dancers}{255}</code> 	<code>\Pisymbol{dice3d}{120}</code> 	<code>\Pisymbol{fselch}{5}</code> () ..
..... 205	 208	 209
<code>\Pisymbol{dice3d}{49}</code> () ..	<code>\Pisymbol{dingbat}{69}</code> 	<code>\Pisymbol{fselch}{6}</code> () ..
..... 208	() ... 199	 209
<code>\Pisymbol{dice3d}{50}</code> () ..	<code>\Pisymbol{dingbat}{70}</code> 	<code>\Pisymbol{fselch}{7}</code> () ..
..... 208	() ... 199	 209
<code>\Pisymbol{dice3d}{51}</code> () ..	<code>\Pisymbol{dingbat}{71}</code> 	<code>\Pisymbol{fselch}{8}</code> () ..
..... 208	() ... 199	 209
<code>\Pisymbol{dice3d}{52}</code> () ..	<code>\Pisymbol{dingbat}{72}</code> 	<code>\Pisymbol{fselch}{9}</code> () ..
..... 208	() ... 199	 209
<code>\Pisymbol{dice3d}{53}</code> () ..	<code>\Pisymbol{dingbat}{73}</code> 	<code>\Pisymbol{fselch}{10}</code> () ..
..... 208	() ... 199	 209
<code>\Pisymbol{dice3d}{54}</code> () ..	<code>\Pisymbol{dingbat}{74}</code> 	<code>\Pisymbol{fselch}{11}</code> () ..
..... 208	() ... 199	 209
<code>\Pisymbol{dice3d}{97}</code> () ..	<code>\Pisymbol{dingbat}{75}</code> 	<code>\Pisymbol{fselch}{12}</code> () ..
..... 208	() ... 199	 209
<code>\Pisymbol{dice3d}{98}</code> () ..	<code>\Pisymbol{dingbat}{76}</code> 	<code>\Pisymbol{fselch}{13}</code> () ..
..... 208	() ... 199	 209
<code>\Pisymbol{dice3d}{99}</code> () ..	<code>\Pisymbol{dingbat}{77}</code> 	<code>\Pisymbol{fselch}{14}</code> () ..
..... 208	() ... 199	 209
<code>\Pisymbol{dice3d}{100}</code> () ..	() ... 199	<code>\Pisymbol{fselch}{15}</code> () ..
..... 208		 209
<code>\Pisymbol{dice3d}{101}</code> () ..		<code>\Pisymbol{fselch}{16}</code> () ..
..... 208		 209
<code>\Pisymbol{dice3d}{102}</code> () ..		<code>\Pisymbol{fselch}{17}</code> () ..
..... 208		 209
<code>\Pisymbol{dice3d}{103}</code> () ..		
..... 208		
<code>\Pisymbol{dice3d}{104}</code> () ..		
..... 208		
<code>\Pisymbol{dice3d}{105}</code> () ..		
..... 208		
<code>\Pisymbol{dice3d}{106}</code> () ..		
..... 208		

<code>\Pisymbol{fselch}{102}</code> 	<code>\Pisymbol{fselch}{130}</code> 	<code>\Pisymbol{fselch}{222}</code> 
..... 210	 210	 210
<code>\Pisymbol{fselch}{103}</code> 	<code>\Pisymbol{fselch}{131}</code> 	<code>\Pisymbol{fselch}{228}</code> 
..... 210	 210	 210
<code>\Pisymbol{fselch}{104}</code> 	<code>\Pisymbol{fselch}{132}</code> 	<code>\Pisymbol{fselch}{234}</code> 
..... 210	 210	 210
<code>\Pisymbol{fselch}{105}</code> 	<code>\Pisymbol{fselch}{133}</code> 	<code>\Pisymbol{fselch}{240}</code> 
..... 210	 210	 210
<code>\Pisymbol{fselch}{106}</code> 	<code>\Pisymbol{fselch}{134}</code> 	<code>\Pisymbol{fselch}{246}</code> 
..... 210	 210	 210
<code>\Pisymbol{fselch}{107}</code> 	<code>\Pisymbol{fselch}{135}</code> 	<code>\Pisymbol{greenpoint}{71}</code>
..... 210	 210	 191
<code>\Pisymbol{fselch}{108}</code> 	<code>\Pisymbol{fselch}{136}</code> 	<code>\Pisymbol{hands}{65}</code>  ..
..... 210	 210	 191
<code>\Pisymbol{fselch}{109}</code> 	<code>\Pisymbol{fselch}{137}</code> 	<code>\Pisymbol{hands}{66}</code>  ..
..... 210	 210	 191
<code>\Pisymbol{fselch}{110}</code> 	<code>\Pisymbol{fselch}{138}</code> 	<code>\Pisymbol{hands}{67}</code>  ..
..... 209	 210	 191
<code>\Pisymbol{fselch}{111}</code> 	<code>\Pisymbol{fselch}{139}</code> 	<code>\Pisymbol{hands}{68}</code>  ..
..... 209	 210	 191
<code>\Pisymbol{fselch}{112}</code> 	<code>\Pisymbol{fselch}{140}</code> 	<code>\Pisymbol{knot1}{48}</code>  .
..... 209	 210	 199
<code>\Pisymbol{fselch}{113}</code> 	<code>\Pisymbol{fselch}{141}</code> 	<code>\Pisymbol{knot1}{49}</code>  .
..... 209	 210	 199
<code>\Pisymbol{fselch}{114}</code> 	<code>\Pisymbol{fselch}{142}</code> 	<code>\Pisymbol{knot1}{50}</code>  .
..... 209	 210	 199
<code>\Pisymbol{fselch}{115}</code> 	<code>\Pisymbol{fselch}{143}</code> 	<code>\Pisymbol{knot1}{51}</code>  .
..... 209	 210	 199
<code>\Pisymbol{fselch}{116}</code> 	<code>\Pisymbol{fselch}{144}</code> 	<code>\Pisymbol{knot1}{52}</code>  .
..... 209	 210	 199
<code>\Pisymbol{fselch}{117}</code> 	<code>\Pisymbol{fselch}{145}</code> 	<code>\Pisymbol{knot1}{53}</code>  .
..... 209	 210	 199
<code>\Pisymbol{fselch}{118}</code> 	<code>\Pisymbol{fselch}{151}</code> 	<code>\Pisymbol{knot1}{58}</code>  .
..... 209	 210	 199
<code>\Pisymbol{fselch}{119}</code> 	<code>\Pisymbol{fselch}{157}</code> 	<code>\Pisymbol{knot1}{59}</code>  .
..... 209	 210	 199
<code>\Pisymbol{fselch}{120}</code> 	<code>\Pisymbol{fselch}{163}</code> 	<code>\Pisymbol{knot1}{60}</code>  .
..... 209	 210	 199
<code>\Pisymbol{fselch}{121}</code> 	<code>\Pisymbol{fselch}{169}</code> 	<code>\Pisymbol{knot1}{61}</code>  .
..... 209	 210	 199
<code>\Pisymbol{fselch}{122}</code> 	<code>\Pisymbol{fselch}{175}</code> 	<code>\Pisymbol{knot1}{62}</code>  .
..... 209	 210	 200
<code>\Pisymbol{fselch}{123}</code> 	<code>\Pisymbol{fselch}{180}</code> 	<code>\Pisymbol{knot1}{63}</code>  .
..... 209	 210	 200
<code>\Pisymbol{fselch}{124}</code> 	<code>\Pisymbol{fselch}{186}</code> 	<code>\Pisymbol{knot1}{64}</code>  .
..... 209	 210	 200
<code>\Pisymbol{fselch}{125}</code> 	<code>\Pisymbol{fselch}{192}</code> 	<code>\Pisymbol{knot1}{65}</code>  .
..... 209	 210	 200
<code>\Pisymbol{fselch}{126}</code> 	<code>\Pisymbol{fselch}{198}</code> 	<code>\Pisymbol{knot1}{66}</code>  .
..... 209	 210	 200
<code>\Pisymbol{fselch}{127}</code> 	<code>\Pisymbol{fselch}{204}</code> 	<code>\Pisymbol{knot1}{67}</code>  .
..... 209	 210	 200
<code>\Pisymbol{fselch}{128}</code> 	<code>\Pisymbol{fselch}{210}</code> 	
..... 209	 210	
<code>\Pisymbol{fselch}{129}</code> 	<code>\Pisymbol{fselch}{216}</code> 	
..... 209	 210	

<code>\Pisymbol{knot1}{68}</code>  199	<code>\Pisymbol{knot1}{100}</code>  199	<code>\Pisymbol{knot2}{71}</code>  200
<code>\Pisymbol{knot1}{69}</code>  199	<code>\Pisymbol{knot1}{101}</code>  200	<code>\Pisymbol{knot2}{72}</code>  200
<code>\Pisymbol{knot1}{70}</code>  199	<code>\Pisymbol{knot1}{102}</code>  200	<code>\Pisymbol{knot2}{73}</code>  200
<code>\Pisymbol{knot1}{71}</code>  199	<code>\Pisymbol{knot1}{103}</code>  200	<code>\Pisymbol{knot2}{74}</code>  200
<code>\Pisymbol{knot1}{72}</code>  199	<code>\Pisymbol{knot1}{104}</code>  200	<code>\Pisymbol{knot2}{75}</code>  200
<code>\Pisymbol{knot1}{73}</code>  199	<code>\Pisymbol{knot1}{105}</code>  200	<code>\Pisymbol{knot2}{76}</code>  200
<code>\Pisymbol{knot1}{74}</code>  199	<code>\Pisymbol{knot2}{48}</code>  200	<code>\Pisymbol{knot2}{77}</code>  200
<code>\Pisymbol{knot1}{75}</code>  199	<code>\Pisymbol{knot2}{49}</code>  200	<code>\Pisymbol{knot2}{78}</code>  200
<code>\Pisymbol{knot1}{76}</code>  199	<code>\Pisymbol{knot2}{50}</code>  200	<code>\Pisymbol{knot2}{79}</code>  200
<code>\Pisymbol{knot1}{77}</code>  199	<code>\Pisymbol{knot2}{51}</code>  200	<code>\Pisymbol{knot2}{80}</code>  200
<code>\Pisymbol{knot1}{78}</code>  200	<code>\Pisymbol{knot2}{52}</code>  200	<code>\Pisymbol{knot2}{81}</code>  200
<code>\Pisymbol{knot1}{79}</code>  200	<code>\Pisymbol{knot2}{53}</code>  200	<code>\Pisymbol{knot2}{82}</code>  200
<code>\Pisymbol{knot1}{80}</code>  200	<code>\Pisymbol{knot2}{58}</code>  200	<code>\Pisymbol{knot2}{83}</code>  200
<code>\Pisymbol{knot1}{81}</code>  200	<code>\Pisymbol{knot2}{59}</code>  200	<code>\Pisymbol{knot2}{84}</code>  200
<code>\Pisymbol{knot1}{82}</code>  200	<code>\Pisymbol{knot2}{60}</code>  200	<code>\Pisymbol{knot2}{85}</code>  200
<code>\Pisymbol{knot1}{83}</code>  200	<code>\Pisymbol{knot2}{61}</code>  200	<code>\Pisymbol{knot2}{86}</code>  200
<code>\Pisymbol{knot1}{84}</code>  199	<code>\Pisymbol{knot2}{62}</code>  200	<code>\Pisymbol{knot2}{87}</code>  200
<code>\Pisymbol{knot1}{85}</code>  199	<code>\Pisymbol{knot2}{63}</code>  200	<code>\Pisymbol{knot2}{88}</code>  200
<code>\Pisymbol{knot1}{86}</code>  199	<code>\Pisymbol{knot2}{64}</code>  200	<code>\Pisymbol{knot2}{96}</code>  200
<code>\Pisymbol{knot1}{87}</code>  199	<code>\Pisymbol{knot2}{65}</code>  200	<code>\Pisymbol{knot2}{97}</code>  200
<code>\Pisymbol{knot1}{88}</code>  199	<code>\Pisymbol{knot2}{66}</code>  200	<code>\Pisymbol{knot2}{98}</code>  200
<code>\Pisymbol{knot1}{96}</code>  199	<code>\Pisymbol{knot2}{67}</code>  200	<code>\Pisymbol{knot2}{99}</code>  200
<code>\Pisymbol{knot1}{97}</code>  199	<code>\Pisymbol{knot2}{68}</code>  200	<code>\Pisymbol{knot2}{100}</code>  200
<code>\Pisymbol{knot1}{98}</code>  199	<code>\Pisymbol{knot2}{69}</code>  200	<code>\Pisymbol{knot2}{101}</code>  200
<code>\Pisymbol{knot1}{99}</code>  199	<code>\Pisymbol{knot2}{70}</code>  200	<code>\Pisymbol{knot2}{102}</code>  200

<code>\Pisymbol{knot2}{103}</code> 	<code>\Pisymbol{knot3}{74}</code> 	<code>\Pisymbol{knot4}{48}</code> 
..... 200	 200	 201
<code>\Pisymbol{knot2}{104}</code> 	<code>\Pisymbol{knot3}{75}</code> 	<code>\Pisymbol{knot4}{49}</code> 
..... 200	 200	 201
<code>\Pisymbol{knot2}{105}</code> 	<code>\Pisymbol{knot3}{76}</code> 	<code>\Pisymbol{knot4}{50}</code> 
..... 200	 200	 201
<code>\Pisymbol{knot3}{48}</code> 	<code>\Pisymbol{knot3}{77}</code> 	<code>\Pisymbol{knot4}{51}</code> 
..... 200	 200	 201
<code>\Pisymbol{knot3}{49}</code> 	<code>\Pisymbol{knot3}{78}</code> 	<code>\Pisymbol{knot4}{52}</code> 
..... 200	 200	 201
<code>\Pisymbol{knot3}{50}</code> 	<code>\Pisymbol{knot3}{79}</code> 	<code>\Pisymbol{knot4}{53}</code> 
..... 200	 200	 201
<code>\Pisymbol{knot3}{51}</code> 	<code>\Pisymbol{knot3}{80}</code> 	<code>\Pisymbol{knot4}{58}</code> 
..... 200	 200	 201
<code>\Pisymbol{knot3}{52}</code> 	<code>\Pisymbol{knot3}{81}</code> 	<code>\Pisymbol{knot4}{59}</code> 
..... 200	 200	 201
<code>\Pisymbol{knot3}{53}</code> 	<code>\Pisymbol{knot3}{82}</code> 	<code>\Pisymbol{knot4}{60}</code> 
..... 200	 200	 201
<code>\Pisymbol{knot3}{58}</code> 	<code>\Pisymbol{knot3}{83}</code> 	<code>\Pisymbol{knot4}{61}</code> 
..... 200	 201	 201
<code>\Pisymbol{knot3}{59}</code> 	<code>\Pisymbol{knot3}{84}</code> 	<code>\Pisymbol{knot4}{62}</code> 
..... 200	 200	 201
<code>\Pisymbol{knot3}{60}</code> 	<code>\Pisymbol{knot3}{85}</code> 	<code>\Pisymbol{knot4}{63}</code> 
..... 200	 200	 201
<code>\Pisymbol{knot3}{61}</code> 	<code>\Pisymbol{knot3}{86}</code> 	<code>\Pisymbol{knot4}{64}</code> 
..... 200	 200	 201
<code>\Pisymbol{knot3}{62}</code> 	<code>\Pisymbol{knot3}{87}</code> 	<code>\Pisymbol{knot4}{65}</code> 
..... 200	 200	 201
<code>\Pisymbol{knot3}{63}</code> 	<code>\Pisymbol{knot3}{88}</code> 	<code>\Pisymbol{knot4}{66}</code> 
..... 200	 200	 201
<code>\Pisymbol{knot3}{64}</code> 	<code>\Pisymbol{knot3}{96}</code> 	<code>\Pisymbol{knot4}{67}</code> 
..... 200	 200	 201
<code>\Pisymbol{knot3}{65}</code> 	<code>\Pisymbol{knot3}{97}</code> 	<code>\Pisymbol{knot4}{68}</code> 
..... 200	 200	 201
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..... 200	 200	 201
<code>\Pisymbol{knot3}{67}</code> 	<code>\Pisymbol{knot3}{99}</code> 	<code>\Pisymbol{knot4}{70}</code> 
..... 201	 200	 201
<code>\Pisymbol{knot3}{68}</code> 	<code>\Pisymbol{knot3}{100}</code> 	<code>\Pisymbol{knot4}{71}</code> 
..... 200	 200	 201
<code>\Pisymbol{knot3}{69}</code> 	<code>\Pisymbol{knot3}{101}</code> 	<code>\Pisymbol{knot4}{72}</code> 

<code>\Pisymbol{knot4}{77}</code>  201	<code>\Pisymbol{knot5}{51}</code> (◆) 201	<code>\Pisymbol{knot5}{80}</code>  201
<code>\Pisymbol{knot4}{78}</code>  201	<code>\Pisymbol{knot5}{52}</code> (●) 201	<code>\Pisymbol{knot5}{81}</code>  201
<code>\Pisymbol{knot4}{79}</code>  201	<code>\Pisymbol{knot5}{53}</code>  201	<code>\Pisymbol{knot5}{82}</code>  201
<code>\Pisymbol{knot4}{80}</code>  201	<code>\Pisymbol{knot5}{58}</code>  201	<code>\Pisymbol{knot5}{83}</code>  201
<code>\Pisymbol{knot4}{81}</code>  201	<code>\Pisymbol{knot5}{59}</code>  201	<code>\Pisymbol{knot5}{84}</code>  201
<code>\Pisymbol{knot4}{82}</code>  201	<code>\Pisymbol{knot5}{60}</code>  201	<code>\Pisymbol{knot5}{85}</code>  201
<code>\Pisymbol{knot4}{83}</code>  201	<code>\Pisymbol{knot5}{61}</code>  201	<code>\Pisymbol{knot5}{86}</code>  201
<code>\Pisymbol{knot4}{84}</code>  201	<code>\Pisymbol{knot5}{62}</code>  201	<code>\Pisymbol{knot5}{87}</code>  201
<code>\Pisymbol{knot4}{85}</code>  201	<code>\Pisymbol{knot5}{63}</code>  201	<code>\Pisymbol{knot5}{88}</code>  201
<code>\Pisymbol{knot4}{86}</code>  201	<code>\Pisymbol{knot5}{64}</code>  201	<code>\Pisymbol{knot5}{96}</code>  201
<code>\Pisymbol{knot4}{87}</code>  201	<code>\Pisymbol{knot5}{65}</code>  201	<code>\Pisymbol{knot5}{97}</code>  201
<code>\Pisymbol{knot4}{88}</code>  201	<code>\Pisymbol{knot5}{66}</code>  201	<code>\Pisymbol{knot5}{98}</code>  201
<code>\Pisymbol{knot4}{96}</code>  201	<code>\Pisymbol{knot5}{67}</code>  201	<code>\Pisymbol{knot5}{99}</code>  201
<code>\Pisymbol{knot4}{97}</code>  201	<code>\Pisymbol{knot5}{68}</code>  201	<code>\Pisymbol{knot5}{100}</code>  201
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<code>\Pisymbol{knot4}{99}</code>  201	<code>\Pisymbol{knot5}{70}</code>  201	<code>\Pisymbol{knot5}{102}</code>  201
<code>\Pisymbol{knot4}{100}</code>  201	<code>\Pisymbol{knot5}{71}</code>  201	<code>\Pisymbol{knot5}{103}</code>  201
<code>\Pisymbol{knot4}{101}</code>  201	<code>\Pisymbol{knot5}{72}</code>  201	<code>\Pisymbol{knot5}{104}</code>  201
<code>\Pisymbol{knot4}{102}</code>  201	<code>\Pisymbol{knot5}{73}</code>  201	<code>\Pisymbol{knot5}{105}</code>  201
<code>\Pisymbol{knot4}{103}</code>  201	<code>\Pisymbol{knot5}{74}</code>  201	<code>\Pisymbol{knot6}{48}</code>  201
<code>\Pisymbol{knot4}{104}</code>  201	<code>\Pisymbol{knot5}{75}</code>  201	<code>\Pisymbol{knot6}{49}</code>  201
<code>\Pisymbol{knot4}{105}</code>  201	<code>\Pisymbol{knot5}{76}</code>  201	<code>\Pisymbol{knot6}{50}</code>  201
<code>\Pisymbol{knot5}{48}</code>  201	<code>\Pisymbol{knot5}{77}</code>  201	<code>\Pisymbol{knot6}{51}</code> (◆) 201
<code>\Pisymbol{knot5}{49}</code>  201	<code>\Pisymbol{knot5}{78}</code>  201	<code>\Pisymbol{knot6}{52}</code> (●) 202
<code>\Pisymbol{knot5}{50}</code>  201	<code>\Pisymbol{knot5}{79}</code>  201	<code>\Pisymbol{knot6}{53}</code>  202

<code>\Pisymbol{knot7}{86}</code>  202	<code>\Pisymbol{magic}{85}</code>  209	<code>\Pisymbol{nkarta}{61}</code>  192
<code>\Pisymbol{knot7}{87}</code>  202	<code>\Pisymbol{magic}{87}</code>  209	<code>\Pisymbol{nkarta}{62}</code>  192
<code>\Pisymbol{knot7}{88}</code>  202	<code>\Pisymbol{magic}{88}</code>  209	<code>\Pisymbol{nkarta}{63}</code>  192
<code>\Pisymbol{knot7}{96}</code>  202	<code>\Pisymbol{magic}{90}</code>  209	<code>\Pisymbol{nkarta}{64}</code>  192
<code>\Pisymbol{knot7}{97}</code>  202	<code>\Pisymbol{moonphase}{0}</code>  193	<code>\Pisymbol{nkarta}{65}</code>  192
<code>\Pisymbol{knot7}{98}</code>  202	<code>\Pisymbol{moonphase}{1}</code>  193	<code>\Pisymbol{nkarta}{66}</code>  192
<code>\Pisymbol{knot7}{99}</code>  202	<code>\Pisymbol{moonphase}{2}</code>  193	<code>\Pisymbol{nkarta}{67}</code>  192
<code>\Pisymbol{knot7}{100}</code>  202	<code>\Pisymbol{moonphase}{3}</code>  193	<code>\Pisymbol{nkarta}{68}</code>  192
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<code>\Pisymbol{magic}{48}</code>  209	<code>\Pisymbol{nkarta}{38}</code>  191	<code>\Pisymbol{nkarta}{74}</code>  192
<code>\Pisymbol{magic}{49}</code>  209	<code>\Pisymbol{nkarta}{39}</code>  191	<code>\Pisymbol{nkarta}{75}</code>  .. 192
<code>\Pisymbol{magic}{50}</code>  209	<code>\Pisymbol{nkarta}{40}</code>  .. 191	<code>\Pisymbol{nkarta}{76}</code>  192
<code>\Pisymbol{magic}{51}</code>  209	<code>\Pisymbol{nkarta}{41}</code>  .. 191	<code>\Pisymbol{nkarta}{77}</code>  192
<code>\Pisymbol{magic}{52}</code>  209	<code>\Pisymbol{nkarta}{42}</code>  191	<code>\Pisymbol{nkarta}{78}</code>  192
<code>\Pisymbol{magic}{53}</code>  209	<code>\Pisymbol{nkarta}{43}</code>  191	<code>\Pisymbol{nkarta}{79}</code>  192
<code>\Pisymbol{magic}{54}</code>  209	<code>\Pisymbol{nkarta}{44}</code>  191	<code>\Pisymbol{nkarta}{80}</code>  192
<code>\Pisymbol{magic}{55}</code>  209	<code>\Pisymbol{nkarta}{45}</code>  191	<code>\Pisymbol{nkarta}{81}</code>  192
<code>\Pisymbol{magic}{56}</code>  209	<code>\Pisymbol{nkarta}{46}</code>  191	<code>\Pisymbol{nkarta}{82}</code>  192
<code>\Pisymbol{magic}{57}</code>  209	<code>\Pisymbol{nkarta}{47}</code>  191	<code>\Pisymbol{nkarta}{83}</code>  192
<code>\Pisymbol{magic}{66}</code>  209	<code>\Pisymbol{nkarta}{48}</code>  .. 191	<code>\Pisymbol{nkarta}{84}</code>  192
<code>\Pisymbol{magic}{71}</code>  209	<code>\Pisymbol{nkarta}{49}</code>  .. 191	<code>\Pisymbol{nkarta}{85}</code>  192
<code>\Pisymbol{magic}{82}</code>  209	<code>\Pisymbol{nkarta}{50}</code>  .. 192	<code>\Pisymbol{nkarta}{86}</code>  192
<code>\Pisymbol{magic}{84}</code>  209	<code>\Pisymbol{nkarta}{51}</code>  .. 192	<code>\Pisymbol{nkarta}{87}</code>  192
	<code>\Pisymbol{nkarta}{52}</code>  .. 192	<code>\Pisymbol{nkarta}{88}</code>  192
	<code>\Pisymbol{nkarta}{53}</code>  .. 192	<code>\Pisymbol{nkarta}{89}</code>  192
	<code>\Pisymbol{nkarta}{54}</code>  .. 192	<code>\Pisymbol{nkarta}{90}</code>  .. 192
	<code>\Pisymbol{nkarta}{55}</code>  .. 192	<code>\Pisymbol{nkarta}{91}</code>  192
	<code>\Pisymbol{nkarta}{56}</code> .. 192	<code>\Pisymbol{nkarta}{92}</code>  192
	<code>\Pisymbol{nkarta}{57}</code> .. 192	
	<code>\Pisymbol{nkarta}{58}</code> 192	
	<code>\Pisymbol{nkarta}{59}</code> 192	
	<code>\Pisymbol{nkarta}{60}</code> 192	

\Pisymbol{nkarta}{93} ()	192	\Pisymbol{nkarta}{124} ()		\Pisymbol{nkarta}{189} ()	.
\Pisymbol{nkarta}{94} ()	192	\Pisymbol{nkarta}{125} ()	192	\Pisymbol{nkarta}{190} (x)	192
\Pisymbol{nkarta}{95} (f)	192	\Pisymbol{nkarta}{126} (H)	192	\Pisymbol{nkarta}{191} (O)	192
\Pisymbol{nkarta}{96} (A)	191	\Pisymbol{nkarta}{161} (♥)	192	\Pisymbol{nkarta}{192} (*)	192
\Pisymbol{nkarta}{97} (A)	191	\Pisymbol{nkarta}{162} (♦)	192	\Pisymbol{nkarta}{193} (●)	191
\Pisymbol{nkarta}{98} (A)	191	\Pisymbol{nkarta}{163} (▲)	192	\Pisymbol{nkarta}{194} (□)	191
\Pisymbol{nkarta}{99} (⊕)	191	\Pisymbol{nkarta}{164} ()	192	\Pisymbol{nkarta}{195} (A)	191
\Pisymbol{nkarta}{100} (▲)	191	\Pisymbol{nkarta}{165} ()	192	\Pisymbol{nkarta}{196} (d)	191
\Pisymbol{nkarta}{101} (★)	191	\Pisymbol{nkarta}{166} ()	192	\Pisymbol{nkarta}{197} (B)	191
\Pisymbol{nkarta}{102} (A)	191	\Pisymbol{nkarta}{167} (◀)	192	\Pisymbol{nkarta}{198} (A)	191
\Pisymbol{nkarta}{103} (A)	191	\Pisymbol{nkarta}{168} (⊗)	192	\Pisymbol{nkarta}{199} (A)	191
\Pisymbol{nkarta}{104} (A)	191	\Pisymbol{nkarta}{169} (A)	192	\Pisymbol{nkarta}{200} (→)	191
\Pisymbol{nkarta}{105} (O)	191	\Pisymbol{nkarta}{170} (■)	192	\Pisymbol{nkarta}{201} (A)	191
\Pisymbol{nkarta}{106} (A)	191	\Pisymbol{nkarta}{171} (*)	192	\Pisymbol{nkarta}{202} (◆)	191
\Pisymbol{nkarta}{107} (A)	191	\Pisymbol{nkarta}{172} (□)	192	\Pisymbol{nkarta}{203} (■)	191
\Pisymbol{nkarta}{108} (□)	191	\Pisymbol{nkarta}{173} (A)	192	\Pisymbol{nkarta}{204} (■)	191
\Pisymbol{nkarta}{109} (目)	191	\Pisymbol{nkarta}{174} (+)	192	\Pisymbol{nkarta}{205} (●)	191
\Pisymbol{nkarta}{110} (A)	191	\Pisymbol{nkarta}{175} (O)	192	\Pisymbol{nkarta}{206} (■)	191
\Pisymbol{nkarta}{111} (O)	191	\Pisymbol{nkarta}{176} (●)	192	\Pisymbol{nkarta}{207} (A)	191
\Pisymbol{nkarta}{112} (◇)	191	\Pisymbol{nkarta}{177} (□)	192	\Pisymbol{nkarta}{208} (A)	191
\Pisymbol{nkarta}{113} (A)	192	\Pisymbol{nkarta}{178} (f)	192	\Pisymbol{nkarta}{209} (A)	191
\Pisymbol{nkarta}{114} (A)	192	\Pisymbol{nkarta}{179} (x)	192	\Pisymbol{nkarta}{210} (A)	192
\Pisymbol{nkarta}{115} (A)	192	\Pisymbol{nkarta}{180} (□)	192	\Pisymbol{nkarta}{211} (A)	192
\Pisymbol{nkarta}{116} (A)	192	\Pisymbol{nkarta}{181} (A)	192	\Pisymbol{nkarta}{212} (A)	192
\Pisymbol{nkarta}{117} (O)	192	\Pisymbol{nkarta}{182} (A)	192	\Pisymbol{nkarta}{213} (A)	192
\Pisymbol{nkarta}{118} (A)	192	\Pisymbol{nkarta}{183} (*)	192	\Pisymbol{nkarta}{214} (A)	192
\Pisymbol{nkarta}{119} (A)	192	\Pisymbol{nkarta}{184} (A)	192	\Pisymbol{nkarta}{215} (A)	192
\Pisymbol{nkarta}{120} (A)	192	\Pisymbol{nkarta}{185} (A)	192	\Pisymbol{nkarta}{216} (●)	192
\Pisymbol{nkarta}{121} (O)	192	\Pisymbol{nkarta}{186} (A)	192	\Pisymbol{nkarta}{217} (A)	192
\Pisymbol{nkarta}{122} (A)	192	\Pisymbol{nkarta}{187} (A)	192	\Pisymbol{nkarta}{218} (●)	192
\Pisymbol{nkarta}{123} ()	192	\Pisymbol{nkarta}{188} (A)	192	\Pisymbol{nkarta}{219} (A)	192

\Pisymbol{nkarta}{220} (■)	\Pisymbol{nkarta}{251} (✱)	\Pisymbol{smfpr10}{77} (♠)
..... 192	 192	 206
\Pisymbol{nkarta}{221} (●)	\Pisymbol{nkarta}{252} (●)	\Pisymbol{smfpr10}{78} (♠)
..... 192	 192	 206
\Pisymbol{nkarta}{222} (●)	\Pisymbol{nkarta}{253} (▼)	\Pisymbol{smfpr10}{79} (♠) .
..... 192	 192	 206
\Pisymbol{nkarta}{223} (♣)	\Pisymbol{nkarta}{254} (▶)	\Pisymbol{smfpr10}{80} (♠) .
..... 192	 192	 206
\Pisymbol{nkarta}{224} (■)	\Pisymbol{smfpr10}{34} () ..	\Pisymbol{smfpr10}{81} (♠)
..... 192	 205	 206
\Pisymbol{nkarta}{225} (♣) .	\Pisymbol{smfpr10}{35} (♠)	\Pisymbol{smfpr10}{82} (♠)
..... 192	 205	 206
\Pisymbol{nkarta}{226} (♣) .	\Pisymbol{smfpr10}{36} (♠)	\Pisymbol{smfpr10}{83} (♠)
..... 192	 205	 206
\Pisymbol{nkarta}{227} (●) .	\Pisymbol{smfpr10}{42} (♣)	\Pisymbol{smfpr10}{84} (♠) .
..... 192	 205	 206
\Pisymbol{nkarta}{228} (♠) .	\Pisymbol{smfpr10}{46} (♠)	\Pisymbol{smfpr10}{85} (♠)
..... 192	 205	 206
\Pisymbol{nkarta}{229} (♠) .	\Pisymbol{smfpr10}{48}	\Pisymbol{smfpr10}{86} (♠) .
..... 192	(♠) 205	 206
\Pisymbol{nkarta}{230} (○) .	\Pisymbol{smfpr10}{49}	\Pisymbol{smfpr10}{87} (♠) .
..... 192	(♠) 205	 206
\Pisymbol{nkarta}{231} (□)	\Pisymbol{smfpr10}{50}	\Pisymbol{smfpr10}{88} (♠) .
..... 192	(♠) 205	 206
\Pisymbol{nkarta}{232} (▽)	\Pisymbol{smfpr10}{51}	\Pisymbol{smfpr10}{89} (♠)
..... 192	(♠) 205	 206
\Pisymbol{nkarta}{233} (♠) .	\Pisymbol{smfpr10}{52}	\Pisymbol{smfpr10}{90} (♠) .
..... 192	(♠) 205	 206
\Pisymbol{nkarta}{234} (♠) .	\Pisymbol{smfpr10}{53}	\Pisymbol{smfpr10}{97} (♠) .
..... 192	(♠) 205	 206
\Pisymbol{nkarta}{235} (♠) .	\Pisymbol{smfpr10}{54}	\Pisymbol{smfpr10}{98} (♠) .
..... 192	(♠) 205	 206
\Pisymbol{nkarta}{236} (♠) .	\Pisymbol{smfpr10}{55}	\Pisymbol{smfpr10}{99} (♠) .
..... 192	(♠) 205	 206
\Pisymbol{nkarta}{237} (♠) .	\Pisymbol{smfpr10}{56}	\Pisymbol{smfpr10}{100} (♠)
..... 192	(♠) 205	 206
\Pisymbol{nkarta}{238} (♠) .	\Pisymbol{smfpr10}{57}	\Pisymbol{smfpr10}{101} (♠)
..... 192	(♠) 205	 206
\Pisymbol{nkarta}{239} (♠) .	\Pisymbol{smfpr10}{65} (♠) .	\Pisymbol{smfpr10}{102} (♠)
..... 192	 206	 206
\Pisymbol{nkarta}{240} (♠)	\Pisymbol{smfpr10}{66} (♠) .	\Pisymbol{smfpr10}{103} (♠)
..... 192	 206	 206
\Pisymbol{nkarta}{241} (♠)	\Pisymbol{smfpr10}{67} (♠) .	\Pisymbol{smfpr10}{104} (♠)
..... 192	 206	 206
\Pisymbol{nkarta}{242} (♠) .	\Pisymbol{smfpr10}{68} (♠) .	\Pisymbol{smfpr10}{105} (♠)
..... 192	 206	 206
\Pisymbol{nkarta}{243} (♠)	\Pisymbol{smfpr10}{69} (♠) .	\Pisymbol{smfpr10}{106} (♠)
..... 192	 206	 206
\Pisymbol{nkarta}{244} (♠) .	\Pisymbol{smfpr10}{70} (♠) .	\Pisymbol{smfpr10}{107} (♠)
..... 192	 206	 206
\Pisymbol{nkarta}{245} (♠) .	\Pisymbol{smfpr10}{71} (♠) .	\Pisymbol{smfpr10}{108} (♠)
..... 192	 206	 206
\Pisymbol{nkarta}{246} (♠)	\Pisymbol{smfpr10}{72} (♠) .	\Pisymbol{smfpr10}{109} (♠)
..... 192	 206	 206
\Pisymbol{nkarta}{247} (♠) .	\Pisymbol{smfpr10}{73} (♠) .	\Pisymbol{smfpr10}{110} (♠)
..... 192	 206	 206
\Pisymbol{nkarta}{248} (♠)	\Pisymbol{smfpr10}{74} (♠)	\Pisymbol{smfpr10}{111} (♠)
..... 192	 206	 206
\Pisymbol{nkarta}{249} (♠)	\Pisymbol{smfpr10}{75} (♠) .	\Pisymbol{smfpr10}{112} (♠)
..... 192	 206	 206
\Pisymbol{nkarta}{250} (♠)	\Pisymbol{smfpr10}{76} (♠)	\Pisymbol{smfpr10}{113} (♠)
..... 192	 206	 206

$\backslash\text{Pisymbol}\{\text{umrandb}\}\{123\}$ ()
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 $\backslash\text{Pisymbol}\{\text{WebOMintsGD}\}\{47\}$
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 $\backslash\text{Pisymbol}\{\text{WebOMintsGD}\}\{83\}$
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$\backslash\text{Pisymbol}\{\text{WebOMintsGD}\}\{84\}$
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 $\backslash\text{Pisymbol}\{\text{WebOMintsGD}\}\{85\}$
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 $\backslash\text{Pisymbol}\{\text{WebOMintsGD}\}\{86\}$
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 $\backslash\text{Pisymbol}\{\text{WebOMintsGD}\}\{87\}$
 () 196
 $\backslash\text{Pisymbol}\{\text{WebOMintsGD}\}\{88\}$
 () 196
 $\backslash\text{Pisymbol}\{\text{WebOMintsGD}\}\{89\}$
 () 196
 $\backslash\text{Pisymbol}\{\text{WebOMintsGD}\}\{90\}$
 () 196
 $\backslash\text{Pisymbol}\{\text{WebOMintsGD}\}\{91\}$
 () 196
 $\backslash\text{Pisymbol}\{\text{WebOMintsGD}\}\{93\}$
 () 196
 $\backslash\text{Pisymbol}\{\text{WebOMintsGD}\}\{97\}$
 () 196
 $\backslash\text{Pisymbol}\{\text{WebOMintsGD}\}\{98\}$
 () 196
 $\backslash\text{Pisymbol}\{\text{WebOMintsGD}\}\{99\}$
 () 196
 $\backslash\text{Pisymbol}\{\text{WebOMintsGD}\}\{100\}$
 () 196
 $\backslash\text{Pisymbol}\{\text{WebOMintsGD}\}\{101\}$
 () 196
 $\backslash\text{Pisymbol}\{\text{WebOMintsGD}\}\{102\}$
 () 196
 $\backslash\text{Pisymbol}\{\text{WebOMintsGD}\}\{103\}$
 () 196
 $\backslash\text{Pisymbol}\{\text{WebOMintsGD}\}\{104\}$
 () 196
 $\backslash\text{Pisymbol}\{\text{WebOMintsGD}\}\{105\}$
 () 196
 $\backslash\text{Pisymbol}\{\text{WebOMintsGD}\}\{106\}$
 () 196
 $\backslash\text{Pisymbol}\{\text{WebOMintsGD}\}\{107\}$
 () 196
 $\backslash\text{Pisymbol}\{\text{WebOMintsGD}\}\{108\}$
 () 196
 $\backslash\text{Pisymbol}\{\text{WebOMintsGD}\}\{109\}$
 () 196
 $\backslash\text{Pisymbol}\{\text{WebOMintsGD}\}\{110\}$
 () 196
 $\backslash\text{Pisymbol}\{\text{WebOMintsGD}\}\{111\}$
 () 196
 $\backslash\text{Pisymbol}\{\text{WebOMintsGD}\}\{112\}$
 () 196
 $\backslash\text{Pisymbol}\{\text{WebOMintsGD}\}\{113\}$
 () 196
 $\backslash\text{Pisymbol}\{\text{WebOMintsGD}\}\{114\}$
 () 196
 $\backslash\text{Pisymbol}\{\text{WebOMintsGD}\}\{115\}$
 () 196
 $\backslash\text{Pisymbol}\{\text{WebOMintsGD}\}\{116\}$
 () 196
 $\backslash\text{Pisymbol}\{\text{WebOMintsGD}\}\{117\}$
 () 196
 $\backslash\text{Pisymbol}\{\text{WebOMintsGD}\}\{118\}$
 () 196

$\backslash\text{Pisymbol}\{\text{WebOMintsGD}\}\{119\}$
 () 196
 $\backslash\text{Pisymbol}\{\text{WebOMintsGD}\}\{120\}$
 () 196
 $\backslash\text{Pisymbol}\{\text{WebOMintsGD}\}\{121\}$
 () 196
 $\backslash\text{Pisymbol}\{\text{WebOMintsGD}\}\{122\}$
 () 196
 $\backslash\text{pitchfork}$ () 116
 $\backslash\text{pitchfork}$ () 48
 $\backslash\text{pitchfork}$ () 55
 $\backslash\text{pitchfork}$ () 88
 $\backslash\text{pitchfork}$ () 86
 $\backslash\text{pitchfork}$ () 56
 pitchforks 48, 86, 88, 110, 116
 Pitman's base 12 symbols 113, 173
 $\backslash\text{piup}$ (π) 91
 $\backslash\text{planck}$ ($\hbar$) 19
 $\backslash\text{Plane}$ () 141
 planets ... 122–124, 193–195
 $\backslash\text{plasmon}$ () 129
 playing cards 140, 141
 Plimsoll line 216
 $\backslash\text{Plus}$ () 133
 $\backslash\text{plus}$ ($+$) 151
 $\backslash\text{plus}$ ($+$) 31
 $\backslash\text{plus}$ ($+$) 31
 plus-or-minus sign ... *see* $\backslash\text{pm}$
 $\backslash\text{PlusCenterOpen}$ () ... 133
 $\backslash\text{pluscirc}$ ($\oplus$) 30
 $\backslash\text{pluscirc}$ ($\oplus$) 32
 $\backslash\text{plusdot}$ ($+$) 32
 $\backslash\text{plusdot}$ ($+$) 33
 $\backslash\text{pluseqq}$ ($\pm$) 33
 $\backslash\text{plushat}$ ($\hat{+}$) 33
 $\backslash\text{PlusOutline}$ () 133
 plusses 133, 191–192
 $\backslash\text{plussim}$ ($\pm$) 33
 $\backslash\text{plussubtwo}$ ($\pm_2$) 33
 $\backslash\text{PlusThinCenterOpen}$ () 133
 $\backslash\text{plustrif}$ ($\star$) 32
 $\backslash\text{plustrif}$ ($\star$) 33
 $\backslash\text{Pluto}$ ($\mathcal{P}$) 123
 $\backslash\text{Pluto}$ ($\mathfrak{P}$) 122
 $\backslash\text{Pluto}$ ($\mathfrak{P}$) 124
 $\backslash\text{pluto}$ ($\mathcal{P}$) 122
 $\backslash\text{pm}$ ($\pm$) 29
 $\backslash\text{pm}$ ($\pm$) 32
 $\backslash\text{pm}$ ($\pm$) 32
 $\backslash\text{pm}$ ($\pm$) 31
 $\backslash\text{pm}$ ($\pm$) 33
 $\backslash\text{pm}$ ($\pm$) 176
 $\backslash\text{pmb}$ 225
 pmbboxdraw (package) 178, 231
 $\backslash\text{pmod}$ 89
 $\backslash\text{pod}$ 89
 $\backslash\text{pointer}$ () 169
 pointing finger *see* fists
 $\backslash\text{PointingHand}$ () 170
 $\backslash\text{pointint}$ ($\oint$) 45
 $\backslash\text{pointintsl}$ ($\oint$) 47

<code>\pointintup</code> ($\oint$)	47	<code>\preceqq</code> ($\preceq$)	49	pronunciation symbols	<i>see</i>
<code>\pointright</code> ($\oint$)	133	<code>\preceqq</code> ($\preceq$)	53	phonetic symbols	
<code>\Poland</code> ($\text{\P}$)	182	<code>\preceqq</code> ($\preceq$)	56	proof, end of	115
<code>\polariton</code> ($\text{\P}$)	129	<code>\precnapprox</code> ($\preccurlyeq$)	50	proper subset/superset	<i>see</i>
<code>\polaron</code> ($\text{\P}$)	129	<code>\precnapprox</code> ($\preccurlyeq$)	49	<code>\subsetneq</code> / <code>\supsetneq</code>	
<code>\polishhook</code> ($\text{\P}$)	24	<code>\precnapprox</code> ($\preccurlyeq$)	55	proper vertices	128
<code>\polter</code> ($\text{\P}$)	110	<code>\precnapprox</code> ($\preccurlyeq$)	53	<code>\PropertyLine</code> ($\text{\P}$)	117
polutonikogreek (babel package option)	15, 90, 91	<code>\precnapprox</code> ($\preccurlyeq$)	52	<code>\propfrom</code> (∞)	53
polygons	136–138, 162–166, 191–192, 207–208	<code>\precnapprox</code> ($\preccurlyeq$)	56	<code>\propto</code> ($\propto$)	116
polynom (package)	104	<code>\precneq</code> ($\precneq$)	50	<code>\propto</code> ($\propto$)	48
polynomial division	104	<code>\precneq</code> ($\precneq$)	53, 54	<code>\propto</code> ($\propto$)	53
polytonic Greek	15, 90, 91	<code>\precneq</code> ($\precneq$)	56	<code>\propto</code> ($\propto$)	51
<code>\portato</code> ($\text{\P}$)	157	<code>\precneq</code> ($\precneq$)	49	<code>\propto</code> ($\propto$)	57
<code>\portatoDown</code> ($\text{\P}$)	157	<code>\precneqq</code> ($\preceq$)	55	<code>\protein</code> ($\text{\P}$)	128
<code>\Portugal</code> ($\text{\P}$)	182	<code>\precneqq</code> ($\preceq$)	53, 54	proto-Semitic symbols	142
<code>\Poseidon</code> ($\text{\P}$)	124	<code>\precneqq</code> ($\preceq$)	56	<code>\proton</code> (p^+)	128
<code>\positron</code> (e^+)	129	<code>\precnsim</code> ($\sim$)	50	protosem (package)	142, 231
<code>\postalmark</code> ($\text{\P}$)	117	<code>\precnsim</code> ($\sim$)	49	<code>\ProvidesPackage</code>	230
<code>\Postbox</code> ($\text{\P}$)	180	<code>\precnsim</code> ($\sim$)	55	<code>\PrtSc</code> ($\text{\PrtSc}$)	125
PostScript	91, 120, 130, 214, 223	<code>\precnsim</code> ($\sim$)	53	<code>\prurel</code> ($\prec$)	55
PostScript fonts	130	<code>\precnsim</code> ($\sim$)	52	<code>\prurel</code> ($\prec$)	57
<code>\pot</code> ($\text{\P}$)	184	<code>\precnsim</code> ($\sim$)	56	<code>\ps</code> ($\text{\P}$)	176
<code>\Pound</code> ($\text{\P}$)	26	<code>\precnsim</code> ($\sim$)	50	pseudographics	178
<code>\pounds</code>	15	<code>\precnsim</code> ($\sim$)	48	<code>\Psi</code> (Ψ)	90
<code>\pounds</code> ($\text{\P}$)	227, 228	<code>\precnsim</code> ($\sim$)	55	<code>\psi</code> (ψ)	90
power set <i>see</i> alphabets, math		<code>\precnsim</code> ($\sim$)	53	<code>\psiup</code> (ψ)	91
<code>\powerset</code> ($\mathcal{P}$)	93	<code>\precnsim</code> ($\sim$)	51	psnfss (package)	134
<code>\Pp</code> ($\text{\P}$)	176	<code>\precnsim</code> ($\sim$)	57	PSTricks (package)	186
<code>\pp</code> ($\text{\P}$)	176	prescription <i>see</i> <code>\texttreceipe</code>		<code>\Psyche</code> ($\text{\P}$)	124
<code>\ppm</code> ($\text{\P}$)	176	present-value symbols	107, 219	<code>\Pu</code> ($\text{\P}$)	154
<code>\Ppp</code> ($\text{\P}$)	176	<code>\prime</code> ($\text{\P}$)	115	<code>\pullback</code> ($\text{\P}$)	32
<code>\ppp</code> ($\text{\P}$)	176	<code>\prime</code> ($\text{\P}$)	116	<code>\pullback</code> ($\text{\P}$)	57
<code>\Pppp</code> ($\text{\P}$)	176	<code>\prime</code> ($\text{\P}$)	116	pullback diagrams	218
<code>\Ppppp</code> ($\text{\P}$)	176	<code>\prime</code> ($\text{\P}$)	114	pulse diagram symbols	121
<code>\Ppppp</code> ($\text{\P}$)	176	primes	114–117	<code>\PulseHigh</code> ($\text{\P}$)	121
<code>\Pr</code> ($\text{\P}$)	89	<code>\Printer</code> ($\text{\P}$)	125	<code>\PulseLow</code> ($\text{\P}$)	121
<code>\Prec</code> ($\text{\P}$)	56	printer's fist <i>see</i> fists		<code>\pumpkin</code> ($\text{\P}$)	37
<code>\prec</code> ($\prec$)	48	printer's flowers <i>see</i> fleurons		pumpkins	37
<code>\prec</code> ($\prec$)	53	<i>and</i> flowers		punctuation	16
<code>\prec</code> ($\prec$)	51	probabilistic independence	217	punctum	<i>see</i> musixgre
<code>\prec</code> ($\prec$)	56	probability limit (plim)	<i>see</i>	<code>\Purierstab</code> ($\text{\P}$)	184
<code>\precapprox</code> ($\preccurlyeq$)	50	$\lim_{n \rightarrow \infty}$		<code>\pushout</code> ($\text{\P}$)	32
<code>\precapprox</code> ($\preccurlyeq$)	48	<code>\DeclareMathOperator</code>		<code>\pushout</code> ($\text{\P}$)	57
<code>\precapprox</code> ($\preccurlyeq$)	55	<code>\prod</code> ($\prod$)	39	pushout diagrams	218
<code>\precapprox</code> ($\preccurlyeq$)	53	<code>\prod</code> ($\prod$)	44	<code>\p wedge</code> ($\text{\P}$)	19
<code>\precapprox</code> ($\preccurlyeq$)	51	<code>\prod</code> ($\prod$)	43	pxfonts (package)	28, 30, 41, 49, 60, 63, 71, 88, 91–93, 115, 119, 140, 211, 226
<code>\precapprox</code> ($\preccurlyeq$)	56	<code>\prod</code> ($\prod$)	45	<code>\Pxp</code> ($\text{\P}$)	176
<code>\preccurlyeq</code> ($\preccurlyeq$)	50	<code>\PRODI</code>	48	<code>\pxp</code> ($\text{\P}$)	176
<code>\preccurlyeq</code> ($\preccurlyeq$)	48	<code>\PRODI</code> ($\text{\P}$)	48		
<code>\preccurlyeq</code> ($\preccurlyeq$)	55	<code>\Prodi</code>	48		
<code>\preccurlyeq</code> ($\preccurlyeq$)	53	<code>\Prodi</code> ($\text{\P}$)	48		
<code>\preccurlyeq</code> ($\preccurlyeq$)	51	<code>\prodi</code>	48		
<code>\preccurlyeq</code> ($\preccurlyeq$)	56	<code>\prodi</code> ($\text{\P}$)	48		
<code>\precdot</code> ($\text{\P}$)	50	<code>\prodi</code> ($\text{\P}$)	48		
<code>\preceq</code> ($\preceq$)	48	prodint (package)	48, 231		
<code>\preceq</code> ($\preceq$)	53	product integrals	48		
<code>\preceq</code> ($\preceq$)	51	<code>\profline</code> ($\text{\P}$)	117		
<code>\preceq</code> ($\preceq$)	56	<code>\profsurf</code> ($\text{\P}$)	117		
<code>\precdot</code> ($\text{\P}$)	50	Project Gutenberg	214		
<code>\preceq</code> ($\preceq$)	48	projective space ($\mathbb{P}$)	<i>see</i>		
<code>\preceq</code> ($\preceq$)	53	alphabets, math			
<code>\preceq</code> ($\preceq$)	51	<code>\projlim</code> (projlim)	89		
<code>\preceq</code> ($\preceq$)	56				

$\backslash$ qqs ()	153
$\backslash$ qs ()	153
$\backslash$ qside ($\ll$)	174
$\backslash$ quaddot ($\ddot{}$)	151
$\backslash$ quadeye ($\circ$)	151
$\backslash$ Quadrat ($\mathbb{I}$)	102
$\backslash$ quadrad ($\mathbb{I}$)	102
$\backslash$ Quadras ($\mathbb{I}$)	102
$\backslash$ quadras ($\mathbb{I}$)	102
$\backslash$ quadrupole ($\otimes$)	128
$\backslash$ quark (q)	128
$\backslash$ quarkb (b)	128
$\backslash$ quarkc (c)	128
$\backslash$ quarkd (d)	128
$\backslash$ quarks (s)	128
$\backslash$ quarkt (t)	128
$\backslash$ quarku (u)	128
quarter note	<i>see</i> musical symbols
$\backslash$ quarterNote ()	155
$\backslash$ quaternote ()	152
$\backslash$ quaternote ()	152
$\backslash$ quaternote ()	152
$\backslash$ quarterNoteDotted ()	155
$\backslash$ quarterNoteDottedDouble ()	155
$\backslash$ quarterNoteDottedDoubleDown ()	155
$\backslash$ quarterNoteDottedDown ()	155
$\backslash$ quarterNoteDown ()	155
quasi-quotation marks ($\ulcorner$ $\lrcorner$)	<i>see</i> $\backslash$ ulcorner and $\backslash$ urcorner
quaternions ($\mathbb{H}$)	<i>see</i> alphabets, math
quaver	<i>see</i> musical symbols
$\backslash$ quaver ()	155
$\backslash$ quaverDotted ()	155
$\backslash$ quaverDottedDouble ()	155
$\backslash$ quaverDottedDoubleDown ()	155
$\backslash$ quaverDottedDown ()	155
$\backslash$ quaverDown ()	155
$\backslash$ quaverRest ()	156
$\backslash$ quaverRestDotted ()	156
queen	175, 209–210
$\backslash$ questeq ($\stackrel{?}{=}$)	57
$\backslash$ Question ($??$)	117
quilisma	<i>see</i> musixgre
$\backslash$ Quincunx ($\mathbf{\pi}$)	124
Quine corners ($\ulcorner$ $\lrcorner$)	<i>see</i> $\backslash$ ulcorner and $\backslash$ urcorner
quotation marks	14, 16, 27, 183, 225, 228
$\backslash$ quotedblbase („)	16, 228
$\backslash$ quotesinglbase (,)	16, 228

R

$\backslash$ R (Ψ)	151
$\backslash$ R ($\mathfrak{A}$)	151

$\backslash$ R ($\sim$)	176
$\backslash$ r ()	20
$\backslash$ r ($\sim$)	176
$\backslash$ r ($\mathbb{R}$)	151
$\backslash$ r ($\mathfrak{s}$)	119
$\backslash$ Radiation ()	171
$\backslash$ radiation ()	183
radicals	<i>see</i> $\backslash$ sqrt and $\backslash$ surd
$\backslash$ Radioactivity ()	127
$\backslash$ Radix ($\mathbb{R}$)	124
$\backslash$ Rain ()	171
$\backslash$ RainCloud ()	171
raindrop	209
raising	<i>see</i> $\backslash$ textraising
$\backslash$ RaisingEdge ($\lrcorner$)	121
$\backslash$ Angle ($\geq$)	120
$\backslash$ rAngle ($\gg$)	101
$\backslash$ rAngle ($\gg$)	98
$\backslash$ rAngle ($\gg$)	100
$\backslash$ angle ($\rangle$)	28, 96
$\backslash$ angle ($\rangle$)	98
$\backslash$ angle ($\rangle$)	97
$\backslash$ angle ($\rangle$)	100
$\backslash$ anglebar ($\rangle$)	98
$\backslash$ angledot ($\rangle$)	98
$\backslash$ angledot ($\rangle$)	95
$\backslash$ angledownzigzagarrow ($\searrow$)	115
$\backslash$ RArrow ($\Rightarrow$)	125
$\backslash$ arrowfill	108
$\backslash$ ratio ($\doteq$)	59
$\backslash$ RATIONAL ($\mathbb{Q}$)	89
$\backslash$ Rational ($\mathbb{Q}$)	89
rational numbers ($\mathbb{Q}$)	<i>see</i> alphabets, math
rationalized Planck constant	<i>see</i> $\backslash$ hbar
$\backslash$ RB ($\}$)	125
$\backslash$ Rbag ($\rangle$)	95
$\backslash$ rbag ()	95
$\backslash$ rbag ()	32
$\backslash$ rbag ()	95
$\backslash$ rbag ()	95
$\backslash$ rbag ()	32
$\backslash$ rbag ()	95
$\backslash$ blackbowtie ($\bowtie$)	32
$\backslash$ rbkbrbrak ($\rangle$)	95
$\backslash$ Rbrace ($\}$)	100
$\backslash$ brace ($\}$)	98
$\backslash$ brace ($\}$)	99
$\backslash$ brace ($\}$)	98

$\backslash$ rbrace ($\}$)	100
$\backslash$ Rbrack ($\mathbb{I}$)	120
$\backslash$ rBrack ($\mathbb{I}$)	101
$\backslash$ rBrack ($\mathbb{I}$)	99
$\backslash$ rBrack ($\mathbb{I}$)	99
$\backslash$ rBrack ($\mathbb{I}$)	100
$\backslash$ rbrack ($\}$)	99
$\backslash$ rbrack ($\}$)	99
$\backslash$ rbracklrtick ($\rangle$)	95
$\backslash$ rbrackubar ($\rangle$)	95
$\backslash$ rbrackurtick ($\rangle$)	95
$\backslash$ Rbrbrak ($\rangle$)	95
$\backslash$ rbrbrak ($\rangle$)	100
$\backslash$ rc ()	23
$\backslash$ rCeil ($\lceil$)	101
$\backslash$ rceil ($\lceil$)	96
$\backslash$ rceil ($\lceil$)	99
$\backslash$ rceil ($\lceil$)	97
$\backslash$ rceil ($\lceil$)	99
$\backslash$ rcirclearrowdown ($\curvearrowright$)	73
$\backslash$ rcirclearrowleft ($\curvearrowleft$)	73
$\backslash$ rcirclearrowright ($\curvearrowright$)	73
$\backslash$ rcirclearrowup ($\curvearrowup$)	73
$\backslash$ rcircleleftint ($\oint$)	44
$\backslash$ rcircleleftint ($\oint$)	43
$\backslash$ rcirclerightint ($\oint$)	44
$\backslash$ rcirclerightint ($\oint$)	43
$\backslash$ rcorners ($\lrcorner$)	95
$\backslash$ rcurvearrowdown ($\curvearrowright$)	73
$\backslash$ rcurvearrowleft ($\curvearrowleft$)	73
$\backslash$ rcurvearrowne ($\searrow$)	73
$\backslash$ rcurvearrownw ($\swarrow$)	73
$\backslash$ rcurvearrowright ($\curvearrowright$)	73
$\backslash$ rcurvearrowse ($\searrow$)	73
$\backslash$ rcurvearrowsw ($\swarrow$)	73
$\backslash$ rcurvearrowup ($\curvearrowup$)	73
$\backslash$ rcurvyangle ($\rangle$)	95
$\backslash$ rdbrack ($\mathbb{I}$)	97
$\backslash$ rdiagovfdiag ($\times$)	117
$\backslash$ rdiagovsearrow ($\searrow$)	82
$\backslash$ Rdsh ($\downarrow$)	76
$\backslash$ Rdsh ($\downarrow$)	82
$\backslash$ Re ($\Re$)	93
$\backslash$ Re ($\Re$)	94
$\backslash$ REAL ($\mathbb{R}$)	89
$\backslash$ Real ($\mathbb{R}$)	89
real numbers ($\mathbb{R}$)	<i>see</i> alphabets, math
recipe	<i>see</i> $\backslash$ textrecipe
$\backslash$ recorder ($\oslash$)	169

<code>\Rectangle</code> ()	139	retracting	<i>see</i>	<code>\rho</code> (ρ)	90
<code>\RectangleBold</code> ()	139	<code>\textretracting</code>		<code>\rho</code> (ρ)	91
rectangles	139, 140, 162–166, 191–192	<code>\Retrograde</code> (R_k)	124	<code>\rhomesonminus</code> (ϱ^-)	128
<code>\RectangleThin</code> ()	139	<code>\Return</code> ()	125	<code>\rhomesonnull</code> (ϱ^0)	128
<code>\Rectpipe</code> ()	127	return	<i>see</i> carriage return	<code>\rhomesonplus</code> (ϱ^+)	128
<code>\Rectsteel</code> ()	127	<code>\revangle</code> (Δ)	114	<code>\rhook</code> (ρ)	89
recycle (package)	180, 231	<code>\revangle</code> (Δ)	115	<code>\rhookdownarrow</code> ($\downarrow$)	77
<code>\recycle</code> ()	183	<code>\revangleubar</code> ($\underline{\Delta}$)	115	<code>\rhookdownarrow</code> ($\downarrow$)	73
		<code>\revaw</code> ()	100	<code>\rhookleftarrow</code> ($\leftarrow$)	77
<code>\recycle</code> ()	180	<code>\revD</code> (Ω)	19	<code>\rhookleftarrow</code> ($\leftarrow$)	73
<code>\Recycling</code> ()	180	<code>\revddots</code> ($\cdots$)	218	<code>\rhooknearrow</code> ($\nearrow$)	77
recycling symbols	179, 180, 183, 185–189, 191	<code>\reve</code> (ϑ)	19	<code>\rhooknearrow</code> ($\nearrow$)	73
reduced quadrupole moment	<i>see</i>	<code>\reveject</code> (φ)	19	<code>\rhooknwarrow</code> ($\nwarrow$)	77
<code>\rqm</code>		<code>\reverifyset</code> ($\mathcal{Q}$)	116	<code>\rhooknwarrow</code> ($\nwarrow$)	73
<code>\reference</code> (R)	128	<code>\reverifyset</code> ($\mathcal{Q}$)	114	<code>\rhookrightarrow</code> ($\rightarrow$)	77
<code>\reflectbox</code>	214	<code>\revepsilon</code> (ϵ)	19	<code>\rhookrightarrow</code> ($\rightarrow$)	73
registered trademark	14, 26, 227	<code>\revepsilon</code> (ϵ)	214	<code>\rhooksearrow</code> ($\searrow$)	77
<code>\Reibe</code> ()	184	reverse solidus	<i>see</i>	<code>\rhooksearrow</code> ($\searrow$)	73
relational database symbols	117	<code>\textbackslash</code>		<code>\rhookswarrow</code> ($\swarrow$)	77
relational symbols	48	<code>\reverseallabreve</code> ()	153	<code>\rhookswarrow</code> ($\swarrow$)	72
binary	48–51, 53, 55–67, 86–88	<code>\reverseC</code> ()	153	<code>\rhookuparrow</code> ($\uparrow$)	77
negated binary	49, 50, 52–55, 57	reversed symbols	214	<code>\rhookuparrow</code> ($\uparrow$)	72
triangle	67–69	<code>\reversedvideobend</code> ()	169	<code>\rhoup</code> (ρ)	91
<code>\relationleftproject</code> ()	109	<code>\reversemathcloud</code> ()	37	<code>\right</code>	96, 100, 101, 211, 213
<code>\relationlifting</code> ()	109	<code>\reversemathwitch</code> ()	37	<code>\rightangle</code> ($\angle$)	114
<code>\relationrightproject</code> ()	109	<code>\reversemathwitch*</code> ()	37	<code>\rightangle</code> ($\angle$)	118
relations	109	<code>\revglotstop</code> (f)	19	<code>\rightangle</code> ($\angle$)	115
<code>\Relbar</code> ($=$)	88, 215	<code>\revmeasuredangle</code> (Δ)	114	<code>\rightangledot</code> (h)	114
<code>\Relbar</code> ($=$)	51	<code>\revnmid</code> (f)	57	<code>\rightangledot</code> (h)	115
<code>\Relbar</code> ($=$)	89	<code>\revsphericalangle</code> ($\triangleright$)	114	<code>\rightanglesqr</code> (h)	114
<code>\relbar</code> ($-$)	88, 215	<code>\Rewind</code> ($\blacktriangleleft$)	169	<code>\rightanglesqr</code> (h)	115
<code>\relbar</code> ($-$)	51	<code>\RewindToIndex</code> ()	169	<code>\rightanglesquare</code> (h)	114
<code>\relbar</code> ($-$)	89	<code>\RewindToStart</code> ()	169	<code>\RIGHTarrow</code> ($\blacktriangleright$)	169
<code>\resize</code> (package)	23	<code>\rfbowntie</code> ($\bowtie$)	57	<code>\Rightarrow</code> ($\Rightarrow$)	28, 70
<code>\Request</code> ()	180	<code>\rfilet</code> ()	97	<code>\Rightarrow</code> ($\Rightarrow$)	76
<code>\resistivity</code> (κ)	128	<code>\rFloor</code> ()	101	<code>\Rightarrow</code> ($\Rightarrow$)	72
<code>\resizebox</code>	85, 211	<code>\rfloor</code> ($\rfloor$)	96	<code>\Rightarrow</code> ($\Rightarrow$)	82
<code>\Respondens</code> ($\sim$)	176	<code>\rfloor</code> ($\rfloor$)	99	<code>\rightarrow</code> ($\rightarrow$)	71
<code>\respondens</code> ($\sim$)	176	<code>\rfloor</code> ($\rfloor$)	97	<code>\rightarrow</code> ($\rightarrow$)	70
response ($\mathbb{R}$)	229, 230	<code>\rfloor</code> ($\rfloor$)	99	<code>\rightarrow</code> ($\rightarrow$)	76
<code>\restoresymbol</code>	211	<code>\rfloor</code> ($\rfloor$)	97	<code>\rightarrow</code> ($\rightarrow$)	72
<code>\restrictbarb</code> ($\downarrow$)	86	<code>\rfloor</code> ($\rfloor$)	99	<code>\rightarrow</code> ($\rightarrow$)	85
<code>\restrictbarbup</code> ($\uparrow$)	86	<code>\rfloor</code> ($\rfloor$)	99	<code>\rightarrow</code> ($\rightarrow$)	82
<code>\restriction</code> ($\uparrow$)	71	<code>\rfloor</code> ($\rfloor$)	99	<code>\rightarrow</code> ($\rightarrow$)	82
<code>\restriction</code> ($\uparrow$)	79	<code>\rfloor</code> ($\rfloor$)	99	<code>\rightarrow</code> ($\rightarrow$)	82
<code>\restriction</code> ($\uparrow$)	75	<code>\rfloor</code> ($\rfloor$)	99	<code>\rightarrow</code> ($\rightarrow$)	82
<code>\restriction</code> ($\uparrow$)	84	<code>\rfloor</code> ($\rfloor$)	99	<code>\rightarrow</code> ($\rightarrow$)	82
restrictions	71, 75, 79, 80, 84, 86	<code>\rfloor</code> ($\rfloor$)	99	<code>\rightarrow</code> ($\rightarrow$)	82
<code>\restrictmallet</code> ($\downarrow$)	86	<code>\RHD</code> ($\blacktriangleright$)	30	<code>\rightarrow</code> ($\rightarrow$)	82
<code>\restrictmalletup</code> ($\uparrow$)	86	<code>\rhd</code> ($\triangleright$)	29, 30	<code>\rightarrow</code> ($\rightarrow$)	82
<code>\restrictwand</code> ($\downarrow$)	86	<code>\rhd</code> ($\triangleright$)	65	<code>\rightarrow</code> ($\rightarrow$)	82
<code>\restrictwandup</code> ($\uparrow$)	86	<code>\rhd</code> ($\triangleright$)	64, 68	<code>\rightarrow</code> ($\rightarrow$)	82
rests	<i>see</i> musical symbols	<code>\rhd</code> ($\triangleright$)	33, 138	<code>\rightarrow</code> ($\rightarrow$)	82
		<code>\Rho</code> (P)	90	<code>\rightarrow</code> ($\rightarrow$)	82

<code>\rightarrowtail</code> ($\rightarrowtail$) ... 76	<code>\rightleftarrows</code> ($\rightleftarrows$) 77	<code>\rightthreetimes</code> ($\times$) .. 29
<code>\rightarrowtail</code> ($\rightarrowtail$) ... 72	<code>\rightleftharpoonup</code> ($\leftharpoonup$) . 72	<code>\rightthreetimes</code> ($\times$) ... 32
<code>\rightarrowtail</code> ($\rightarrowtail$) ... 82	<code>\rightleftharpoons</code> ($\rightleftharpoons$) 72	<code>\rightthreetimes</code> ($\times$) ... 32
<code>\rightarrowtriangle</code> ($\rightarrowtriangle$) 80	<code>\rightleftharpoons</code> ($\rightleftharpoons$) 70	<code>\rightthreetimes</code> ($\times$) ... 30
<code>\rightarrowtriangle</code> ($\rightarrowtriangle$) 71	<code>\rightleftharpoons</code> ($\rightleftharpoons$) 70	<code>\rightthreetimes</code> ($\times$) .. 33
<code>\rightarrowtriangle</code> ($\rightarrowtriangle$) 80	<code>\rightleftharpoons</code> ($\rightleftharpoons$) . 81	<code>\rightthumbsdown</code> ($\rightthumbsdown$) . 132
<code>\rightarrowtriangle</code> ($\rightarrowtriangle$) 82	<code>\rightleftharpoons</code> ($\rightleftharpoons$) . 79	<code>\rightthumbsup</code> ($\rightthumbsup$) ... 132
<code>\rightarrowx</code> ($\rightarrowx$) 82	<code>\rightleftharpoons</code> ($\rightleftharpoons$) . 75	<code>\righttoleftarrow</code> ($\righttoleftarrow$) . 71
<code>\rightAssert</code> ($\vdash$) 53	<code>\rightleftharpoons</code> ($\rightleftharpoons$) . 84	<code>\righttoleftarrow</code> ($\righttoleftarrow$) .. 80
<code>\rightassert</code> ($\vdash$) 53	<code>\rightleftharpoonsdown</code> ($\rightleftharpoonsdown$)	<code>\Righttorque</code> ($\curvearrowright$) 127
<code>\rightbarharpoon</code> ($\rightbarharpoon$) .. 72	 84	<code>\rightturn</code> ($\curvearrowright$) 169
<code>\rightbkarrow</code> ($\rightarrow$) 76	<code>\rightleftharpoonsfill</code> . 108	<code>\rightupcurvedarrow</code> ($\rightarrow$) 77
<code>\rightbkarrow</code> ($\rightarrow$) 82	<code>\rightleftharpoonsup</code> ($\rightleftharpoonsup$) 84	<code>\rightVDash</code> ($\Vdash$) 53
<code>\rightblackarrow</code> ($\rightarrow$) .. 80	<code>\rightleftsquigarrow</code> ($\rightleftsquigarrow$) 77	<code>\rightVdash</code> ($\Vdash$) 53
<code>\rightblackspoon</code> ($\rightarrow$) .. 87	<code>\rightlsquigarrow</code> ($\rightarrow$) . 77	<code>\rightVdash</code> ($\Vdash$) 50
<code>\RIGHTCIRCLE</code> ($\bullet$) 136	<code>\rightlsquigarrow</code> ($\rightarrow$) .. 72	<code>\rightvDash</code> ($\Vdash$) 53
<code>\RIGHTcircle</code> ($\bullet$) 136	<code>\Rightmapsto</code> ($\mapsto$) 76	<code>\rightvdash</code> ($\vdash$) 53
<code>\Rightcircle</code> ($\bullet$) 136	<code>\Rightmapsto</code> ($\mapsto$) 77	<code>\rightvdash</code> ($\vdash$) 50
<code>\rightcurvedarrow</code> ($\rightarrow$) . 77	<code>\Rightmapsto</code> ($\mapsto$) 72	<code>\rightwave</code> ($\rightwave$) 100
<code>\rightcurvedarrow</code> ($\rightarrow$) . 82	<code>\rightModels</code> ($\models$) 51	<code>\rightwavearrow</code> ($\rightarrow$) ... 76
<code>\rightdasharrow</code> ($\rightarrow$) ... 80	<code>\rightModels</code> ($\models$) 53	<code>\rightwavearrow</code> ($\rightarrow$) ... 82
<code>\rightdasharrow</code> ($\rightarrow$) ... 82	<code>\rightModels</code> ($\models$) 51	<code>\rightwhitearrow</code> ($\rightarrow$) .. 80
<code>\rightdbltail</code> ($\rightarrow$) 57	<code>\rightmoon</code> ($\curvearrowright$) 123	<code>\rightwhitearrow</code> ($\rightarrow$) .. 82
<code>\RightDiamond</code> ($\blacklozenge$) 139	<code>\rightmoon</code> ($\curvearrowright$) 123	<code>\rightwhiteroundarrow</code> ($\rightarrow$) 80
<code>\rightdotarrow</code> ($\rightarrow$) 82	<code>\rightmoon</code> ($\curvearrowright$) 122	<code>\rightY</code> ($\rightarrow$) 32
<code>\rightdowncurvedarrow</code> ($\rightarrow$) .	<code>\rightouterjoin</code> ($\bowtie$) ... 117	<code>\rightY</code> ($\rightarrow$) 30
..... 77	<code>\rightp</code> ($\rightarrow$) 24	<code>\rinforzando</code> () 157
<code>\rightdowncurvedarrow</code> ($\rightarrow$) 82	<code>\rightpentagon</code> ($\curvearrowright$) 138	<code>\ring</code> ($\text{\textcircled{#}}$) 103
<code>\rightevaw</code> ($\rightarrow$) 100	<code>\rightpentagonblack</code> ($\blacklozenge$) 138	<code>ring</code> ($\text{\textcircled{#}}$) <i>see</i> accents
<code>\rightfilledspoon</code> ($\rightarrow$) . 86	<code>\rightpitchfork</code> ($\rightarrow$) ... 88	<code>ring equal to</code> ... <i>see</i> <code>\circeq</code>
<code>\rightfishtail</code> ($\rightarrow$) 56	<code>\rightpitchfork</code> ($\rightarrow$) ... 86	<code>ring in equal to</code> . <i>see</i> <code>\eqcirc</code>
<code>\rightfootline</code> ($\rightarrow$) 53	<code>\rightpointleft</code> ($\rightarrow$) .. 132	<code>\ringplus</code> ($\text{\textcircled{+}}$) 33
<code>\rightfootline</code> ($\rightarrow$) 51	<code>\rightpointright</code> ($\rightarrow$) . 132	<code>\riota</code> ($\text{\textcircled{!}}$) 117
<code>\rightfree</code> ($\rightarrow$) 51	<code>\rightpropto</code> ($\propto$) 50	<code>\riota</code> ($\text{\textcircled{!}}$) 19
<code>\righthalfcap</code> ($\text{\textcircled{#}}$) 31	<code>\rightrcurvedarrow</code> ($\rightarrow$) . 77	<code>\rip</code> ($\text{\textcircled{!}}$) 174
<code>\righthalfcup</code> ($\text{\textcircled{#}}$) 31	<code>\rightrightarrow</code> ($\rightarrow$) . 71	<code>\risingdotseq</code> ($\doteq$) 50
<code>\righthand</code> ($\rightarrow$) 133	<code>\rightrightarrow</code> ($\rightarrow$) . 70	<code>\risingdotseq</code> ($\doteq$) 48
<code>\rightharpoonaccent</code> ($\rightarrow$) 103	<code>\rightrightarrow</code> ($\rightarrow$) .. 80	<code>\risingdotseq</code> ($\doteq$) 55
<code>\rightharpoonccw</code> ($\rightarrow$) .. 75	<code>\rightrightarrow</code> ($\rightarrow$) . 76	<code>\risingdotseq</code> ($\doteq$) 53
<code>\rightharpooncw</code> ($\rightarrow$) ... 75	<code>\rightrightarrow</code> ($\rightarrow$) .. 72	<code>\risingdotseq</code> ($\doteq$) 50
<code>\rightharpoondown</code> ($\rightarrow$) . 72	<code>\rightrightarrow</code> ($\rightarrow$) . 82	<code>\risingdotseq</code> ($\doteq$) 56
<code>\rightharpoondown</code> ($\rightarrow$) . 70	<code>\rightrightarrow</code> ($\rightarrow$) 72	<code>\rJoin</code> ($\times$) 49
<code>\rightharpoondown</code> ($\rightarrow$) .. 81	<code>\rightrightarrow</code> ($\rightarrow$) .. 72	<code>\rJoin</code> ($\times$) 32
<code>\rightharpoondown</code> ($\rightarrow$) . 79	<code>\RightScissors</code> ($\rightarrow$) 131	<code>\RK</code> ($\rightarrow$) 125
<code>\rightharpoondown</code> ($\rightarrow$) . 84	<code>\rightslice</code> ($\rightarrow$) 29	<code>\rlap</code> .. 24, 25, 139, 217, 218
<code>\rightharpoondownbar</code> ($\rightarrow$) 84	<code>\rightslice</code> ($\rightarrow$) 32	<code>\rmoustache</code> ($\rightarrow$) 96
<code>\rightharpoonsupdown</code> ($\rightleftharpoons$) 84	<code>\rightslice</code> ($\rightarrow$) 50	<code>\rmoustache</code> ($\rightarrow$) 99
<code>\rightharpoonup</code> ($\rightarrow$) ... 72	<code>\rightspoon</code> ($\rightarrow$) 87	<code>\rmoustache</code> ($\rightarrow$) 97
<code>\rightharpoonup</code> ($\rightarrow$) ... 70	<code>\rightspoon</code> ($\rightarrow$) 86	<code>\rmoustache</code> ($\rightarrow$) 99
<code>\rightharpoonup</code> ($\rightarrow$) ... 81	<code>\rightsquigarrow</code> ($\rightarrow$) . 71	<code>\RO</code> (ρ) 125
<code>\rightharpoonup</code> ($\rightarrow$) ... 79	<code>\rightsquigarrow</code> ($\rightarrow$) .. 70	<code>rock/paper/scissors</code> 133
<code>\rightharpoonup</code> ($\rightarrow$) ... 84	<code>\rightsquigarrow</code> ($\rightarrow$) .. 80	<code>\rollingpin</code> ($\rightarrow$) 184
<code>\rightharpoonupbar</code> ($\rightarrow$) . 84	<code>\rightsquigarrow</code> ($\rightarrow$) .. 77	<code>Roman coins</code> 26
<code>\rightharpoonupdash</code> ($\rightleftharpoons$) 84	<code>\rightsquigarrow</code> ($\rightarrow$) .. 73	<code>\Romania</code> ($\rightarrow$) 182
<code>\rightimply</code> ($\Rightarrow$) 56	<code>\rightsquigarrow</code> ($\rightarrow$) 82, 83	<code>Romanian comma-belo accent</code>
<code>\rightlcurvedarrow</code> ($\rightarrow$) . 77	<code>\rightt</code> ($\rightarrow$) 24	($\rightarrow$) <i>see</i> accents
<code>\rightleftarrows</code> ($\rightleftarrows$) .. 71	<code>\righttail</code> ($\rightarrow$) 56	<code>rook</code> 175, 209–210
<code>\rightleftarrows</code> ($\rightleftarrows$) .. 70	<code>\righttherefore</code> ($\therefore$) ... 111	<code>roots</code> <i>see</i> <code>\sqrt</code>
<code>\rightleftarrows</code> ($\rightleftarrows$) .. 80	<code>\righttherefore</code> ($\therefore$) . 30, 111	
<code>\rightleftarrows</code> ($\rightleftarrows$) .. 76	<code>\rightthreearrows</code> ($\rightarrow$) .. 80	
<code>\rightleftarrows</code> ($\rightleftarrows$) .. 72	<code>\rightthreearrows</code> ($\rightarrow$) . 82	
<code>\rightleftarrows</code> ($\rightleftarrows$) .. 82	<code>\rightthreetimes</code> ($\times$) .. 116	

roshambo	133	$\backslash$ rrhLap ($\updownarrow$)	190	$\backslash$ Rsh ($\textcircled{r}$)	80
$\backslash$ rotatebox	24, 214	$\backslash$ rrhLp ($\uparrow\downarrow$)	190	$\backslash$ Rsh ($\textcircled{r}$)	76
rotated symbols	17–19, 24, 214	$\backslash$ rrhLs ($\downarrow\downarrow$)	190	$\backslash$ Rsh ($\textcircled{r}$)	72
rotating (package)	27, 125	$\backslash$ rrhLsp ($\uparrow\uparrow$)	190	$\backslash$ Rsh ($\textcircled{r}$)	83
$\backslash$ rotm (ω)	19	$\backslash$ rrhLw ($\downarrow\downarrow$)	190	$\backslash$ rsolbar (λ)	33
$\backslash$ rotOmega (ω)	19	$\backslash$ rrhLwp ($\uparrow\uparrow$)	190	$\backslash$ rsqhook ($\sqcap$)	56
$\backslash$ rotr ($\textcircled{r}$)	19	$\backslash$ rrhM ($\downarrow\downarrow$)	190	$\backslash$ rsub ($\supset$)	37
$\backslash$ rotvara ($\textcircled{v}$)	19	$\backslash$ rrhMp ($\uparrow\uparrow$)	190	$\backslash$ rtborder ($\dashv$)	176
$\backslash$ rotw ($\mathbb{M}$)	19	$\backslash$ rrhR ($\uparrow\uparrow$)	190	$\backslash$ rtbotcorner ($\lrcorner$)	176
$\backslash$ roty ($\textcircled{t}$)	19	$\backslash$ rrhRa ($\downarrow\uparrow$)	190	$\backslash$ rtimes ($\times$)	30
$\backslash$ RoundedLsteel (L)	127	$\backslash$ rrhRap ($\updownarrow$)	190	$\backslash$ rtimes ($\times$)	29
$\backslash$ RoundedLsteel (L)	127	$\backslash$ rrhRp ($\downarrow\downarrow$)	190	$\backslash$ rtimes ($\times$)	32
$\backslash$ RoundedTsteel ($\textcircled{T}$)	127	$\backslash$ rrhRs ($\uparrow\uparrow$)	190	$\backslash$ rtimes ($\times$)	31, 32
$\backslash$ RoundedTsteel ($\textcircled{T}$)	127	$\backslash$ rrhRsp ($\downarrow\downarrow$)	190	$\backslash$ rtimes ($\times$)	30
$\backslash$ RoundedTTsteel (I)	127	$\backslash$ rrhRw ($\uparrow\uparrow$)	190	$\backslash$ rtimes ($\times$)	33
$\backslash$ Rparen ($\textcircled{J}$)	120	$\backslash$ rrhRwp ($\downarrow\downarrow$)	190	$\backslash$ rtimesblack ($\blacktimes$)	32
$\backslash$ rParen ($\textcircled{J}$)	99	$\backslash$ rrhSd ($\Rightarrow$)	190	$\backslash$ rtriltri ($\triangleright$)	69
$\backslash$ rparen ($\textcircled{J}$)	98	$\backslash$ rrhSdp ($\Leftarrow$)	190	$\backslash$ triple	101
$\backslash$ rparen ($\textcircled{J}$)	99	$\backslash$ rrhSl ($\downarrow\downarrow$)	190	$\backslash$ rttopcorner ($\ulcorner$)	176
$\backslash$ rparengtr ($\textcircled{r}$)	95	$\backslash$ rrhSlp ($\uparrow\uparrow$)	190	$\backslash$ RU (C)	125
$\backslash$ Rparenless ($\textcircled{R}$)	95	$\backslash$ rrhSr ($\uparrow\uparrow$)	190	Rubik's Cube	190
$\backslash$ rppolint ($\textcircled{f}$)	45	$\backslash$ rrhSrp ($\downarrow\downarrow$)	190	rubikcube (package)	190, 231, 232
$\backslash$ rppolintsl ($\textcircled{f}$)	46	$\backslash$ rrhSu ($\Leftarrow$)	190	$\backslash$ ruledelayed ($\Rightarrow$)	56
$\backslash$ rppolintup ($\textcircled{f}$)	46	$\backslash$ rrhSup ($\Rightarrow$)	190	runes	151
$\backslash$ rqm ($\textcircled{f}$)	216	$\backslash$ rrhU ($\Leftarrow$)	190	Anglo-Frisian	151
$\backslash$ RR ($\textcircled{R}$)	151	$\backslash$ rrhUa ($\Rightarrow$)	190	Danish . see normal runes	
$\backslash$ rrangle ($\textcircled{J}$)	97	$\backslash$ rrhUap ($\Rightarrow$)	190	Germanic	151
$\backslash$ rrangle ($\textcircled{J}$)	95	$\backslash$ rrhUp ($\Rightarrow$)	190	Hälsinge . see staveless runes	
$\backslash$ rrbracket ($\textcircled{J}$)	96	$\backslash$ rrhUs ($\Leftarrow$)	190	long-branch . see normal runes	
$\backslash$ rrbracket ($\textcircled{J}$)	101	$\backslash$ rrhUsp ($\Rightarrow$)	190	medieval	151
$\backslash$ rrceil ($\textcircled{J}$)	95	$\backslash$ rrhUw ($\Leftarrow$)	190	normal	151
$\backslash$ RRelbar ($\equiv$)	89	$\backslash$ rrhUwp ($\Rightarrow$)	190	short-twig	151
$\backslash$ Rrelbar ($\equiv$)	89	$\backslash$ RRightarrow ($\Rightarrow$)	82	staveless	151
$\backslash$ rrfloor ($\textcircled{J}$)	95	$\backslash$ Rrightarrow ($\Rightarrow$)	71	Swedo-Norwegian . see short-twig runes	
$\backslash$ rrhD ($\Rightarrow$)	190	$\backslash$ Rrightarrow ($\Rightarrow$)	80	$\backslash$ rupee ($\textcircled{r}$)	26
$\backslash$ rrhDa ($\Leftarrow$)	190	$\backslash$ Rrightarrow ($\Rightarrow$)	76	$\backslash$ RV (ϕ)	125
$\backslash$ rrhDap ($\Rightarrow$)	190	$\backslash$ Rrightarrow ($\Rightarrow$)	72	$\backslash$ rVert ($\textcircled{J}$)	101
$\backslash$ rrhDp ($\Leftarrow$)	190	$\backslash$ Rrightarrow ($\Rightarrow$)	82	$\backslash$ rVert ($\textcircled{J}$)	96
$\backslash$ rrhDs ($\Rightarrow$)	190	$\backslash$ rrparentthesis ($\textcircled{J}$)	95	$\backslash$ rVert ($\textcircled{J}$)	98
$\backslash$ rrhDsp ($\Leftarrow$)	190	$\backslash$ rrparentthesis ($\textcircled{J}$)	95	$\backslash$ rvert ($\textcircled{J}$)	98
$\backslash$ rrhDw ($\Rightarrow$)	190	$\backslash$ RS ($\blacktriangle$)	126	$\backslash$ rVert ($\textcircled{J}$)	98
$\backslash$ rrhDwp ($\Leftarrow$)	190	$\backslash$ rsem ($\textcircled{J}$)	99	$\backslash$ rVvert ($\textcircled{J}$)	98
$\backslash$ rrhE ($\Rightarrow$)	190	$\backslash$ rsem ($\textcircled{J}$)	97	$\backslash$ Rvzigzag ($\textcircled{J}$)	95
$\backslash$ rrhEp ($\Leftarrow$)	190	$\backslash$ rsemantic . see $\backslash$ rdbrack		$\backslash$ rvzigzag ($\textcircled{J}$)	95
$\backslash$ rrhF ($\textcircled{Q}$)	190	rsfs (emf package option)	122	$\backslash$ rWalley ($\textcircled{J}$)	184
$\backslash$ rrhFp ($\textcircled{Q}$)	190	rsfso (package)	119, 231	$\backslash$ rwave ($\textcircled{J}$)	100
$\backslash$ rrhFw ($\textcircled{Q}$)	190	$\backslash$ Rsh ($\textcircled{r}$)	71	$\backslash$ rwavy ($\textcircled{J}$)	97
$\backslash$ rrhFwp ($\textcircled{Q}$)	190	$\backslash$ Rsh ($\textcircled{r}$)	70	$\backslash$ rwavy ($\textcircled{J}$)	97
$\backslash$ rrhL ($\downarrow\downarrow$)	190				
$\backslash$ rrhLa ($\downarrow\uparrow$)	190				

<code>\S</code> (§)	15	<code>\scalebox</code>	211	<code>\Searrow</code> ()	80
<code>\s</code> (h)	151	scaled (CountriesOfEurope pack- age option)	183	<code>\Searrow</code> ()	76
<code>s</code> (ξ)	151	scaling	221, 223	<code>\Searrow</code> ()	72
<code>\sA</code> ()	180	mechanical	221, 223	<code>\Searrow</code> ()	83
<code>\SAa</code> (o)	148	optical	221	<code>\searrow</code> ()	71
<code>\SAb</code> (Π)	148	<code>\scd</code> (D)	19	<code>\searrow</code> ()	70, 218
<code>\SAd</code> (H)	148	<code>\scg</code> (G)	19	<code>\searrow</code> ()	76
<code>\SAdb</code> (H)	148	<code>\Schaler</code> (V)	184	<code>\searrow</code> ()	72
<code>\SAdd</code> (B)	148	<code>\Schneebesen</code> (♣)	184	<code>\searrow</code> ()	85
<code>\Sadey</code> (⊙)	184	<code>\Schussel</code> (U)	184	<code>\searrow</code> ()	83
<code>\sadface</code> (⊗)	183	<code>\schwa</code> (ə)	19	<code>\searrowtail</code> ()	76
<code>\SAf</code> (ϕ)	148	<code>\schwa</code> (ə)	19	<code>\searrowtail</code> ()	72
safety-related symbols	127	Schwartz distribution spaces <i>see</i> alphabets, math		<code>\sebkarrow</code> ()	76
<code>\Saftpresse</code> ()	184	<code>\sci</code> (i)	19	<code>\sec</code> (sec)	89
<code>\Sag</code> (l)	148	scientific symbols	121–129, 207–208	<code>\Sech</code> ()	154
<code>\SAGA</code> (Π)	148	<code>\ScissorHollowLeft</code> ()	131	<code>\SechBL</code> ()	154
<code>\Sagittarius</code> ()	124	<code>\ScissorHollowRight</code> ()	131	<code>\SechBl</code> ()	154
<code>\Sagittarius</code> ()	122	<code>\ScissorLeft</code> ()	131	<code>\SechBR</code> ()	154
<code>\Sagittarius</code> ()	122	<code>\ScissorLeftBrokenBottom</code> ()	131	<code>\SechBr</code> ()	154
<code>\SAh</code> (Y)	148	<code>\ScissorLeftBrokenTop</code> ()	131	<code>\second</code> (")	116
<code>\SAhd</code> (Ψ)	148	<code>\ScissorLeftBrokenTop</code> ()	131	seconds, angular <i>see</i> <code>\second</code>	
<code>\SAhu</code> (Y)	148	<code>\ScissorRight</code> ()	131	<code>\secrestress</code> (i)	24
<code>\SAk</code> (h)	148	<code>\ScissorRightBrokenBottom</code> ()	131	section mark <i>see</i> <code>\S</code>	
<code>\SAl</code> (l)	148	<code>\ScissorRightBrokenTop</code> ()	131	<code>\SectioningDiamond</code> ()	171
<code>\SAlq</code> (h)	148	scissors	131, 186–189	<code>\sector</code> (∇)	116
<code>\SAm</code> (S)	148	<code>\scn</code> (N)	19	sedenions (\$) <i>see</i> alphabets, math	
<code>\samebishops</code> ()	174	<code>\scoh</code> (∧)	59	<code>\sefilledspoon</code> ()	86
<code>\Sampi</code> (θ)	148	<code>\Scorpio</code> (♏)	124	<code>\sefootline</code> (∖)	50
<code>\Sampi</code> (Λ)	148	<code>\Scorpio</code> (♏)	122	<code>\sefree</code> (∖)	50
<code>\sampi</code> (λ)	148	<code>\scorpio</code> (♏)	122	segmented numerals	121
<code>\sampi</code> (λ)	148	<code>\scpolint</code> (j)	45		
<code>\SAn</code> (h)	148	<code>\scpolintsl</code> (j)	46	<code>\Segno</code> ()	153
sans (dsfont package option)	119	<code>\scpolintup</code> (j)	46	<code>\segno</code> ()	153
<code>\sansLmirrored</code> (J)	117	scr (rsfs package option)	119	<code>\seharpoonccw</code> (∖)	75
<code>\sansLturned</code> (l)	117	<code>\scr</code> (R)	19	<code>\seharpooncw</code> (∖)	75
<code>\SAo</code> (h)	148	script letters <i>see</i> alphabets, math		<code>\seharpoonne</code> (∖)	79
<code>\Sappho</code> ()	124	<code>\scripta</code> (a)	19	<code>\seharpoonsw</code> (∖)	79
<code>\SAq</code> (ϕ)	148	<code>\scriptg</code> (g)	19	<code>\seight</code> (i)	151
<code>\SAr</code> (O)	148	<code>\scriptscriptstyle</code>	217	<code>\selcurvearrow</code> (∖)	77
<code>\sarabfamily</code>	148	<code>\scriptstyle</code>	217	<code>\selectfont</code>	12
sarabian (package)	148, 231, 232	<code>\scriptv</code> (v)	19	<code>\selsquigararrow</code> (∖)	72
<code>\SAs</code> (x)	148	<code>\Scroll</code> ()	125	<code>semaf.fd</code> (file)	207
<code>\SAsa</code> (x)	148	<code>\scu</code> (u)	19	semantic valuation	96, 97, 101
<code>\SAsd</code> (x)	148	<code>\scurel</code> (x)	55	<code>semaphor</code> (package)	205, 207, 231
<code>\SAsv</code> (h)	148	<code>\scurel</code> (x)	56	semaphore symbols	205–207
<code>\SAt</code> (X)	148	<code>\scy</code> (Y)	19	<code>\semapsto</code> (∖)	72
<code>\SAtb</code> (x)	148	<code>\sddtstile</code> ()	58	semibreve <i>see</i> musical symbols	
<code>\SAtd</code> (III)	148	<code>\sDep</code> ()	153	<code>\semibreve</code> (o)	155
<code>\satellitedish</code> ()	141	<code>\sdtstile</code> ()	58	<code>\semibreveDotted</code> (o.)	155
satisfies <i>see</i> <code>\models</code>		<code>\sdtstile</code> ()	58	semidirect products	29, 30, 116
<code>\Saturn</code> (♄)	123	<code>\sdtstile</code> ()	58	semiquaver <i>see</i> musical symbols	
<code>\Saturn</code> (♄)	124	<code>\sdtstile</code> ()	58	<code>\semiquaver</code> ()	155
<code>\Saturn</code> (♄)	122	<code>\sdtstile</code> ()	58	<code>\semiquaverDotted</code> ()	155
<code>\saturn</code> (h)	122	seagull <i>see</i> <code>\textseagull</code>		<code>\semiquaverDottedDouble</code> ()	155
<code>\savesym</code> (package)	211	<code>\Searrow</code> ()	71		
<code>\savesymbol</code>	211				
<code>\SAw</code> (o)	148				
<code>\SAy</code> (i)	148				
<code>\SAz</code> (X)	148				
<code>\SAzd</code> (i)	148				
<code>\Sborder</code> ()	141				

<code>\semitictransliteration</code> . 20, 24	<code>\sharp</code> (#) 152	<code>\sigmaup</code> (σ) 91
<code>\semodels</code> ($\searrow$) 50	<code>\sharpArrowboth</code> ($\Uparrow$) 156	<code>\sim</code> ($\sim$) 48, 216, 226
<code>\semmodels</code> ($\swarrow$) 50	<code>\sharpArrowdown</code> ($\Downarrow$) 156	<code>\sim</code> ($\sim$) 53
<code>semtrans</code> (package) 20, 24, 231	<code>\sharpArrowup</code> ($\Uparrow$) 156	<code>\sim</code> ($\sim$) 51
<code>\senwarrows</code> ($\searrow$) 76	Sharpe, Michael 23	<code>\sim</code> ($\sim$) 56
<code>\senwarrows</code> ($\searrow$) 72	<code>\sharpSlashslashslashStem</code>	<code>\simbot</code> ($\sim$) 95
<code>\senwcurvearrow</code> ($\curvearrowright$) 77	($\#$) 156	<code>\simcolon</code> ($\sim:$) 59
<code>\senwharpoons</code> ($\searrow$) 79	<code>\sharpSlashslashslashStemstem</code>	<code>\simcoloncolon</code> ($\sim::$) 59
<code>\senwharpoons</code> ($\searrow$) 75	($\#$) 156	<code>\simeq</code> ($\simeq$) 48
<code>\seovnearrow</code> ($\nearrow$) 83	<code>\sharpSlashslashStem</code> ($\#$) 156	<code>\simeq</code> ($\simeq$) 53
<code>\SePa</code> ($\text{\textcircled{P}}$) 154	<code>\sharpSlashslashStemstemstem</code>	<code>\simeq</code> ($\simeq$) 51
<code>\separated</code> ($\text{\textcircled{X}}$) 50	($\#$) 156	<code>\simeq</code> ($\simeq$) 56
separation vector ($\text{\textcircled{v}}$) 119	<code>\shfermion</code> ($\text{\textcircled{f}}$) 128	<code>\singE</code> ($\cong$) 67
<code>\sepitchfork</code> ($\text{\textcircled{X}}$) 86	<code>\Shift</code> ($\text{\textcircled{Shift}}$) 125	<code>\singtr</code> ($\gtrsim$) 67
<code>\seppawns</code> ($\text{\textcircled{O-O}}$) 174	<code>\shift</code> ($\Downarrow$) 28	<code>\similarleftarrow</code> ($\leftarrow$) 83
<code>\Serbia</code> ($\text{\textcircled{S}}$) 182	<code>\Shilling</code> (β) 25	<code>\similarrightarrow</code> ($\rightarrow$) 83
<code>\sercurvearrow</code> ($\curvearrowleft$) 77	<code>\shneg</code> ($\Uparrow$) 28	<code>\simLE</code> ($\gtrsim$) 67
<code>\SerialInterface</code> ($\text{\textcircled{S}}$) 125	short-twig runes 151	<code>\simless</code> ($\gtrsim$) 67
<code>\SerialPort</code> ($\text{\textcircled{S}}$) 125	<code>\shortcastling</code> ($\text{\textcircled{O-O}}$) 174	<code>\simminus</code> ($\approx$) 56
<code>\sersquigarrow</code> ($\curvearrowright$) 72	<code>\shortdownarrow</code> ($\downarrow$) 71	<code>\simneqq</code> ($\approx$) 54
<code>\sesearrows</code> ($\searrow$) 76	<code>\shortdowntack</code> (τ) 53	<code>\simneqq</code> ($\approx$) 56
<code>\sesearrows</code> ($\searrow$) 72	<code>\shortdowntack</code> (τ) 56	<code>\simperp</code> ($\perp$) 59
<code>\sespoon</code> ($\text{\textcircled{S}}$) 86	<code>\ShortFifty</code> ($\text{\textcircled{50}}$) 170	simplewick (package) 220
<code>\Sesquiquadrate</code> ($\text{\textcircled{S}}$) 124	<code>\ShortForty</code> ($\text{\textcircled{40}}$) 170	<code>\simplus</code> ($\text{\textcircled{+}}$) 33
set interior <i>see</i> <code>\mathring</code>	<code>\shortleftarrow</code> ($\leftarrow$) 71	simpsons (package) 177, 231
set operators	<code>\shortlefttack</code> ($\dashleftarrow$) 53	Simpsons characters 177
intersection <i>see</i> <code>\cap</code>	<code>\shortlefttack</code> ($\dashleftarrow$) 56	<code>\simrdots</code> ($\approx$) 55
membership <i>see</i> <code>\in</code>	<code>\shortmid</code> ($\mid$) 48	<code>\simrdots</code> ($\approx$) 56
union <i>see</i> <code>\cup</code>	<code>\shortmid</code> ($\mid$) 55	<code>\sin</code> ($\sin$) 89
<code>\setminus</code> ($\setminus$) 29	<code>\shortmid</code> ($\mid$) 53	<code>\sincoh</code> ($\sim$) 59
<code>\setminus</code> ($\setminus$) 31	<code>\shortmid</code> ($\mid$) 31	<code>\sinewave</code> ($\sim$) 117
<code>\setminus</code> ($\setminus$) 31	<code>\shortmid</code> ($\mid$) 56	<code>\sinewave</code> ($\sim$) 117
<code>\setminus</code> ($\setminus$) 33	<code>\ShortNinetyFive</code> ($\text{\textcircled{95}}$) 170	<code>\sinh</code> ($\sinh$) 89
<code>\seVdash</code> ($\searrow$) 50	<code>\shortparallel</code> ($\parallel$) 48	<code>\SixFlowerAlternate</code> ($\text{\textcircled{S}}$) 135
<code>\sevdash</code> ($\searrow$) 51	<code>\shortparallel</code> ($\parallel$) 55	<code>\SixFlowerAltPetal</code> ($\text{\textcircled{S}}$) 135
<code>\Sextile</code> ($\text{\textcircled{S}}$) 124	<code>\shortparallel</code> ($\parallel$) 53	<code>\SixFlowerOpenCenter</code> ($\text{\textcircled{S}}$) 135
<code>\Sey</code> ($\text{\textcircled{S}}$) 184	<code>\shortparallel</code> ($\parallel$) 51	<code>\SixFlowerPetalDotted</code> ($\text{\textcircled{S}}$) 135
<code>\sfive</code> ($\text{\textcircled{5}}$) 151	<code>\shortparallel</code> ($\parallel$) 56	<code>\SixFlowerPetalRemoved</code> ($\text{\textcircled{S}}$) 135
<code>\sfour</code> ($\text{\textcircled{4}}$) 151	<code>\ShortPulseHigh</code> ($\text{\textcircled{H}}$) 121	<code>\SixFlowerRemovedOpenPetal</code>
SGML 228	<code>\ShortPulseLow</code> ($\text{\textcircled{L}}$) 121	($\text{\textcircled{S}}$) 135
sha (III) 214	<code>\shortrightarrow</code> ($\rightarrow$) 71	<code>\SixStar</code> ($\text{\textcircled{S}}$) 135
<code>\Shake</code> ($\text{\textcircled{S}}$) 153	<code>\shortrightarrowleftarrow</code>	<code>\SixteenStarLight</code> ($\text{\textcircled{S}}$) 135
<code>\shake</code> ($\text{\textcircled{S}}$) 153	($\rightleftharpoons$) 83	sixteenth note <i>see</i> musical
<code>\Shakel</code> ($\text{\textcircled{S}}$) 153	<code>\shortrighttack</code> ($\dashrightarrow$) 53	symbols
<code>\Shakene</code> ($\text{\textcircled{S}}$) 153	<code>\ShortSixty</code> ($\text{\textcircled{60}}$) 170	<code>\sixteenthNote</code> ($\text{\textcircled{S}}$) 155
<code>\Shakenw</code> ($\text{\textcircled{S}}$) 153	<code>\ShortThirty</code> ($\text{\textcircled{30}}$) 170	<code>\sixteenthnote</code> ($\text{\textcircled{S}}$) 152
<code>\Shakesw</code> ($\text{\textcircled{S}}$) 153	<code>\shortuparrow</code> ($\uparrow$) 71	<code>\sixteenthNoteDotted</code> ($\text{\textcircled{S}}$) 155
<code>\sharp</code> (#) 152	<code>\shortuptack</code> ($\perp$) 53	<code>\sixteenthNoteDottedDouble</code>
<code>\sharp</code> (#) 152	<code>\shortuptack</code> ($\perp$) 56	($\text{\textcircled{S}}$) 155
<code>\sharp</code> (#) 152	<code>\showclock</code> 171	<code>\sixteenthNoteDown</code> ($\text{\textcircled{S}}$) 155
<code>\sharp</code> (#) 156	<code>\shpos</code> ($\downarrow$) 28	skak (package) 174, 175, 231
<code>\sharp</code> (#) 152	shuffle (package) 34, 231	skull (package) 174, 231
<code>\sharp</code> (#) 156	<code>\shuffle</code> ($\text{\textcircled{S}}$) 33	<code>\skull</code> ($\text{\textcircled{S}}$) 183
<code>\sharp</code> (#) 152	<code>\shuffle</code> ($\text{\textcircled{S}}$) 34	
	shuffle product ($\text{\textcircled{S}}$) 34	
	<code>\SI</code> ($\text{\textcircled{S}}$) 126	
	<code>\Sieb</code> ($\text{\textcircled{S}}$) 184	
	<code>\sieve</code> ($\text{\textcircled{S}}$) 184	
	<code>\Sigma</code> (Σ) 90	
	<code>\sigma</code> (σ) 90	

<code>\skull</code> (☠)	174	<code>\smallfrown</code> (˘)	87	<code>\smallointsl</code> (Ⅎ)	38
<code>skulls</code>	174, 183, 209	<code>\smallfrown</code> (˘)	56	<code>\smallointup</code> (Ⅎ)	38
<code>\slash</code> (/)	226	<code>\SmallHBar</code> (⎯)	139	<code>\smallowns</code> (⊃)	94
<code>\slashb</code> (Ⅎ)	19	<code>\smalliiiint</code> (∫∫∫)	38	<code>\smallpencil</code> (✎)	132
<code>\slashc</code> (Ⅎ)	19	<code>\smalliiiintsl</code> (∫∫∫)	38	<code>\smallpointint</code> (Ⅎ)	38
<code>\slashd</code> (Ⅎ)	19	<code>\smalliiiintup</code> (∫∫∫)	38	<code>\smallpointintsl</code> (Ⅎ)	38
<code>\slashdiv</code> (÷)	30	<code>\smalliiint</code> (∫∫)	38	<code>\smallpointintup</code> (Ⅎ)	38
<code>slashed</code> (package)	216	<code>\smalliiintsl</code> (∫∫)	38	<code>\smallprod</code> (∏)	30
<code>\slashed</code>	216	<code>\smalliiintup</code> (∫∫)	38	<code>\SmallRightDiamond</code> (⬤)	139
<code>slashed.letters</code>	216	<code>\smalliint</code> (∫∫)	38	<code>\smallrppoint</code> (Ⅎ)	38
<code>slashed.sty</code> (file)	216	<code>\smalliintsl</code> (∫∫)	38	<code>\smallrppointsl</code> (Ⅎ)	38
<code>\slashu</code> (Ⅎ)	19	<code>\smalliintup</code> (∫∫)	38	<code>\smallrppointup</code> (Ⅎ)	38
<code>\Sleet</code> (⋈)	171	<code>\smallin</code> (€)	94	<code>\smallscpoint</code> (Ⅎ)	38
<code>\sliding</code> (▢)	22	<code>\smallin</code> (€)	56	<code>\smallscpointsl</code> (Ⅎ)	38
<code>\Slovakia</code> (☞)	182	<code>\smallint</code> (∫)	116	<code>\smallscpointup</code> (Ⅎ)	38
<code>\Slovenia</code> (☞)	182	<code>\smallint</code> (∫)	116	<code>\smallsetminus</code> (∖)	29
 		<code>\smallint</code> (∫)	38	<code>\smallsetminus</code> (∖)	32
<code>\smallaltoclef</code> (♯)	153	<code>\smallintBar</code> (Ⅎ)	38	<code>\smallsetminus</code> (∖)	32
<code>\smallawint</code> (Ⅎ)	38	<code>\smallintbar</code> (Ⅎ)	38	<code>\smallsetminus</code> (∖)	31
<code>\smallawintsl</code> (Ⅎ)	38	<code>\smallintBarsl</code> (Ⅎ)	38	<code>\smallsetminus</code> (∖)	33
<code>\smallawintup</code> (Ⅎ)	38	<code>\smallintbarsl</code> (Ⅎ)	38	<code>\smallsmile</code> (☺)	48
 		<code>\smallintBarup</code> (Ⅎ)	38	<code>\smallsmile</code> (☺)	55
<code>\smallbassclef</code> (♭)	153	<code>\smallintbarup</code> (Ⅎ)	38	<code>\smallsmile</code> (☺)	53, 88
<code>\smallblackcircle</code> (●)	35	<code>\smallintcap</code> (Ⅎ)	38	<code>\smallsmile</code> (☺)	87
<code>\smallblackdiamond</code> (◆)	35	<code>\smallintcapsl</code> (Ⅎ)	38	<code>\smallsmile</code> (☺)	56
<code>\smallblacklozenge</code> (◊)	137	<code>\smallintcapup</code> (Ⅎ)	38	<code>\smallsqint</code> (Ⅎ)	38
<code>\smallblacksquare</code> (■)	35	<code>\smallintclockwise</code> (Ⅎ)	38	<code>\smallsqintsl</code> (Ⅎ)	38
<code>\smallblackstar</code> (★)	35	<code>\smallintclockwise</code> (Ⅎ)	38	<code>\smallsqintup</code> (Ⅎ)	38
<code>\smallblacktriangledown</code> (▼)	35, 69	<code>\smallintclockwiseup</code> (Ⅎ)	38	<code>\SmallSquare</code> (□)	139
<code>\smallblacktriangleleft</code> (◀)	35, 69	<code>\smallintcup</code> (Ⅎ)	38	<code>\smallsquare</code> (◻)	35
<code>\smallblacktriangleleft</code> (◀)	138	<code>\smallintcupsl</code> (Ⅎ)	38	<code>\smallsquare</code> (◻)	35
<code>\smallblacktriangleright</code> (▶)	35, 69	<code>\smallintcupup</code> (Ⅎ)	38	<code>\smallstar</code> (★)	35
<code>\smallblacktriangleright</code> (▶)	138	<code>\smallintlarhk</code> (Ⅎ)	38	<code>\smallsumint</code> (Ⅎ)	38
<code>\smallblacktriangleup</code> (▲)	35, 69	<code>\smallintlarhksl</code> (Ⅎ)	38	<code>\smallsumintsl</code> (Ⅎ)	38
<code>\smallbosenloops</code> (Ⅎ)	128	<code>\smallintlarhkup</code> (Ⅎ)	38	<code>\smallsumintup</code> (Ⅎ)	38
<code>\smallbosenloopAs</code> (Ⅎ)	128	<code>\smallintsl</code> (Ⅎ)	38	 	
<code>\smallbosenloopVs</code> (Ⅎ)	128	<code>\smallintup</code> (Ⅎ)	38	<code>\smalltrebleclef</code> (♩)	153
<code>\SmallCircle</code> (○)	139	<code>\smallintx</code> (Ⅎ)	38	 	
<code>\smallcircle</code> (◦)	35	<code>\smallintxsl</code> (Ⅎ)	38	<code>\SmallTriangleDown</code> (▽)	139
<code>\smallcirfnint</code> (Ⅎ)	38	<code>\smallintxup</code> (Ⅎ)	38	<code>\smalltriangledown</code> (▽)	34
<code>\smallcirfnintsl</code> (Ⅎ)	38	<code>\SmallLowerDiamond</code> (◊)	139	<code>\smalltriangledown</code> (▽)	35, 69
<code>\smallcirfnintup</code> (Ⅎ)	38	<code>\smalllowint</code> (Ⅎ)	38	<code>\smalltriangledown</code> (▽)	35, 68
<code>\SmallCross</code> (×)	139	<code>\smalllowintsl</code> (Ⅎ)	38	<code>\SmallTriangleLeft</code> (◁)	139
<code>smallctrbull</code> (bullctr package option)	173	<code>\smalllowintup</code> (Ⅎ)	38	<code>\smalltriangleleft</code> (◁)	34
<code>\smallctrbull</code>	173	<code>\smalllozenge</code> (◊)	137	<code>\smalltriangleleft</code> (◁)	35, 69
<code>\smalldiamond</code> (◊)	35	<code>\smalllozenge</code> (◊)	136	<code>\smalltriangleleft</code> (◁)	35, 68
<code>\smalldiamond</code> (◊)	35	<code>\smallni</code> (⊃)	56	<code>\smalltriangleleft</code> (◁)	137
<code>\SmallDiamondshape</code> (◊)	139	<code>\smallnpoint</code> (Ⅎ)	38	<code>\SmallTriangleRight</code> (▷)	139
<code>\smalldivlash</code> (∕)	32	<code>\smallnpointsl</code> (Ⅎ)	38	<code>\smalltriangleright</code> (▷)	34
<code>\smallfint</code> (Ⅎ)	38	<code>\smallnpointup</code> (Ⅎ)	38	<code>\smalltriangleright</code> (▷)	35, 69
<code>\smallfintsl</code> (Ⅎ)	38	<code>\smalloiint</code> (∫∫)	38	<code>\smalltriangleright</code> (▷)	137
<code>\smallfintup</code> (Ⅎ)	38	<code>\smalloiintsl</code> (∫∫)	38	 	
<code>\smallfrown</code> (˘)	48	<code>\smalloiintup</code> (∫∫)	38	<code>\SmallTriangleUp</code> (△)	139
<code>\smallfrown</code> (˘)	55	<code>\smalloiint</code> (∫∫)	38	<code>\smalltriangleup</code> (△)	35, 69
<code>\smallfrown</code> (˘)	53, 88	<code>\smalloiintsl</code> (∫∫)	38	<code>\smalltriangleup</code> (△)	35, 68
		<code>\smalloiintup</code> (∫∫)	38	<code>\smallupint</code> (Ⅎ)	38
		<code>\smalloint</code> (Ⅎ)	38	<code>\smallupintsl</code> (Ⅎ)	38
		<code>\smallointctrclockwise</code> (Ⅎ)	38		
		<code>\smallointctrclockwise</code> (Ⅎ)	38		
		<code>\smallointctrclockwiseup</code> (Ⅎ)	38		

<code>\smallupintup</code> ()	38	<code>\SNPP</code> ()	177	<code>\Sqcap</code> ()	33
<code>\smallvarointclockwise</code> ($\oint$)	38	<code>\snststile</code> ()	58	<code>\sqcap</code> ()	30
<code>\smallvarointclockwisesl</code> ($\oint$)	38	<code>\sntstile</code> ()	58	<code>\sqcap</code> ()	29
<code>\smallvarointclockwiseup</code> ($\oint$)	38	<code>\snttstile</code> ()	58	<code>\sqcap</code> ()	31
<code>\SmallVBar</code> ($\Uparrow$)	139	<code>\SO</code> ($\circ$)	125, 126	<code>\sqcap</code> ()	30
<code>\smallwhitestar</code> ($\star$)	35	<code>\sO</code> ()	180	<code>\sqcapdot</code> ()	33
<code>\smartctrbull</code> (bullctr package option)	173	<code>\SOH</code> ($\oplus$)	126	<code>\sqcapdot</code> ()	31
<code>\smartctrbull</code>	173	<code>\SOH</code> ($\oplus$)	126	<code>\sqcapplus</code> ()	30
<code>\smashtimes</code> ($\otimes$)	32	<code>\solid</code> ()	128	<code>\sqcapplus</code> ()	31
<code>\smashtimes</code> ($\otimes$)	33	South Arabian alphabet	148	<code>\sqcapplus</code> ()	30
<code>\smbkcircle</code> ($\bullet$)	36	<code>\SouthNode</code> ()	124	<code>\Sqcup</code> ()	32
<code>\smbkcircle</code> ($\bullet$)	37	<code>\Soyombo</code> ()	180	<code>\sqcup</code> ()	33
<code>\smbkldiamond</code> ($\blacklozenge$)	36	soyombo (package)	180, 231, 232	<code>\sqcup</code> ()	30
<code>\smbkldiamond</code> ($\blacklozenge$)	137	Soyombo (font)	180	<code>\sqcup</code> ()	28, 29
<code>\smbklozenge</code> ($\blacklozenge$)	137	Soyombo symbols	180	<code>\sqcup</code> ()	31
<code>\smbklozenge</code> ($\blacklozenge$)	137	space	224	<code>\sqcup</code> ()	30
<code>\smbklsquare</code> ($\blacksquare$)	36	thin	224	<code>\sqcupdot</code> ()	33
<code>\smbklsquare</code> ($\blacksquare$)	137	visible	<i>see</i>	<code>\sqcupdot</code> ()	31
<code>\smeparsl</code> ($\#$)	56	<code>\textvisiblespace</code>		<code>\sqcupplus</code> ()	30
<code>\smile</code> ($\smile$)	48	<code>\Spacebar</code> ()	125	<code>\sqcupplus</code> ()	31
<code>\smile</code> ($\smile$)	55	spades	140, 141, 185–186	<code>\sqcupplus</code> ()	31
<code>\smile</code> ($\smile$)	53, 88	<code>\spadesuit</code> ($\spadesuit$)	140	<code>\sqdoublecap</code> ()	30
<code>\smile</code> ($\smile$)	87	<code>\spadesuit</code> ($\spadesuit$)	140	<code>\sqdoublecup</code> ()	30
<code>\smile</code> ($\smile$)	56	<code>\spadesuit</code> ($\spadesuit$)	140	<code>\sqdoublefrown</code> ($\approx$)	87
smile symbols	87, 88	<code>\spadesuit</code> ($\spadesuit$)	140	<code>\sqdoublefrowneq</code> ($\approx$)	87
<code>\smileeq</code> ($\cong$)	53, 88	<code>\spadesuit</code> ($\spadesuit$)	140	<code>\sqdoublefrown</code> ($\approx$)	87
<code>\smileeq</code> ($\cong$)	87	<code>\Spain</code> ()	183	<code>\sqdoublefrown</code> ($\approx$)	87
<code>\smileeqfrown</code> ($\approx$)	87	<code>\Sparkle</code> ($\star$)	135	<code>\sqdoublefrown</code> ($\approx$)	87
<code>\smileface</code> ($\odot$)	183	<code>\SparkleBold</code> ($\star$)	135	<code>\sqdoublefrown</code> ($\approx$)	87
<code>\smilefrown</code> ($\approx$)	53, 88	sparkles	135	<code>\sqdoublefrown</code> ($\approx$)	87
<code>\smilefrown</code> ($\approx$)	87	“special” characters	14	<code>\sqdoublefrown</code> ($\approx$)	87
<code>\smilefrown</code> ($\approx$)	87	<code>\SpecialForty</code> ()	170	<code>\sqdoublefrown</code> ($\approx$)	87
<code>\smiley</code> ($\odot$)	170, 184	<code>\sPed</code> ()	153	<code>\sqdoublefrown</code> ($\approx$)	87
<code>\smiley</code> ($\odot$)	169	<code>\sphericalangle</code> ($\sphericalangle$)	116	<code>\sqdoublefrown</code> ($\approx$)	87
smiley faces	117, 126, 169, 170, 179, 183–189, 193–195	<code>\sphericalangle</code> ($\sphericalangle$)	114	<code>\sqdoublefrown</code> ($\approx$)	87
<code>\smt</code> ($\Leftarrow$)	67	<code>\sphericalangle</code> ($\sphericalangle$)	114	<code>\sqdoublefrown</code> ($\approx$)	87
<code>\smte</code> ($\Leftarrow$)	67	<code>\sphericalangle</code> ($\sphericalangle$)	114	<code>\sqdoublefrown</code> ($\approx$)	87
<code>\smwhitestar</code> ($\star$)	36	<code>\sphericalangle</code> ($\sphericalangle$)	114	<code>\sqdoublefrown</code> ($\approx$)	87
<code>\smwhitestar</code> ($\star$)	137	<code>\sphericalangle</code> ($\sphericalangle$)	114	<code>\sqdoublefrown</code> ($\approx$)	87
<code>\smwhtcircle</code> ($\circ$)	36	<code>\sphericalangle</code> ($\sphericalangle$)	114	<code>\sqdoublefrown</code> ($\approx$)	87
<code>\smwhtcircle</code> ($\circ$)	137, 138	<code>\sphericalangle</code> ($\sphericalangle$)	114	<code>\sqdoublefrown</code> ($\approx$)	87
<code>\smwhtdiamond</code> ($\diamond$)	36	<code>\sphericalangle</code> ($\sphericalangle$)	114	<code>\sqdoublefrown</code> ($\approx$)	87
<code>\smwhtdiamond</code> ($\diamond$)	137, 138	<code>\sphericalangle</code> ($\sphericalangle$)	114	<code>\sqdoublefrown</code> ($\approx$)	87
<code>\smwhtlozenge</code> ($\lozenge$)	137	<code>\sphericalangle</code> ($\sphericalangle$)	114	<code>\sqdoublefrown</code> ($\approx$)	87
<code>\smwhtlozenge</code> ($\lozenge$)	137	<code>\sphericalangle</code> ($\sphericalangle$)	114	<code>\sqdoublefrown</code> ($\approx$)	87
<code>\smwhtsquare</code> ($\square$)	36	<code>\sphericalangle</code> ($\sphericalangle$)	114	<code>\sqdoublefrown</code> ($\approx$)	87
<code>\smwhtsquare</code> ($\square$)	137	<code>\sphericalangle</code> ($\sphericalangle$)	114	<code>\sqdoublefrown</code> ($\approx$)	87
snakes	197	<code>\spin</code> ($\otimes$)	128	<code>\sqdoublefrown</code> ($\approx$)	87
<code>\sndtstile</code> ()	58	<code>\SpinDown</code> ($\downarrow$)	139	<code>\sqdoublefrown</code> ($\approx$)	87
<code>\Snow</code> ($\star$)	171	<code>\spindown</code> (Φ)	128	<code>\sqdoublefrown</code> ($\approx$)	87
<code>\SnowCloud</code> ()	171	<code>\SpinUp</code> ($\uparrow$)	139	<code>\sqdoublefrown</code> ($\approx$)	87
<code>\Snowflake</code> ($\star$)	135	<code>\spinup</code> (Φ)	128	<code>\sqdoublefrown</code> ($\approx$)	87
<code>\SnowflakeChevron</code> ($\star$)	135	spirals	197	<code>\sqdoublefrown</code> ($\approx$)	87
<code>\SnowflakeChevronBold</code> ($\star$)	135	<code>\spirituslenis</code> ()	103	<code>\sqdoublefrown</code> ($\approx$)	87
snowflakes	135	<code>\spirituslenis</code> ()	103	<code>\sqdoublefrown</code> ($\approx$)	87
<code>\Snowman</code> ()	185	<code>\splitvert</code> ($\vdots$)	126	<code>\sqdoublefrown</code> ($\approx$)	87
		<code>\Spoon</code> ($\updownarrow$)	183	<code>\sqdoublefrown</code> ($\approx$)	87
		spoon symbols	86, 87	<code>\sqdoublefrown</code> ($\approx$)	87
		<code>\spreadlips</code> ()	22	<code>\sqdoublefrown</code> ($\approx$)	87
		<code>\Springtree</code> ()	184	<code>\sqdoublefrown</code> ($\approx$)	87
		<code>\sqbullet</code> ($\blacksquare$)	30	<code>\sqdoublefrown</code> ($\approx$)	87
		<code>\Sqcap</code> ()	32	<code>\sqdoublefrown</code> ($\approx$)	87

<code>\sqsubseteq</code> (◻)	59	<code>\SquareCastShadowTopRight</code>		<code>\ssttstile</code> (◻◻)	58
<code>\sqsubseteq</code> (◻)	61	(◻)	139	<code>\sswarrow</code> (↘)	71
<code>\sqsubseteq</code> (◻)	61	<code>\squarecrossfill</code> (◻)	137	<code>\sswarrow</code> (↘)	81
<code>\sqsubseteq</code> (◻)	62	<code>\squaredots</code> (::)	111	<code>\staccatissimo</code> (♩)	157
<code>\sqsubseteq</code> (◻)	60	<code>\squaredots</code> (::)	31, 111	<code>\stackrel{rel}{\sim}</code>	28, 215, 219
<code>\sqsubseteq</code> (◻)	61	<code>\squarehfill</code> (◻)	137	standard state	216
<code>\sqsubseteq</code> (◻)	61	<code>\squarehvfill</code> (◻)	137	<code>\star</code> (★)	29, 219
<code>\sqsubseteq</code> (◻)	60	<code>\squareleftblack</code> (◻)	137	<code>\star</code> (★)	151
<code>\sqsubseteq</code> (◻)	61	<code>\squarellblack</code> (◻)	137	<code>\star</code> (★)	36, 137
<code>\sqsubseteq</code> (◻)	61	<code>\squarellquad</code> (◻)	137	<code>\star</code> (★)	36
<code>\sqsubseteq</code> (◻)	62	<code>\squarelrblack</code> (◻)	137	<code>\star</code> (★)	35
<code>\sqsubseteq</code> (◻)	60	<code>\squarelrquad</code> (◻)	137	<code>\star</code> (★)	37
<code>\sqsubseteq</code> (◻)	61	<code>\squareneswfill</code> (◻)	137	Star of David	135
<code>\sqsubseteq</code> (◻)	61	<code>\squarenwsefill</code> (◻)	137	<code>\stareq</code> (≐)	53
<code>\sqsubseteq</code> (◻)	61	<code>\squarepipe</code> (◻)	127	<code>\stareq</code> (≐)	56
<code>\sqsupset</code> (⊃)	61	<code>\squarerightblack</code> (◻)	138	starfont (package)	124, 231, 232
<code>\sqsupset</code> (⊃)	60	squares	136–141, 162–166, 175,	<code>\starofdavid</code> (☆)	137
<code>\sqsupset</code> (⊃)	61	176, 191–192, 197, 207–		<code>\starredbullet</code> (★)	136
<code>\sqsupset</code> (⊃)	60	208		stars	115, 124, 135–138,
<code>\sqsupset</code> (⊃)	59, 60	<code>\SquareShadowA</code> (◻)	139	191–192	
<code>\sqsupset</code> (⊃)	61	<code>\SquareShadowB</code> (◻)	139	<code>\stater</code> (⋈)	26
<code>\sqsupset</code> (⊃)	61	<code>\SquareShadowBottomRight</code>		<code>\Station</code> (S)	124
<code>\sqsupset</code> (⊃)	61	(◻)	139	statistical independence	217
<code>\sqsupset</code> (⊃)	62	<code>\SquareShadowC</code> (◻)	139	<code>\staveI</code> (⌵)	178
<code>\sqsupseteq</code> (⊇)	60	<code>\SquareShadowTopLeft</code> (◻)	139	<code>\staveII</code> (⌵)	178
<code>\sqsupseteq</code> (⊇)	59	<code>\SquareShadowTopRight</code> (◻)	139	<code>\staveIII</code> (⌵)	178
<code>\sqsupseteq</code> (⊇)	61	<code>\SquareSolid</code> (◼)	139	<code>\staveIV</code> (⌵)	178
<code>\sqsupseteq</code> (⊇)	62	<code>\SquareSteel</code> (◼)	127	<code>\staveIX</code> (⌵)	178
<code>\sqsupseteq</code> (⊇)	60	<code>\squaresolid</code> (◼)	139	<code>\staveL</code> (⌵)	178
<code>\sqsupseteq</code> (⊇)	61	<code>\squaresteel</code> (◼)	127	<code>\staveL</code> (⌵)	179
<code>\sqsupseteq</code> (⊇)	61	<code>\squaresetopblack</code> (◼)	138	staveless runes	151
<code>\sqsupseteq</code> (⊇)	60	<code>\squareulblack</code> (◼)	138	<code>\staveLI</code> (⌵)	178
<code>\sqsupseteq</code> (⊇)	61	<code>\squareulquad</code> (◼)	138	<code>\staveLII</code> (⌵)	178
<code>\sqsupseteq</code> (⊇)	61	<code>\squareurblack</code> (◼)	138	<code>\staveLIII</code> (⌵)	178
<code>\sqsupseteq</code> (⊇)	62	<code>\squareurquad</code> (◼)	138	<code>\staveLIV</code> (⌵)	178
<code>\sqsupseteq</code> (⊇)	60	<code>\squarevfill</code> (◼)	138	<code>\staveLIX</code> (⌵)	179
<code>\sqsupseteq</code> (⊇)	61	<code>\squarewithdots</code> (◼)	141	<code>\staveLV</code> (⌵)	178
<code>\sqsupseteq</code> (⊇)	61	<code>\squeezer</code> (⌵)	184	<code>\staveLVI</code> (⌵)	178
<code>\sqtriplefrown</code> (⋈)	87	<code>\squigarrowdownup</code> (↕)	72	<code>\staveLVII</code> (⌵)	178
<code>\sqtriplesmile</code> (⋈)	87	<code>\squigarrowleft</code> (↔)	72	<code>\staveLVIII</code> (⌵)	179
<code>\Square</code> (◻)	124	<code>\squigarrowleft</code> (↔)	72	<code>\staveLX</code> (⌵)	179
<code>\Square</code> (◻)	134	<code>\squigarrownwse</code> (↙)	72	<code>\staveLXI</code> (⌵)	179
<code>\Square</code> (◻)	139	<code>\squigarrownwse</code> (↙)	72	<code>\staveLXII</code> (⌵)	179
<code>\Square</code> (◻)	139	<code>\squigarrowrightleft</code> (↔)	72	<code>\staveLXIII</code> (⌵)	179
<code>\Square</code> (◻)	139	<code>\squigarrowrightleft</code> (↔)	72	<code>\staveLXIV</code> (⌵)	179
<code>\Square</code> (◻)	139	<code>\squigarrowsenw</code> (↖)	72	<code>\staveLXV</code> (⌵)	179
<code>\Square</code> (◻)	139	<code>\squigarrowswne</code> (↗)	72	<code>\staveLXVI</code> (⌵)	179
<code>\Square</code> (◻ vs. ◻ vs. ◻)	212	<code>\squigarrowupdown</code> (↕)	72	<code>\staveLXVII</code> (⌵)	179
<code>\square</code> (◻)	30	<code>\squoval</code> (◻)	138	<code>\staveLXVIII</code> (⌵)	179
<code>\square</code> (◻)	115	<code>\sqplus</code> (⊕)	30	<code>\staveLXIX</code> (⌵)	179
<code>\square</code> (◻)	137	<code>\sqplus</code> (⊕)	32	<code>\staveLXX</code> (⌵)	179
<code>\square</code> (◻)	36	<code>\SS</code> (SS)	15, 125	<code>\staveLXXI</code> (⌵)	179
<code>\square</code> (◻)	176	<code>\ss</code> (ß)	15	<code>\staveLXXII</code> (⌵)	179
<code>\square</code> (◻)	35	<code>\ssttstile</code> (◻◻)	58	<code>\staveLXXIII</code> (⌵)	179
<code>\square</code> (◻)	138	<code>\ssearrow</code> (↘)	71	<code>\staveLXXIV</code> (⌵)	179
square impulse	121	<code>\ssearrow</code> (↘)	81	<code>\staveLXXV</code> (⌵)	179
square root	see <code>\sqrt</code>	<code>\seven</code> (7)	151	<code>\staveLXXVI</code> (⌵)	179
hooked	see <code>\hksqrt</code>	<code>\ssix</code> (6)	151	<code>\staveLXXVII</code> (⌵)	179
<code>\squarebotblack</code> (◼)	137	<code>\sslash</code> (//)	29	<code>\staveLXXVIII</code> (⌵)	179
<code>\SquareCastShadowBottomRight</code>		<code>\sslash</code> (//)	32	<code>\staveLXXIX</code> (⌵)	179
(◻)	139	<code>\sslash</code> (//)	33	<code>\staveLXXX</code> (⌵)	179
<code>\SquareCastShadowTopLeft</code>		<code>\ssttstile</code> (◻◻)	58	<code>\staveLXXXI</code> (⌵)	179
(◻)	139	<code>\ssttstile</code> (◻◻)	58		

staves	178
staves (package)	178, 231
<code>\staveV</code> ()	178
<code>\staveVI</code> ()	178
<code>\staveVII</code> ()	178
<code>\staveVIII</code> ()	178
<code>\staveX</code> ()	178
<code>\staveXI</code> ()	178
<code>\staveXII</code> ()	179
<code>\staveXIII</code> ()	179
<code>\staveXIV</code> ()	179
<code>\staveXIX</code> ()	179
<code>\staveXL</code> ()	179
<code>\staveXLI</code> ()	179
<code>\staveXLII</code> ()	179
<code>\staveXLIII</code> ()	179
<code>\staveXLIV</code> ()	179
<code>\staveXLIX</code> ()	178
<code>\staveXLV</code> ()	179
<code>\staveXLVI</code> ()	179
<code>\staveXLVII</code> ()	178
<code>\staveXLVIII</code> ()	178
<code>\staveXV</code> ()	179
<code>\staveXVI</code> ()	179
<code>\staveXVII</code> ()	179
<code>\staveXVIII</code> ()	179
<code>\staveXX</code> ()	179
<code>\staveXXI</code> ()	179
<code>\staveXXII</code> ()	179
<code>\staveXXIII</code> ()	179
<code>\staveXXIV</code> ()	178
<code>\staveXXIX</code> ()	178
<code>\staveXXV</code> ()	178
<code>\staveXXVI</code> ()	178
<code>\staveXXVII</code> ()	178
<code>\staveXXVIII</code> ()	178
<code>\staveXXX</code> ()	178
<code>\staveXXXI</code> ()	178
<code>\staveXXXII</code> ()	178
<code>\staveXXXIII</code> ()	178

<code>\staveXXXIV</code> ()	178
<code>\staveXXXIX</code> ()	179
<code>\staveXXXV</code> ()	179
<code>\staveXXXVI</code> ()	179
<code>\staveXXXVII</code> ()	179
<code>\staveXXXVIII</code> ()	179
<code>\stdtstile</code> ()	58
<code>\steaming</code> ()	183
steinmetz (package)	122, 231, 232
Steinmetz phasor notation	122
sterling	<i>see</i> <code>\pounds</code>
<code>\sthree</code> ()	151
stick figures	142, 185, 203–207
<code>\Stigma</code> ()	148
<code>\Stigma</code> ()	148
<code>\stigma</code> ()	148
<code>\stigma</code> ()	148
stix (package)	33, 37, 38, 45, 46, 56, 57, 62, 66, 67, 69, 82–84, 89, 92–95, 99, 103, 105, 112, 114, 115, 117, 123, 124, 127, 137, 138, 141, 152, 172, 231, 232
stmaryrd (package)	29, 39, 49, 60, 67, 71, 85, 88, 95, 96, 212, 216, 230, 231
stochastic independence	<i>see</i> <code>\bot</code>
<code>\StoneMan</code> ()	171
<code>\Stopsign</code> ()	127
<code>\StopWatchEnd</code> ()	171
<code>\StopWatchStart</code> ()	171
<code>\stress</code> ()	24
<code>\Strichmaxerl</code> ()	185
<code>\strictfi</code> ()	49
<code>\strictfi</code> ()	55
<code>\strictif</code> ()	49
<code>\strictif</code> ()	55
<code>\strictiff</code> ()	49
<code>\StrikingThrough</code> ()	25
<code>\strns</code> ()	117
<code>\strokedint</code> ()	43
<code>\StrokeFive</code> ()	171
<code>\StrokeFour</code> ()	171
<code>\StrokeOne</code> ()	171
<code>\StrokeThree</code> ()	171
<code>\strokethrough</code> ()	103
<code>\StrokeTwo</code> ()	171
<code>\stst</code> ()	216
<code>\stststile</code> ()	58
<code>\sttstile</code> ()	58
<code>\sttstile</code> ()	58
<code>\STX</code> ()	126
.sty files	12
<code>\SUB</code> ()	126

subatomic particles	128–129
<code>\subcorner</code> ()	22
<code>\subdoublebar</code> ()	22
<code>\subdoublevert</code> ()	22
<code>\subedot</code> ()	62
<code>\sublptr</code> ()	22
<code>\submult</code> ()	62
<code>\subrarr</code> ()	62
<code>\subrptr</code> ()	22
subscripts	
new symbols used in	217
<code>\Subset</code> ()	60
<code>\Subset</code> ()	60
<code>\Subset</code> ()	61
<code>\Subset</code> ()	61
<code>\Subset</code> ()	61
<code>\Subset</code> ()	62
<code>\subset</code> ()	60
<code>\subset</code> ()	59
<code>\subset</code> ()	61
<code>\subset</code> ()	61
<code>\subset</code> ()	62
<code>\subsetapprox</code> ()	62
<code>\subsetcirc</code> ()	62
<code>\subsetdot</code> ()	62
<code>\subseteq</code> ()	60
<code>\subseteq</code> ()	59
<code>\subseteq</code> ()	61
<code>\subseteq</code> ()	61
<code>\subseteq</code> ()	62
<code>\subseteqq</code> ()	60
<code>\subseteqq</code> ()	60
<code>\subseteqq</code> ()	61
<code>\subseteqq</code> ()	61
<code>\subseteqq</code> ()	62
<code>\subsetneq</code> ()	60
<code>\subsetneq</code> ()	60
<code>\subsetneq</code> ()	61
<code>\subsetneq</code> ()	61
<code>\subsetneq</code> ()	62
<code>\subsetneqq</code> ()	60
<code>\subsetneqq</code> ()	60
<code>\subsetneqq</code> ()	61
<code>\subsetneqq</code> ()	61
<code>\subsetneqq</code> ()	62
<code>\subplus</code> ()	60
<code>\subplus</code> ()	61
<code>\subplus</code> ()	62
<code>\subplus</code> ()	62
<code>\subplus</code> ()	62
<code>\succ</code> ()	56
<code>\succ</code> ()	48
<code>\succ</code> ()	53
<code>\succ</code> ()	51
<code>\succ</code> ()	56
<code>\succapprox</code> ()	50

<code>\succapprox</code> ($\succsim$)	48	<code>\Sun</code> ($\odot$ vs. $\star$ vs. $\odot$)	212	<code>\supsup</code> ($\supseteq$)	62
<code>\succapprox</code> ($\succsim$)	55	<code>sun</code>	122–124, 141, 169, 171, 185–186, 209, 212	<code>\surd</code> ($\surd$)	115
<code>\succapprox</code> ($\succsim$)	53	<code>\sun</code> ($\star$)	123	<code>\surface</code> (Φ)	129
<code>\succapprox</code> ($\succsim$)	51	<code>\sun</code> ($\star$)	169	<code>\SurveySign</code> (Δ)	171
<code>\succapprox</code> ($\succsim$)	56	<code>\SunCloud</code> ($\star$)	171	<code>\svrexample</code> ($\mathbb{W}$)	129
<code>\succcurlyeq</code> ($\succcurlyeq$)	50	<code>\SunshineOpenCircled</code> ($\star$)	141	<code>\svrphoton</code> (f)	129
<code>\succcurlyeq</code> ($\succcurlyeq$)	48	<code>\sup</code> ($\sup$)	89	<code>svrsymbols</code> (package)	128, 231, 232
<code>\succcurlyeq</code> ($\succcurlyeq$)	55	<code>\supdsup</code> ($\supseteq$)	62	<code>\Swarrow</code> ($\swarrow$)	71
<code>\succcurlyeq</code> ($\succcurlyeq$)	53	<code>\supedot</code> ($\supseteq$)	62	<code>\Swarrow</code> ($\swarrow$)	81
<code>\succcurlyeq</code> ($\succcurlyeq$)	51	superscripts		<code>\Swarrow</code> ($\swarrow$)	76
<code>\succcurlyeq</code> ($\succcurlyeq$)	56	new symbols used in	217	<code>\Swarrow</code> ($\swarrow$)	72
<code>\succdot</code> ($\succdot$)	50	supersets	59–62	<code>\Swarrow</code> ($\swarrow$)	83
<code>\succeq</code> ($\succeq$)	48	<code>\suphsol</code> ($\supseteq$)	62	<code>\swarrow</code> ($\swarrow$)	71
<code>\succeq</code> ($\succeq$)	53	<code>\suphsol</code> ($\supseteq$)	62	<code>\swarrow</code> ($\swarrow$)	70, 218
<code>\succeq</code> ($\succeq$)	51	<code>\supsub</code> ($\supseteq$)	62	<code>\swarrow</code> ($\swarrow$)	76
<code>\succeq</code> ($\succeq$)	56	<code>\suplarr</code> ($\supseteq$)	62	<code>\swarrow</code> ($\swarrow$)	72
<code>\succeqq</code> ($\succeqq$)	49	<code>\supmult</code> ($\supseteq$)	62	<code>\swarrow</code> ($\swarrow$)	85
<code>\succeqq</code> ($\succeqq$)	53	supremum	see <code>\sup</code>	<code>\swarrow</code> ($\swarrow$)	83
<code>\succeqq</code> ($\succeqq$)	56	<code>\Supset</code> ($\supseteq$)	60	<code>\swarrowtail</code> ($\swarrowtail$)	76
<code>\succnapprox</code> ($\succnapprox$)	50	<code>\Supset</code> ($\supseteq$)	60	<code>\swarrowtail</code> ($\swarrowtail$)	72
<code>\succnapprox</code> ($\succnapprox$)	49	<code>\Supset</code> ($\supseteq$)	61	<code>\swbkarrow</code> ($\swarrow$)	76
<code>\succnapprox</code> ($\succnapprox$)	55	<code>\Supset</code> ($\supseteq$)	61	<code>\Sweden</code> ($\S$)	183
<code>\succnapprox</code> ($\succnapprox$)	54	<code>\Supset</code> ($\supseteq$)	61	Swedo-Norwegian runes	see
<code>\succnapprox</code> ($\succnapprox$)	52	<code>\Supset</code> ($\supseteq$)	62	short-twig runes	
<code>\succnapprox</code> ($\succnapprox$)	56	<code>\supset</code> ($\supset$)	60	<code>\swfilledspoon</code> ($\swarrow$)	86
<code>\succneq</code> ($\succneq$)	50	<code>\supset</code> ($\supset$)	59	<code>\swfootline</code> ($\swarrow$)	51
<code>\succneq</code> ($\succneq$)	54	<code>\supset</code> ($\supset$)	61	<code>\swfree</code> ($\swarrow$)	51
<code>\succneq</code> ($\succneq$)	56	<code>\supset</code> ($\supset$)	61	<code>\swharpoonccw</code> ($\swarrow$)	75
<code>\succneqq</code> ($\succneqq$)	49	<code>\supset</code> ($\supset$)	62	<code>\swharpooncw</code> ($\swarrow$)	75
<code>\succneqq</code> ($\succneqq$)	55	<code>\supsetapprox</code> ($\supseteq$)	62	<code>\swharpoonnw</code> ($\swarrow$)	79
<code>\succneqq</code> ($\succneqq$)	54	<code>\supsetcirc</code> ($\supseteq$)	62	<code>\swharpoonse</code> ($\swarrow$)	79
<code>\succneqq</code> ($\succneqq$)	56	<code>\supsetdot</code> ($\supseteq$)	62	<code>\Switzerland</code> ($\S$)	183
<code>\succnsim</code> ($\succnsim$)	50	<code>\supseteq</code> ($\supseteq$)	60	<code>\swlcurvearrow</code> ($\swarrow$)	77
<code>\succnsim</code> ($\succnsim$)	49	<code>\supseteq</code> ($\supseteq$)	59	<code>\swlsquigarrow</code> ($\swarrow$)	72
<code>\succnsim</code> ($\succnsim$)	55	<code>\supseteq</code> ($\supseteq$)	61	<code>\swmapsto</code> ($\swarrow$)	72
<code>\succnsim</code> ($\succnsim$)	54	<code>\supseteq</code> ($\supseteq$)	61	<code>\swModels</code> ($\swarrow$)	51
<code>\succnsim</code> ($\succnsim$)	52	<code>\supseteq</code> ($\supseteq$)	62	<code>\swmodels</code> ($\swarrow$)	51
<code>\succnsim</code> ($\succnsim$)	56	<code>\supseteq</code> ($\supseteq$)	60	<code>\swnearrows</code> ($\swarrow$)	76
<code>\succsim</code> ($\succsim$)	50	<code>\supseteq</code> ($\supseteq$)	61	<code>\swnearrows</code> ($\swarrow$)	72
<code>\succsim</code> ($\succsim$)	48	<code>\supseteq</code> ($\supseteq$)	61	<code>\swnecurvearrow</code> ($\swarrow$)	77
<code>\succsim</code> ($\succsim$)	55	<code>\supseteq</code> ($\supseteq$)	61	<code>\swneharpoons</code> ($\swarrow$)	79
<code>\succsim</code> ($\succsim$)	53	<code>\supseteq</code> ($\supseteq$)	62	<code>\swneharpoons</code> ($\swarrow$)	75
<code>\succsim</code> ($\succsim$)	51	<code>\supseteq</code> ($\supseteq$)	60	swords	170
<code>\succsim</code> ($\succsim$)	56	<code>\supseteq</code> ($\supseteq$)	60	<code>\swords</code> ($\times$)	183
such that	214, 216	<code>\supseteq</code> ($\supseteq$)	61	<code>\swpitchfork</code> ($\swarrow$)	86
<code>\suchthat</code> ($\supseteq$)	216	<code>\supseteq</code> ($\supseteq$)	61	<code>\swrcurvearrow</code> ($\swarrow$)	77
<code>\sum</code> ($\sum$)	39	<code>\supseteq</code> ($\supseteq$)	62	<code>\swrsquigarrow</code> ($\swarrow$)	72
<code>\sum</code> ($\sum$)	44	<code>\supseteq</code> ($\supseteq$)	60	<code>\swspoon</code> ($\swarrow$)	86
<code>\sum</code> ($\sum$)	43	<code>\supseteq</code> ($\supseteq$)	60	<code>\swswarrows</code> ($\swarrow$)	76
<code>\sum</code> ($\sum$)	45	<code>\supseteq</code> ($\supseteq$)	61	<code>\swswarrows</code> ($\swarrow$)	72
<code>\sumint</code> ($\int$)	44	<code>\supseteq</code> ($\supseteq$)	61	swung dash	see <code>\sim</code>
<code>\sumint</code> ($\int$)	43	<code>\supseteq</code> ($\supseteq$)	61	<code>\swVdash</code> ($\swarrow$)	51
<code>\sumint</code> ($\int$)	45	<code>\supseteq</code> ($\supseteq$)	62	<code>\swvdash</code> ($\swarrow$)	51
<code>\sumintsl</code> ($\int$)	46	<code>\supseteq</code> ($\supseteq$)	60	<code>\syl</code> ($\mathbb{M}$)	23
<code>\sumintup</code> ($\int$)	46	<code>\supseteq</code> ($\supseteq$)	61	<code>\syllabic</code> ($\circ$)	24
<code>\Summertree</code> ($\mathbb{M}$)	184	<code>\supseteq</code> ($\supseteq$)	62	<code>\symA</code> ($\mathbb{A}$)	119
<code>\Summit</code> ($\blacktriangle$)	171	<code>\supseteq</code> ($\supseteq$)	61	<code>\symAE</code> ($\mathbb{A}$)	120
<code>\SummitSign</code> ($\blacktriangle$)	171	<code>\supseteq</code> ($\supseteq$)	61	<code>\symB</code> ($\mathbb{B}$)	119
<code>\Sun</code> ($\odot$)	123	<code>\supseteq</code> ($\supseteq$)	62	<code>\symbishop</code> ($\mathbb{B}$)	175
<code>\Sun</code> ($\odot$)	124	<code>\supsim</code> ($\supseteq$)	62	Symbol (font)	91, 214
<code>\Sun</code> ($\odot$)	122	<code>\supsub</code> ($\supseteq$)	62		
<code>\Sun</code> ($\star$)	171				

symbols 14–142, 152–191, 193,
208, 209, 211, 213, 219,
224–225, 227

actuarial 107, 219

alpine 171

ancient language 142–151

annuity 107, 219

APL . . . 56–57, 124, 125

astrological . . . 122–124,
193–195

astronomical . . 122–124,
179, 193–195

Begriffsschrift . . 112, 113

biological 127

block-element 178

body-text 14–27

bold 224–225

box-drawing 178

chess . 174, 175, 209–210

cipher 179

clock . 169–172, 185–186

communication 126

computer 186–189

computer hardware . . 125

contradiction . . . 28, 88

cooking 183, 184, 186–189

countries 181

crystallography 207–208

currency 25, 26, 117, 120

dangerous bend . . . 169

database 117

definition 28, 219

dictionary . . 17–20, 177

dingbat 130–141

dot . . . 14, 110–112, 218

electrical 121

engineering 117, 121, 127

Epi-Olmec . . . 148–150

extensible . 85, 104–110,
122, 213, 219–220

Feynman diagram . . 128

file 186–189

Frege logic . . 85, 94, 112,
113, 118

frown 87, 88

game-related . . 140, 141,
171, 172, 174–176, 186–
189, 208–210

gates, digital logic . . 126

genealogical 169

general 169

Go stones . . . 175, 176

Halloween 37, 110

information 170

informator 174

inverted . . 17–19, 24, 214

Isthmian 148–150

keyboard 125

knitting 181

Knuth’s 169

laundry 170

legal . 14, 15, 26, 27, 227

letter-like 93–95, 186–189

life insurance . . 107, 219

linear logic 28–30, 34, 35,
39, 43–44, 48, 59, 93, 94

linguistic 17–20

log-like 89, 224

logic 126

Magic: The Gathering 209

magical signs 178

map 191–192

maps 181

mathematical . . . 28–120

media control 169,
186–189

METAFONTbook . . . 169

metrical 176, 177

miscellaneous . . 115–118,
141, 169–186, 190

monetary . . . 25, 26, 120

musical . . . 27, 152–168,
185–189

non-commutative division
. 110

particle physics 128–129

Phaistos disk 142

phonetic 17–20

physical 121

Pitman’s base 12 113, 173

present value . . 107, 219

proto-Semitic 142

pulse diagram 121

recycling . 179, 180, 183,
185–189, 191

relational 48

relational database . . 117

reversed 214

rotated . . 17–19, 24, 214

runes 151

safety-related 127

scientific 121–129,
207–208

semaphore 205–207

Simpsons characters . 177

smile 87, 88

Soyombo 180

spoon 86, 87

staves 178

subset and superset 59–62

technological . . . 121–129

TeXbook 169

transliteration 20

upside-down . . 17–19, 24,
214, 226

variable-sized 39–48, 211,
213

weather . . . 171, 185–186

Web 186–189

yin-yang 170, 183,
185–186, 197

zodiacal 122–124, 193–195

symbols.tex (file) . . 211, 230,
231

\symC (C) 119

\symking (𐀫) 175

\symknight (𐀬) 175

\symOE (Œ) 120

\sympawn (♙) 175

\symqueen (♚) 175

\symrook (♜) 175

\symUE (Ů) 120

\SYN (≡) 126

T

T (↑) 151

\T 16

\T (■) 24

\T (⊗) 176

\t (■) 20

\t (⊗) 176

t (↑) 151

t4phonet (package) 20, 23, 231

\Tab (⇄) 125

\tabcolsep 215

\tachyon (τ) 129

tacks 48, 93

\taild (d) 19

\tailinvr (i) 19

\taill (l) 19

\tailn (n) 19

\tailr (r) 19

\tails (s) 19

\tailt (t) 19

\tailz (z) 19

\Takt 154

\talloblong (||) 29

\talloblong (||) 36

\talloblong (||) 37

\tally (| ⊥ ⊐ ⊑ ⊒ ⊓) . . 173

tally markers . . . 146, 171, 173

\tan (tan) 89

\tanh (tanh) 89

\Tape (♯) 141

\Taschenuhr (🕒) 171

Tate-Shafarevich group *see* sha

\Tau (T) 90

\tau (τ) 90

\tauleptonminus (τ[−]) . . 129

\tauleptonplus (τ⁺) . . . 129

\Taurus (♉) 123

\Taurus (♉) 124

\Taurus (♉) 122

\taurus (♉) 122

tautology *see* **\top**

\tauup (τ) 91

\tccentigrade (°C) 113

\tcmu (μ) 113

\tcohm (Ω) 113

\tcpertenthousand (‰) 113

\tcpertousand (‰) 113

\td (■) 23

\tddtstile (|||■||) 58

\tdststile (||■||) 58

\tdtstile (||■) 58

\tdttstile (|||■|||) 58

technological symbols 121–129

<code>\Telefon</code> (☎)	126	<code>\textbarc</code> (e)	17	<code>\textcrlambda</code> (λ)	17
<code>\Telephone</code> (☎)	171	<code>\textbard</code> (d)	17	<code>\textcrtwo</code> (2)	17
<code>\Telephone</code> (☎)	180	<code>\textbardbl</code> ()	14	<code>\textctc</code> (c)	17
Tennent, Bob	28	<code>\textbardbl</code> ()	14	<code>\textctd</code> (d)	17
tensor product	<i>see</i> <code>\otimes</code>	<code>\textbardotlessj</code> (j)	17	<code>\textctdctzlig</code> (dz)	17
<code>\Tent</code> (▲)	171	<code>\textbarg</code> (g)	17	<code>\textctesh</code> (f)	17
<code>\tenuto</code> (–)	157	<code>\textbarglotstop</code> (ʔ)	17	<code>\textctinvglotstop</code> (s)	18
<code>\Terminus</code> (⊗)	176	<code>\textbari</code> (i)	17	<code>\textctj</code> (j)	17
<code>\terminus</code> (⊗)	176	<code>\textbarl</code> (l)	17	<code>\textctjvar</code> (j)	18
<code>\Terminus*</code> (⊕)	176	<code>\textbaro</code> (o)	17	<code>\textctn</code> (n)	17
<code>\terminus*</code> (⊕)	176	<code>\textbarrevglotstop</code> (ʔ)	17	<code>\textctstretchc</code> (L)	18
<code>\Terra</code> (⊕)	124	<code>\textbaru</code> (u)	17	<code>\textctstretchcvar</code> (C)	18
<code>\tesh</code> (f)	19	<code>\textbeltl</code> (l)	17	<code>\textctt</code> (t)	17
<code>testfont.dvi</code> (file)	223	<code>\textbenttailyogh</code> (z)	18	<code>\textcttctclig</code> (æ)	17
<code>testfont.tex</code> (file)	221, 223	<code>\textBeta</code> (B)	15	<code>\textctturnt</code> (t)	18
<code>\tetartemorion</code> (t)	26	<code>\textbeta</code> (β)	15, 17	<code>\textctyogh</code> (z)	17
teubner (package)	26, 112, 148, 177, 231, 232	<code>\textbigcircle</code> (○)	14	<code>\textctz</code> (z)	17
$\mathrm{T\!E\!X}$	12, 68, 69, 85, 111, 122, 178, 211, 214–221, 223, 224, 226, 228, 229, 233	<code>\textbigcircle</code> (○)	14	<code>\textcurrency</code> (¤)	25, 227
<code>.tex</code> files	228, 229	<code>\textbktilgamma</code> (γ)	18	<code>\textcyp</code>	147
$\mathrm{T\!E\!X}$ book, The	215, 217, 218, 220, 224	<code>\textblank</code> (b)	27	<code>\textdagger</code> (†)	14
symbols from	169	<code>\textblock</code> (■)	178	<code>\textdagger</code> (†)	14
<code>\text</code>	28, 216, 218	<code>\textborn</code> (★)	169	<code>\textdaggerdbl</code> (‡)	14
<code>\textacutedbl</code> (")	24	<code>\textbottomtiebar</code> (—)	21	<code>\textdaggerdbl</code> (‡)	14
<code>\textacutemacron</code> (ā)	21	<code>\textbraceleft</code>	14	<code>\textdbend</code> (⤵)	169
<code>\textacutewedge</code> (▲)	21	<code>\textbraceright</code>	14	<code>\textdblhyphen</code> (=)	27
<code>\textadvancing</code> (≡)	21	<code>\textbrevemacron</code> (ā)	21	<code>\textdblhyphenchar</code> (=)	27
<code>\textAlpha</code> (A)	15	<code>\textbrokenbar</code> ()	27, 227	<code>\textdblig</code> (db)	18
<code>\textalpha</code> (α)	15	<code>\textbullet</code> (•)	14	<code>\textdctzlig</code> (dz)	17
<code>\textaoilig</code> (æ)	18	<code>\textbullet</code> (•)	14, 228	<code>\textdegree</code> (°)	117, 227
<code>\textara</code>	151	<code>\textbullseye</code> (⊙)	17	<code>\textDelta</code> (Δ)	15
<code>\textarc</code>	151	<code>\textcelsius</code> (°C)	121, 229	<code>\textdelta</code> (δ)	15
<code>\textarl</code>	151	<code>\textceltpal</code> (°)	17	<code>\textdied</code> (†)	169
<code>\textarm</code>	151	<code>\textcent</code> (¢)	25, 227	<code>\textdiscount</code> (Z)	27
<code>\textarn</code>	151	<code>\textcentoldstyle</code> (¢)	25	<code>\textdiv</code> (÷)	117
<code>\textart</code>	151	<code>\textChi</code> (X)	15	<code>\textdivorced</code> (d)	169
<code>\textasciicircum</code> (ˆ)	24, 227	<code>\textchi</code> (χ)	15, 17	<code>\textdkshade</code> (■)	178
<code>\textasciibreve</code> (˘)	24	<code>\textcircled</code> (⊙)	20	<code>\textdnblock</code> (■)	178
<code>\textasciicaron</code> (ˇ)	24	<code>\textcircledP</code>	26	<code>\textdollar</code> (\$)	14
<code>\textasciicircum</code>	14	<code>\textcircledP</code> (P)	26	<code>\textdollar</code> (\$)	14, 25
<code>\textasciicircum</code> (ˆ)	14, 226, 228	<code>\textcircumacute</code> (◌̇)	21	<code>\textdollaroldstyle</code> (\$)	25
<code>\textasciidieresis</code> (¨)	24, 227	<code>\textcircumdot</code> (◌̈)	21	<code>\textdong</code> (d)	25
<code>\textasciigrave</code> (˘)	24	<code>\textcloseepsilon</code> (ε)	17	<code>\textdotacute</code> (◌̇)	21
<code>\textasciimacron</code>	226	<code>\textcloseomega</code> (ω)	17	<code>\textdotbreve</code> (◌̆)	21
<code>\textasciimacron</code> (˘)	24, 227	<code>\textcloserevepsilon</code> (ε)	17	<code>\textdoublebaresh</code> (f)	17
<code>\textasciitilde</code>	14	<code>\textcolonmonetary</code> (C)	25	<code>\textdoublebarpipe</code> (‡)	17
<code>\textasciitilde</code> (˜)	14, 226, 228	<code>\textcommatailz</code> (z)	17	<code>\textdoublebarpipevar</code> (‡)	18
<code>\textasteriskcentered</code> (*)	14	<code>textcomp</code> (package)	12, 14, 15, 20, 24–27, 70, 101, 117, 121, 152, 169, 211, 226, 228, 231	<code>\textdoublebarslash</code> (≠)	17
<code>\textasteriskcentered</code> (*)	14	<code>\textcopyrightleft</code>	26	<code>\textdoublegrave</code> (˘)	21
<code>\textbabygamma</code> (γ)	17	<code>\textcopyrightleft</code> (©)	26	<code>\textdoublegrave</code> (˘)	23
<code>\textbackslash</code>	14	<code>\textcopyright</code> (©)	14, 26	<code>\textdoublepipe</code> ()	17
<code>\textbackslash</code> (\\)	225, 226	<code>\textcopyright</code> (©)	14, 26, 227	<code>\textdoublepipevar</code> ()	18
<code>\textbaht</code> (฿)	25	<code>\textcorner</code> (˘)	17	<code>\textdoublevbaraccent</code> (≡)	21
<code>\textbar</code>	14	<code>\textcrb</code> (b)	17	<code>\textdoublevbaraccent</code> (≡)	23
<code>\textbar</code> ()	225, 226	<code>\textcrd</code> (d)	20	<code>\textdoublevertline</code> ()	17
<code>\textbarb</code> (b)	17	<code>\textcrd</code> (d)	17	<code>\textdownarrow</code> (↓)	70
		<code>\textcrg</code> (g)	17	<code>\textdownfullarrow</code> (↓)	18
		<code>\textcrh</code> (h)	20	<code>\textdownstep</code> (†)	17
		<code>\textcrh</code> (h)	17	<code>\textdyoghlig</code> (d)	17
		<code>\textcrinvglotstop</code> (s)	17	<code>\textdzlig</code> (dz)	17
				<code>\texteightoldstyle</code> (8)	27
				<code>\textellipsis</code>	14
				<code>\textemdash</code>	14

<code>\textendash</code>	14	<code>\texthth</code> (fi)	17	<code>\textkmit{L}</code> ($\mathbb{L}$)	181
<code>\textEpsilon</code> (E)	15	<code>\texththeng</code> (fi)	17	<code>\textkmit{l}</code> ($\mathbb{L}$)	181
<code>\textepsilon</code> (e)	20	<code>\texthtk</code> (k)	20	<code>\textkmit{M}</code> ($\mathbb{M}$)	181
<code>\textepsilon</code> (ϵ)	15, 17	<code>\texthtk</code> ($\mathbb{K}$)	17	<code>\textkmit{m}</code> (m)	181
<code>\textesh</code> (f)	20	<code>\texthtp</code> (β)	20	<code>\textkmit{O}</code> (O)	181
<code>\textesh</code> ($\mathbb{F}$)	17	<code>\texthtp</code> ($\mathbb{B}$)	17	<code>\textkmit{Q}</code> ($\mathbb{Q}$)	181
<code>\textestimated</code> (E)	27	<code>\texthtq</code> (q)	17	<code>\textkmit{q}</code> ($\mathbb{Q}$)	181
<code>\textEta</code> (H)	15	<code>\texthtrtaild</code> (d)	17	<code>\textkmit{R}</code> ($\mathbb{R}$)	181
<code>\texteta</code> (η)	15	<code>\texthtscg</code> (d)	17	<code>\textkmit{r}</code> ($\mathbb{R}$)	181
<code>\texteuro</code> (€)	26	<code>\texthtt</code> (f)	20	<code>\textkmit{S}</code> ($\mathbb{S}$)	181
<code>\texteuro</code> ($\mathbb{E}$)	25	<code>\texthtt</code> ($\mathbb{F}$)	17	<code>\textkmit{s}</code> ($\mathbb{S}$)	181
<code>\texteuro</code> ($\mathbb{E}$)	25, 228	<code>\texthvlig</code> (hv)	17	<code>\textkmit{T}</code> ($\mathbb{T}$)	181
<code>\textexclamdown</code>	14	<code>\textifsym</code>	121	<code>\textkmit{t}</code> (t)	181
<code>\textfallrise</code> ($\mathbb{F}$)	21	<code>\textinterrobang</code> ($\mathbb{I}$)	27	<code>\textkmit{U}</code> ($\mathbb{U}$)	181
<code>\textfemale</code> ($\mathbb{F}$)	18	<code>\textinterrobangdown</code> ($\mathbb{I}$)	27	<code>\textkmit{v}</code> (v)	181
<code>\textfishhookr</code> (r)	17	<code>\textinvglotstop</code> ($\mathbb{I}$)	17	<code>\textkmit{W}</code> ($\mathbb{W}$)	181
<code>\textfiveoldstyle</code> (5) ..	27	<code>\textinvomega</code> ($\mathbb{O}$)	18	<code>\textkmit{w}</code> (w)	181
<code>\textfjlig</code> (fi)	20	<code>\textinvsc</code> (v)	18	<code>\textkmit{X}</code> ($\mathbb{X}$)	181
<code>\textflorin</code> (f)	25	<code>\textinvscr</code> ($\mathbb{V}$)	17	<code>\textkmit{x}</code> (x)	181
<code>\textfouroldstyle</code> (4) ..	27	<code>\textinvscripta</code> ($\mathbb{A}$)	18	<code>\textkmit{Y}</code> ($\mathbb{Y}$)	181
<code>\textfractionsolidus</code> (/) ..	117	<code>\textinvsubbridge</code> ($\mathbb{B}$) ..	21	<code>\textkmit{y}</code> ($\mathbb{Y}$)	181
<code>\textfrak</code>	119	<code>\textlota</code> (I)	15	<code>\textkmit{Z}</code> ($\mathbb{Z}$)	181
<code>\textfrbarn</code> (n)	18	<code>\texttiota</code> (i)	20	<code>\textkmit{z}</code> (z)	181
<code>\textfrhookd</code> ($\mathbb{D}$)	18	<code>\texttiota</code> ($\mathbb{I}$)	15, 17	<code>\textLambda</code> (Λ)	15
<code>\textfrhookdvar</code> ($\mathbb{D}$)	18	<code>\textKappa</code> (K)	15	<code>\textlambda</code> (λ)	15, 17
<code>\textfrhookt</code> (t)	18	<code>\textkappa</code> ($\mathbb{K}$)	15	<code>\textlangle</code> ($\langle$)	101, 226
<code>\textfrtailgamma</code> (γ)	18	<code>\textkmit</code>	181	<code>\textlbrackdbl</code> ($\llbracket$)	101
<code>\textg</code> (g)	18	<code>\textkmit{2}</code> ($\mathbb{2}$)	181	<code>\textleaf</code> ($\mathbb{L}$)	169
<code>\textGamma</code> (Γ)	15	<code>\textkmit{3}</code> ($\mathbb{3}$)	181	<code>\textleftarrow</code> ($\leftarrow$)	70
<code>\textgamma</code> (γ)	15, 18	<code>\textkmit{4}</code> ($\mathbb{4}$)	181	<code>\textlengthmark</code> (:)	17
<code>\textglobfall</code> ($\mathbb{G}$)	18	<code>\textkmit{5}</code> ($\mathbb{5}$)	181	<code>\textless</code>	14
<code>\textglobrise</code> ($\mathbb{G}$)	18	<code>\textkmit{6}</code> ($\mathbb{6}$)	181	<code>\textless</code> (<)	225, 226
<code>\textglotstop</code> ($\mathbb{G}$)	17	<code>\textkmit{7}</code> ($\mathbb{7}$)	181	<code>\textlfblock</code> ($\mathbb{L}$)	178
<code>\textglotstopvari</code> (?) ..	18	<code>\textkmit{8}</code> ($\mathbb{8}$)	181	<code>\textlfishhookrlig</code> (f) ..	18
<code>\textglotstopvarii</code> (?) ..	18	<code>\textkmit{9}</code> ($\mathbb{9}$)	181	<code>\textlhbend</code> ($\mathbb{L}$)	169
<code>\textglotstopvariii</code> (?) ..	18	<code>\textkmit{"}</code> ($\mathbb{Q}$)	181	<code>\textlhookfour</code> (4)	18
<code>\textgoth</code>	119	<code>\textkmit{ }</code> ($\mathbb{Q}$)	181	<code>\textlhookp</code> (p)	18
<code>\textgravecircum</code> ($\mathbb{G}$) ..	21	<code>\textkmit{ }</code> ($\mathbb{Q}$)	181	<code>\textlhookt</code> (t)	17
<code>\textgravedbl</code> ($\mathbb{G}$)	24	<code>\textkmit{ }</code> ($\mathbb{Q}$)	181	<code>\textlhti</code> ($\mathbb{H}$)	18
<code>\textgravedot</code> ($\mathbb{G}$)	21	<code>\textkmit{ }</code> ($\mathbb{Q}$)	181	<code>\textlhtlongi</code> ($\mathbb{H}$)	17
<code>\textgravemacron</code> ($\mathbb{G}$) ..	21	<code>\textkmit{ }</code> ($\mathbb{Q}$)	181	<code>\textlhtlongy</code> ($\mathbb{H}$)	17
<code>\textgravemid</code> ($\mathbb{G}$)	21	<code>\textkmit{ }</code> ($\mathbb{Q}$)	181	<code>\textlinb</code>	146, 147
<code>\textgreater</code>	14	<code>\textkmit{ }</code> ($\mathbb{Q}$)	181	<code>\textlira</code> ($\mathbb{L}$)	25
<code>\textgreater</code> (>) ..	225, 226	<code>\textkmit{ }</code> ($\mathbb{Q}$)	181	<code>\textlnot</code> ($\mathbb{L}$)	117, 227
<code>textgreek</code> (package) 15, 91, 231, 232		<code>\textkmit{ }</code> ($\mathbb{Q}$)	181	<code>\textlongleg</code> (r)	17
<code>\textgrgamma</code> (γ)	18	<code>\textkmit{ }</code> ($\mathbb{Q}$)	181	<code>\textlooptoprevesh</code> (l) ..	18
<code>\textguarani</code> ($\mathbb{G}$)	25	<code>\textkmit{ }</code> ($\mathbb{Q}$)	181	<code>\textlowering</code> ($\mathbb{L}$)	21
<code>\texthalflength</code> ($\mathbb{H}$)	17	<code>\textkmit{ }</code> ($\mathbb{Q}$)	181	<code>\textlowrise</code> ($\mathbb{L}$)	21
<code>\texthardsign</code> ($\mathbb{H}$)	17	<code>\textkmit{ }</code> ($\mathbb{Q}$)	181	<code>\textlptr</code> ($\mathbb{L}$)	17
<code>\textheng</code> (h)	18	<code>\textkmit{ }</code> ($\mathbb{Q}$)	181	<code>\textlquill</code> (f)	101
<code>\texthighrise</code> ($\mathbb{H}$)	21	<code>\textkmit{ }</code> ($\mathbb{Q}$)	181	<code>\textltailm</code> (m)	17
<code>\texthmlig</code> (lm)	18	<code>\textkmit{ }</code> ($\mathbb{Q}$)	181	<code>\textltailn</code> (n)	20
<code>\texthooktop</code> ($\mathbb{H}$)	17	<code>\textkmit{ }</code> ($\mathbb{Q}$)	181	<code>\textltailn</code> ($\mathbb{H}$)	17
<code>\texthtb</code> ($\mathbb{H}$)	20	<code>\textkmit{ }</code> ($\mathbb{Q}$)	181	<code>\textltilde</code> ($\mathbb{H}$)	17
<code>\texthtb</code> ($\mathbb{H}$)	17	<code>\textkmit{ }</code> ($\mathbb{Q}$)	181	<code>\textltshade</code> ($\mathbb{H}$)	178
<code>\texthtbardotlessj</code> (f) ..	17	<code>\textkmit{ }</code> ($\mathbb{Q}$)	181	<code>\texttlyoghlig</code> (h)	17
<code>\texthtbardotlessjvar</code> (f) ..	18	<code>\textkmit{ }</code> ($\mathbb{Q}$)	181	<code>\textmarried</code> ($\mathbb{M}$)	169
<code>\texthtc</code> (c)	20	<code>\textkmit{ }</code> ($\mathbb{Q}$)	181		
<code>\texthtc</code> ($\mathbb{C}$)	17	<code>\textkmit{ }</code> ($\mathbb{Q}$)	181		
<code>\texthtd</code> (d)	20	<code>\textkmit{ }</code> ($\mathbb{Q}$)	181		
<code>\texthtd</code> ($\mathbb{D}$)	17	<code>\textkmit{ }</code> ($\mathbb{Q}$)	181		
<code>\texthtg</code> (g)	17	<code>\textkmit{ }</code> ($\mathbb{Q}$)	181		

<code>\textSFxliv</code> ($\frac{1}{4}$)	178	<code>\textthornvarii</code> (b)	18	<code>\textyogh</code> (ȝ)	20
<code>\textSFxlix</code> ($\frac{1}{2}$)	178	<code>\textthornvariii</code> (b)	18	<code>\textyogh</code> (ȝ)	18
<code>\textSFxlv</code> ($\frac{1}{2}$)	178	<code>\textthornvariv</code> (b)	18	<code>\textzerooldstyle</code> (o)	27
<code>\textSFxlvi</code> ($\frac{1}{2}$)	178	<code>\textthreeoldstyle</code> (3)	27	<code>\textZeta</code> (Z)	15
<code>\textSFxlvi</code> ($\frac{1}{2}$)	178	<code>\textthreequarters</code> ($\frac{3}{4}$)	117, 227	<code>\textzeta</code> (ζ)	15
<code>\textSFxlviii</code> ($\frac{1}{2}$)	178	<code>\textthreequartersemdash</code>		.tfm files	12, 191, 211, 229
<code>\textSFxx</code> ($\frac{1}{2}$)	178	(—)	27	tfruppee (package)	26, 231, 232
<code>\textSFxxi</code> ($\frac{1}{2}$)	178	<code>\textthreesuperior</code> (³)	117, 227	<code>\TH</code> (P)	15, 227
<code>\textSFxxii</code> ($\frac{1}{2}$)	178	<code>\texttildedot</code> ($\tilde{\cdot}$)	22	<code>\th</code> (b)	151
<code>\textSFxxiii</code> ($\frac{1}{2}$)	178	<code>\texttildelow</code> ($\sim$)	27, 226	<code>\th</code> (b)	15, 227
<code>\textSFxxiv</code> ($\frac{1}{2}$)	178	<code>\texttimes</code> (×)	117	Thành, Hàn Thê	219
<code>\textSFxxv</code> ($\frac{1}{2}$)	178	<code>\texttoneletterstem</code> (l)	17	<code>\therefore</code> (∴)	50
<code>\textSFxxvi</code> ($\frac{1}{2}$)	178	<code>\texttoptiebar</code> ($\overline{\hspace{.5em}}$)	22	<code>\therefore</code> (∴)	48, 111
<code>\textSFxxvii</code> ($\frac{1}{2}$)	178	<code>\texttrademark</code> (TM)	14, 26	<code>\therefore</code> (∴)	55
<code>\textSFxxviii</code> ($\frac{1}{2}$)	178	<code>\texttrademark</code> (TM)	14, 26, 228	<code>\therefore</code> (∴)	111
<code>\textSFxxxix</code> ($\frac{1}{2}$)	178	<code>\texttslig</code> (ts)	17	<code>\therefore</code> (∴)	111
<code>\textSFxxxvi</code> ($\frac{1}{2}$)	178	<code>\textturna</code> (v)	17	<code>\therefore</code> (∴)	112
<code>\textSFxxxvii</code> ($\frac{1}{2}$)	178	<code>\textturncelig</code> (æ)	17	<code>\Thermo</code>	171
<code>\textSFxxxviii</code> ($\frac{1}{2}$)	178	<code>\textturnglotstop</code> (l)	18	<code>\thermod</code> ($\pm$)	117
<code>\textshade</code> ($\blacksquare$)	178	<code>\textturnh</code> (u)	17	<code>\Theta</code> (Θ)	90
<code>\textSigma</code> (Σ)	15	<code>\textturnk</code> (x)	17	<code>\theta</code> (θ)	90
<code>\textsigma</code> (σ)	15	<code>\textturnlongleg</code> (l)	17	<code>\thetaup</code> (θ)	91
<code>\textsixoldstyle</code> (6)	27	<code>\textturnm</code> (u)	17	<code>\thething</code> (T)	170
<code>\textsoftsign</code> (ь)	17	<code>\textturnmrleg</code> (u)	17	<code>\thickapprox</code> ($\approx$)	48
<code>\textspleftarrow</code> (←)	18	<code>\textturnn</code> (i)	17	<code>\thickapprox</code> ($\approx$)	55
<code>\textsterling</code> (£)	14	<code>\textturnrrtail</code> (l)	17	<code>\thickapprox</code> ($\approx$)	53
<code>\textsterling</code> (£)	14, 25	<code>\textturnsck</code> (x)	18	<code>\thickapprox</code> ($\approx$)	56
<code>\textstretchc</code> (C)	17	<code>\textturnscripta</code> (v)	17	<code>\thicksim</code> ($\sim$)	48
<code>\textstretchcvar</code> (c)	18	<code>\textturnscu</code> (n)	18	<code>\thicksim</code> ($\sim$)	55
<code>\textstyle</code>	217, 218, 224	<code>\textturnt</code> (i)	17	<code>\thicksim</code> ($\sim$)	53
<code>\textsubacute</code> ($\acute{\hspace{.5em}}$)	21	<code>\textturnthree</code> (g)	18	<code>\thicksim</code> ($\sim$)	56
<code>\textsubarch</code> ($\frown$)	21	<code>\textturntwo</code> (z)	18	<code>\thickvert</code> ()	97
<code>\textsubbar</code> ($\overline{\hspace{.5em}}$)	21	<code>\textturnv</code> (A)	17	thin space	224
<code>\textsubbridge</code> ($\frown$)	21	<code>\textturnw</code> (M)	17	<code>\ThinFog</code> ($\blacksquare$)	171
<code>\textsubcircum</code> ($\circ$)	21	<code>\textturny</code> (A)	17	<code>\thinstar</code> (*)	35
<code>\textsubdot</code> ($\dot{\hspace{.5em}}$)	21	<code>\texttwelveudash</code> (—)	27	<code>\third</code> (///)	116
<code>\textsubdoublearrow</code> ($\leftrightarrow$)	18	<code>\texttwooldstyle</code>	27	thirty-second note	see musical symbols
<code>\textsubgrave</code> ($\grave{\hspace{.5em}}$)	21	<code>\texttwooldstyle</code> (2)	27	<code>\thirtysecondNote</code> (♩)	155
<code>\textsublhalfring</code> ($\frown$)	21	<code>\texttwosuperior</code> (²)	117, 227	<code>\thirtysecondNoteDotted</code> (♩.)	155
<code>\textsubplus</code> ($\plus$)	21	<code>\textuncrfemale</code> (o)	18	<code>\thirtysecondNoteDottedDouble</code>	
<code>\textsubrhalfring</code> ($\frown$)	21	<code>\textunderscore</code>	14	(♩.)	155
<code>\textsubbrightarrow</code> ($\rightarrow$)	18	<code>\textuparrow</code> (↑)	70	<code>\thirtysecondNoteDottedDoubleDown</code>	
<code>\textsubring</code> ($\circ$)	21	<code>\textupblock</code> ($\blacksquare$)	178	(♩.)	155
<code>\textsubsquare</code> ($\blacksquare$)	22	<code>\textupfullarrow</code> (↑)	18	<code>\thirtysecondNoteDottedDown</code>	
<code>\textsubtilde</code> ($\tilde{\hspace{.5em}}$)	22	<code>\textUpsilon</code> (Υ)	15	(♩.)	155
<code>\textsubumlaut</code> ($\umlaut$)	22	<code>\textupsilon</code> (υ)	15, 17	<code>\thirtysecondNoteDown</code> (♩)	155
<code>\textsubwedge</code> ($\wedge$)	22	<code>\textupstep</code> (↑)	17		155
<code>\textsuperimposetilde</code> ($\tilde{\hspace{.5em}}$)	22	<code>\textvbaraccent</code> ($\bar{\vee}$)	22	<code>\Thorn</code> (P)	19
<code>\textsuperscript</code>	23	$\bar{\vee}$	23	<code>\thorn</code> (p)	19
<code>\textsurd</code> (√)	117	<code>\textvbaraccent</code> ($\bar{\vee}$)	23	<code>\thorn</code> (p)	19
<code>\textswab</code>	119	<code>\textvline</code> ()	17	<code>\thorn</code> (p)	19
<code>\textsyllabic</code> (syllabic)	22	<code>\textvibyi</code> (i)	17	<code>\thorn</code> (p)	19
<code>\textTau</code> (T)	15	<code>\textvibyy</code> (u)	18	thousandths	see
<code>\texttau</code> (τ)	15	<code>\textvisiblespace</code>	14	<code>\textperthousand</code>	
<code>\texttctclig</code> (ṭc)	17	<code>\textwon</code> (₩)	25	<code>\threeBeamedQuavers</code> (♫)	155
<code>\textteshlig</code> (ṭ)	20	<code>\textwynn</code> (p)	18		155
<code>\textteshlig</code> (ṭ)	17	<code>\textXi</code> (Ξ)	15	<code>\threeBeamedQuaversI</code> (♫)	155
<code>\textTheta</code> (Θ)	15	<code>\textxi</code> (ξ)	15		155
<code>\texttheta</code> (θ)	15, 17	<code>\textxswdown</code> (⌵)	170	<code>\threeBeamedQuaversII</code>	
<code>\textthing</code> (T)	170	<code>\textxswup</code> (⌶)	170	(♫)	155
<code>\textthorn</code> (þ)	17	<code>\texttyen</code> (¥)	25, 227		
<code>\textthornvari</code> (b)	18				

<code>\threeBeamedQuaversIII</code> () 155	<code>\topsemicircle</code> ($\frown$) 138	<code>\triangleq</code> ($\triangleq$) 28, 67
<code>\threedangle</code> ($\angle$) 115	<code>torus</code> ($\mathbb{T}$) <i>see</i> alphabets, math	<code>\triangleq</code> ($\triangleq$) 55
<code>\threedotcolon</code> ($\vdots$) 33	<code>\tosa</code> ($\boxtimes$) 83	<code>\triangleq</code> ($\triangleq$) 69
<code>\threesim</code> ($\approx$) 216	<code>\ToTop</code> ($\Uparrow$) 169	<code>\triangleq</code> ($\triangleq$) 68
<code>thumb pizzicato</code> <i>see</i> <code>\lilyThumb</code>	<code>\towa</code> ($\boxtimes$) 83	<code>\triangleq</code> ($\triangleq$) 69
<code>tick</code> <i>see</i> check marks	<code>\tplus</code> (+) 33	<code>\TriangleRight</code> ($\triangleright$) 139
<code>\tieinfty</code> (∞) 114	<code>\TR</code> ($\wp$) 125	<code>\triangleright</code> ($\triangleright$) 67
<code>TikZ</code> (package) . 184–186, 190	trademark . . . 14, 26, 227, 228 registered . . . 14, 26, 227	<code>\triangleright</code> ($\triangleright$) 29
<code>tikzsymbols</code> (package) 184, 185, 231, 232	<code>\TransformHoriz</code> ($\circ\rightarrow$) . . 59	<code>\triangleright</code> ($\triangleright$) . . 69, 137
<code>tilde</code> 14, 17, 19, 21–22, 24, 27, 102, 104, 107, 219, 226 extensible 104, 107 vertically centered . . 226	transforms 59, 109	<code>\triangleright</code> ($\triangleright$) 68
<code>\tilde</code> ($\tilde$) 103	<code>\TransformVert</code> ($\updownarrow$) . . . 59	<code>\triangleright</code> ($\blacktriangleright$) 138
<code>\tilde</code> ($\tilde$) 102, 219	transliteration 20, 24 semitic 20, 24	<code>\triangleright</code> ($\triangleright$) . . 67
<code>\tildel</code> ($\dagger$) 19	transliteration symbols . . 20	<code>\triangleright</code> ($\triangleright$) . . 69
<code>time of day</code> 171, 172	transpose 29	<code>\triangleright</code> ($\triangleright$) . . 36, 69
<code>time signatures</code> 156	transversal intersection . . <i>see</i> <code>\pitchfork</code>	<code>\triangleright</code> ($\triangleright$) 68
<code>\timelimit</code> ($\oplus$) 174	<code>\trapezium</code> ($\square$) 138	<code>\triangleright</code> ($\blacktriangleright$) 138
<code>\times</code> ($\times$) 29	<code>\trebleclef</code> () 153	<code>\triangleright</code> ($\triangleright$) . . 67
<code>\times</code> ($\times$) 32	trees 184, 209	<code>\triangleright</code> ($\triangleright$) . . 69
<code>\times</code> ($\times$) 31	trema (¨) <i>see</i> accents	<code>\triangle</code> ($\triangle$) 115
<code>\times</code> ($\times$) 31	<code>trfsigns</code> (package) . 59, 94, 109, 231	<code>\triangle</code> ($\triangle$) 36, 69
<code>\times</code> ($\times$) 33	<code>\triangle</code> ($\triangle$) 115	<code>\triangle</code> ($\triangle$) 176
<code>Times Roman</code> (font) . 25, 213	<code>\triangle</code> ($\triangle$) 68	<code>\triangle</code> ($\triangle$) 37, 138
<code>\times</code> ($\times$) 31	<code>\triangle</code> ($\triangle$) 68	triangle relations 67–69
<code>\times</code> ($\times$) 33	<code>\triangle</code> ($\triangle$) 37, 138	<code>\triangle</code> ($\triangle$) 138
<code>timing</code> (package) 121	<code>\triangle</code> ($\triangle$) 37, 138	<code>\triangle</code> ($\triangle$) 139
<code>tipa</code> (package) . 17, 18, 20–23, 214, 231	<code>\triangle</code> ($\triangle$) 37, 138	<code>\triangle</code> ($\triangle$) 139
<code>tipx</code> (package) 18, 231	<code>\triangle</code> ($\triangle$) 37, 138	<code>\triangle</code> ($\triangle$) 139
<code>\Tmesonminus</code> (T^-) 129	<code>\triangle</code> ($\triangle$) 37, 138	<code>\triangle</code> ($\triangle$) 139
<code>\Tmesonnull</code> (T^0) 129	<code>\triangle</code> ($\triangle$) 37, 138	<code>\triangle</code> ($\triangle$) 139
<code>\Tmesonplus</code> (T^+) 129	<code>\triangle</code> ($\triangle$) 37, 138	<code>\triangle</code> ($\triangle$) 139
<code>\tminus</code> ($-$) 33	<code>\triangle</code> ($\triangle$) 37, 138	<code>\triangle</code> ($\triangle$) 139
<code>\tndtstile</code> () 58	<code>\triangle</code> ($\triangle$) 37, 138	<code>\triangle</code> ($\triangle$) 139
<code>\tnststile</code> () 58	<code>\triangle</code> ($\triangle$) 37, 138	<code>\triangle</code> ($\triangle$) 139
<code>\tntstile</code> () 58	<code>\triangle</code> ($\triangle$) 37, 138	<code>\triangle</code> ($\triangle$) 139
<code>\tnttstile</code> () 58	<code>\triangle</code> ($\triangle$) 37, 138	<code>\triangle</code> ($\triangle$) 139
<code>\to</code> <i>see</i> <code>\rightarrow</code>	<code>\triangle</code> ($\triangle$) 37, 138	<code>\triangle</code> ($\triangle$) 139
<code>\to</code> ($\rightarrow$) 77	<code>\triangle</code> ($\triangle$) 37, 138	<code>\triangle</code> ($\triangle$) 139
<code>\ToBottom</code> ($\Downarrow$) 169	<code>\triangle</code> ($\triangle$) 37, 138	<code>\triangle</code> ($\triangle$) 139
<code>\toea</code> ($\boxtimes$) 83	<code>\triangle</code> ($\triangle$) 37, 138	<code>\triangle</code> ($\triangle$) 139
<code>\tona</code> ($\boxtimes$) 83	<code>\triangle</code> ($\triangle$) 37, 138	<code>\triangle</code> ($\triangle$) 139
<code>\tone</code> 18	<code>\triangle</code> ($\triangle$) 37, 138	<code>\triangle</code> ($\triangle$) 139
<code>\Tongey</code> (⊗) 184	<code>\triangle</code> ($\triangle$) 37, 138	<code>\triangle</code> ($\triangle$) 139
<code>\top</code> ($\top$) 29, 93, 217	<code>\triangle</code> ($\triangle$) 37, 138	<code>\triangle</code> ($\triangle$) 139
<code>\top</code> ($\top$) 94	<code>\triangle</code> ($\triangle$) 37, 138	<code>\triangle</code> ($\triangle$) 139
<code>\top</code> ($\top$) 93	<code>\triangle</code> ($\triangle$) 37, 138	<code>\triangle</code> ($\triangle$) 139
<code>\top</code> ($\top$) 94	<code>\triangle</code> ($\triangle$) 37, 138	<code>\triangle</code> ($\triangle$) 139
<code>\topborder</code> ($\top$) 176	<code>\triangle</code> ($\triangle$) 37, 138	<code>\triangle</code> ($\triangle$) 139
<code>\topbot</code> ($\top$) 217, 218	<code>\triangle</code> ($\triangle$) 37, 138	<code>\triangle</code> ($\triangle$) 139
<code>\topbot</code> ($\top$) 94	<code>\triangle</code> ($\triangle$) 37, 138	<code>\triangle</code> ($\triangle$) 139
<code>\Topbottomheat</code> ($\square$) 183	<code>\triangle</code> ($\triangle$) 37, 138	<code>\triangle</code> ($\triangle$) 139
<code>\topcir</code> ($\circ$) 117	<code>\triangle</code> ($\triangle$) 37, 138	<code>\triangle</code> ($\triangle$) 139
<code>\topdoteq</code> ($\doteq$) 50	<code>\triangle</code> ($\triangle$) 37, 138	<code>\triangle</code> ($\triangle$) 139
<code>\topfork</code> (⋈) 55	<code>\triangle</code> ($\triangle$) 37, 138	<code>\triangle</code> ($\triangle$) 139
<code>\topfork</code> (⋈) 56	<code>\triangle</code> ($\triangle$) 37, 138	<code>\triangle</code> ($\triangle$) 139
<code>\Topheat</code> ($\square$) 183	<code>\triangle</code> ($\triangle$) 37, 138	<code>\triangle</code> ($\triangle$) 139

<code>\ttststile</code> ()	58	<code>\typecolon</code> (8)	33	<code>\underbrace</code> ()	106
<code>\tttstile</code> ()	58	Type 1 (font)	223	<code>\underbrace</code> ()	105
<code>\ttttstile</code> ()	58			<code>\underbrace</code> ()	105
<code>TUGboat</code>	104, 233	U		<code>\underbrace</code> ()	106
<code>\Tumbler</code> ()	170	<code>U</code> (Λ)	151	<code>\underbrace</code> ()	105
<code>\turn</code> ()	153	<code>\U</code> ()	24	<code>\underbrace</code> ()	104
<code>\turnangle</code> ($\angle$)	115	<code>\U</code> ()	20	<code>\underbrace</code> ()	106
<code>\turnedbackneg</code> ($\neg$)	116	<code>\u</code> ()	20	<code>\underbrace</code> ()	106
<code>\turnediota</code> (ι)	92	<code>u</code> ($\mathbb{N}$)	151	<code>\underbrace</code> ()	105
<code>\turnedneg</code> ($\neg$)	116	<code>\UA</code> ($\uparrow$)	125	<code>\underbrace</code> ()	104
<code>\turnednot</code> ($\neg$)	117	<code>\UArrow</code> ()	125	<code>\underbrace</code> ()	106
<code>turnstile</code> (package)	58, 231	<code>\UB</code> ($\rightarrow$)	154	<code>\underbrace</code> ()	105
<code>\TwelveStar</code> ()	135	<code>\ubar</code> ($\mathfrak{u}$)	19	<code>\underbrace</code> ()	105
<code>twiddle</code>	<i>see</i> tilde	<code>\ubarbbrevis</code> ($\mathfrak{u}$)	177	<code>\underbrace</code> ()	106
<code>\twoBeamedQuavers</code> ()	155	<code>\ubarbrevis</code> ($\mathfrak{u}$)	177	<code>\underbrace</code> ()	105
<code>\twocaps</code> ($\mathfrak{m}$)	33	<code>\ubarsbrevis</code> ($\mathfrak{u}$)	177	<code>\underbrace</code> ()	105
<code>\twocups</code> ($\mathfrak{u}$)	33	<code>\ubrbrak</code> ($\mathfrak{u}$)	117	<code>\underbrace</code> ()	105
<code>\twoheaddownarrow</code> ($\downarrow$)	81	<code>\ubrevislonga</code> ($\mathfrak{u}$)	177	<code>\underbrace</code> ()	105
<code>\twoheaddownarrow</code> ($\downarrow$)	76	<code>ubulb.fd</code> (file)	223	<code>\underbrace</code> ()	105
<code>\twoheaddownarrow</code> ($\downarrow$)	72	<code>ucs</code> (package)	229	<code>\underbrace</code> ()	105
<code>\twoheaddownarrow</code> ($\downarrow$)	83	<code>\udesc</code> ($\mathfrak{u}$)	19	<code>\underbrace</code> ()	105
<code>\twoheadleftarrow</code> ($\leftarrow$)	70	<code>udingbat.fd</code> (file)	199	<code>\underbrace</code> ()	105
<code>\twoheadleftarrow</code> ($\leftarrow$)	81	<code>\udot</code> ($\cdot$)	30	<code>\underbrace</code> ()	105
<code>\twoheadleftarrow</code> ($\leftarrow$)	76	<code>\udotdot</code> ($\cdot\cdot$)	31, 111	<code>\underbrace</code> ()	105
<code>\twoheadleftarrow</code> ($\leftarrow$)	73	<code>\udotdot</code> ($\cdot\cdot$)	31, 111	<code>\underbrace</code> ()	105
<code>\twoheadleftarrow</code> ($\leftarrow$)	83	<code>\udots</code> ($\cdot\cdot\cdot$)	111	<code>\underbrace</code> ()	105
<code>\twoheadleftarrowtail</code> ($\leftarrowtail$)	83	<code>\udots</code> ($\cdot\cdot\cdot$)	111	<code>\underbrace</code> ()	105
<code>\twoheadleftdbkarrow</code> ($\leftarrowtail$)	83	<code>\udtimes</code> ($\mathfrak{x}$)	33	<code>\underbrace</code> ()	105
<code>\twoheadmapsfrom</code> ($\mapsto$)	83	<code>\UHORN</code> ($\mathfrak{U}$)	16	<code>\underbrace</code> ()	105
<code>\twoheadmapsto</code> ($\mapsto$)	83	<code>\uhorn</code> ($\mathfrak{u}$)	16	<code>\underbrace</code> ()	105
<code>\twoheadnearrow</code> ($\nearrow$)	76	<code>\ularc</code> ($\mathfrak{r}$)	117	<code>\underbrace</code> ()	105
<code>\twoheadnearrow</code> ($\nearrow$)	73	<code>\ulblacktriangle</code> ($\blacktriangle$)	138	<code>\underbrace</code> ()	105
<code>\twoheadnarrow</code> ($\nwarrow$)	76	<code>\ulcorner</code> ($\ulcorner$)	95	<code>\underbrace</code> ()	105
<code>\twoheadnarrow</code> ($\nwarrow$)	73	<code>\ulcorner</code> ($\ulcorner$)	95	<code>\underbrace</code> ()	105
<code>\twoheadnarrow</code> ($\nwarrow$)	73	<code>\ulcorner</code> ($\ulcorner$)	95	<code>\underbrace</code> ()	105
<code>\twoheadrightarrow</code> ($\rightarrow$)	70	<code>\ulcorner</code> ($\ulcorner$)	98	<code>\underbrace</code> ()	105
<code>\twoheadrightarrow</code> ($\rightarrow$)	81	<code>\ulcorner</code> ($\ulcorner$)	97	<code>\underbrace</code> ()	105
<code>\twoheadrightarrow</code> ($\rightarrow$)	76	<code>\ulcorner</code> ($\ulcorner$)	95	<code>\underbrace</code> ()	105
<code>\twoheadrightarrow</code> ($\rightarrow$)	73	<code>\ulcorner</code> ($\ulcorner$)	95	<code>\underbrace</code> ()	105
<code>\twoheadrightarrow</code> ($\rightarrow$)	83	<code>\ulcorner</code> ($\ulcorner$)	98	<code>\underbrace</code> ()	105
<code>\twoheadrightarrowtail</code> ($\rightarrowtail$)	83	<code>\ulcorner</code> ($\ulcorner$)	97	<code>\underbrace</code> ()	105
<code>\twoheadsearrow</code> ($\searrow$)	76	<code>\ulcorner</code> ($\ulcorner$)	97	<code>\underbrace</code> ()	105
<code>\twoheadsearrow</code> ($\searrow$)	73	<code>\ulcorner</code> ($\ulcorner$)	97	<code>\underbrace</code> ()	105
<code>\twoheadswarrow</code> ($\swarrow$)	76	<code>\ulcorner</code> ($\ulcorner$)	98	<code>\underbrace</code> ()	105
<code>\twoheadswarrow</code> ($\swarrow$)	73	<code>\ulcorner</code> ($\ulcorner$)	97	<code>\underbrace</code> ()	105
<code>\twoheaduparrow</code> ($\uparrow$)	81	<code>\ulcorner</code> ($\ulcorner$)	97	<code>\underbrace</code> ()	105
<code>\twoheaduparrow</code> ($\uparrow$)	76	<code>\ulcorner</code> ($\ulcorner$)	97	<code>\underbrace</code> ()	105
<code>\twoheaduparrow</code> ($\uparrow$)	73	<code>\ulcorner</code> ($\ulcorner$)	97	<code>\underbrace</code> ()	105
<code>\twoheaduparrow</code> ($\uparrow$)	83	<code>\ulcorner</code> ($\ulcorner$)	97	<code>\underbrace</code> ()	105
<code>\twoheaduparrowcircle</code> ($\uparrow$)	83	<code>\ulcorner</code> ($\ulcorner$)	97	<code>\underbrace</code> ()	105
<code>\twoheadwhiteuparrow</code> ($\uparrow$)	81	<code>\ulcorner</code> ($\ulcorner$)	97	<code>\underbrace</code> ()	105
<code>\twoheadwhiteuparrowpedestal</code> ($\uparrow$)	81	<code>\ulcorner</code> ($\ulcorner$)	97	<code>\underbrace</code> ()	105
<code>\twonotes</code> ()	152	<code>\ulcorner</code> ($\ulcorner$)	97	<code>\underbrace</code> ()	105
<code>\twonotes</code> ()	152	<code>\ulcorner</code> ($\ulcorner$)	97	<code>\underbrace</code> ()	105
<code>txfonts</code> (package)	28, 30, 41, 49, 60, 63, 71, 88, 91–93, 115, 119, 140, 211, 213, 226, 231	<code>\ulcorner</code> ($\ulcorner$)	97	<code>\underbrace</code> ()	105
<code>typelcm</code> (package)	211	<code>\ulcorner</code> ($\ulcorner$)	97	<code>\underbrace</code> ()	105

<code>\underscriptrightarrow</code> ($\underset{\sim}{\rightarrow}$)	<code>\Updownarrow</code> ($\Updownarrow$)	<code>\upharpoonright</code> ($\upharpoonright$)
..... 109	 70, 96	 75
<code>\underset</code>	<code>\Updownarrow</code> ($\Updownarrow$)	<code>\upharpoonleft</code> ($\upharpoonleft$)
215	 76	 72
<code>undertilde</code> (package) .	<code>\Updownarrow</code> ($\Updownarrow$)	<code>\upharpoonleft</code> ($\upharpoonleft$)
107, 231	 99	 70
<code>\undertilde</code> ($\sim$)	<code>\Updownarrow</code> ($\Updownarrow$)	<code>\upharpoonleft</code> ($\upharpoonleft$)
..... 24	 73	 81
<code>\underwedge</code> ($\wedge$)	<code>\Updownarrow</code> ($\Updownarrow$)	<code>\upharpoonleft</code> ($\upharpoonleft$)
..... 24	 83	 79
Unicode ...	<code>\Updownarrow</code> ($\Updownarrow$)	<code>\upharpoonleft</code> ($\upharpoonleft$)
12, 178, 228–230	 100	 84
<code>union</code>	<code>\updownarrow</code> ($\updownarrow$)	<code>\upharpoonleftbar</code> ($\upharpoonleftbar$)
<i>see</i> <code>\cup</code>	 70, 96	 84
<code>unit disk</code> ($\mathbb{D}$) ..	<code>\updownarrow</code> ($\updownarrow$)	<code>\upharpoonright</code> ($\upharpoonright$)
<i>see</i> alphabets,	 99	 72
math	<code>\updownarrow</code> ($\updownarrow$)	<code>\upharpoonright</code> ($\upharpoonright$)
<code>\unitedpawns</code> ($\circ\circ$)	 76	 70
..... 174	<code>\updownarrow</code> ($\updownarrow$)	<code>\upharpoonright</code> ($\upharpoonright$)
<code>units</code> (package)	 73	 81
..... 117	<code>\updownarrow</code> ($\updownarrow$)	<code>\upharpoonrightbar</code> ($\upharpoonrightbar$)
<code>unity</code> ($\mathbb{1}$)	 85	 79
<i>see</i> alphabets, math	<code>\updownarrow</code> ($\updownarrow$)	 84
<code>universa</code> (package) ..	<code>\updownarrow</code> ($\updownarrow$)	<code>\upharpoonright</code> ($\upharpoonright$)
140, 170,	 100	 84
231	<code>\updownarrow</code> ($\updownarrow$)	<code>\upharpoonright</code> ($\upharpoonright$)
<code>\unlhd</code> ($\triangleleft$)	<code>\updownarrow</code> ($\updownarrow$)	<code>\upin</code> ($\upin$)
..... 29, 30	 83	 56
<code>\unlhd</code> ($\triangleleft$)	<code>\updownarrowbar</code> ($\updownarrowbar$)	<code>upint</code> (stix package option)
..... 66	 81	38,
<code>\unlhd</code> ($\triangleleft$)	<code>\updownarrowbar</code> ($\updownarrowbar$)	45, 47
..... 64, 68	 83	<code>\upint</code> ($\int$)
<code>\unlhd</code> ($\triangleleft$)	<code>\updownarrowbar</code> ($\updownarrowbar$)	 45
..... 33	 71	<code>\upintsl</code> ($\int$)
<code>\unrhd</code> ($\triangleright$)	<code>\updownarrowbar</code> ($\updownarrowbar$)	 47
..... 29, 30	 76	<code>\upintup</code> ($\int$)
<code>\unrhd</code> ($\triangleright$)	<code>\updownarrowbar</code> ($\updownarrowbar$)	 47
..... 66	 73	<code>\upiota</code> (ι)
<code>\unrhd</code> ($\triangleright$)	<code>\updownarrowbar</code> ($\updownarrowbar$)	 91
..... 64, 68	 83	<code>\upkappa</code> (κ)
<code>\unrhd</code> ($\triangleright$)	<code>\updownarrowblackarrow</code> ($\blacktriangleright$)	 91
..... 33	 81	<code>\Uplambda</code> (Λ)
<code>\upalpha</code> (α)	<code>\updownarrowcurvearrow</code> ($\curvearrowright$)	 91
..... 91	 77	<code>\uplambda</code> (λ)
<code>\upand</code> ($\mathfrak{A}$)	<code>\updownharpoonleftleft</code> ($\leftarrowleftarrow$)	 91
..... 33	 84	<code>\uplcurvearrow</code> ($\curvearrowleft$)
<code>\UParrow</code> ($\Uparrow$)	<code>\updownharpoonleftright</code> ($\leftarrowrightarrow$)	 77
..... 169	 79	<code>\upleftcurvedarrow</code> ($\curvearrowleft$)
<code>\Uparrow</code> ($\Uparrow$)	<code>\updownharpoonleftright</code> ($\leftarrowrightarrow$)	 77
..... 70, 96	 75	<code>\uplett</code>
<code>\Uparrow</code> ($\Uparrow$)	<code>\updownharpoonleftright</code> ($\leftarrowrightarrow$)	 23
..... 76	 84	<code>\uplsquigarrow</code> ($\rightsquigarrow$)
<code>\Uparrow</code> ($\Uparrow$)	<code>\updownharpoonrightleft</code> ($\rightarrowleftarrow$)	 77
..... 98	 79	<code>\uplsquigarrow</code> ($\rightsquigarrow$)
<code>\Uparrow</code> ($\Uparrow$)	<code>\updownharpoonrightleft</code> ($\rightarrowleftarrow$)	 73
..... 73	 84	<code>\uplus</code> ($\uplus$)
<code>\Uparrow</code> ($\Uparrow$)	<code>\updownharpoonrightright</code> ($\rightarrowrightarrow$)	 30
..... 83	 84	<code>\uplus</code> ($\uplus$)
<code>\Uparrow</code> ($\Uparrow$)	<code>\updownharpoons</code> ($\updownharpoons$)	 29
..... 100	 72	<code>\uplus</code> ($\uplus$)
<code>\uparrow</code> ($\uparrow$)	<code>\updownharpoons</code> ($\updownharpoons$)	 32
..... 70, 96, 211	 79	<code>\uplus</code> ($\uplus$)
<code>\uparrow</code> ($\uparrow$)	<code>\updownharpoons</code> ($\updownharpoons$)	 31
..... 98	 75	<code>\uplus</code> ($\uplus$)
<code>\uparrow</code> ($\uparrow$)	<code>\updownharpoons</code> ($\updownharpoons$)	 33
..... 76	 79	<code>\Upparrow</code> ($\Upparrow$)
<code>\uparrow</code> ($\uparrow$)	<code>\updownharpoons</code> ($\updownharpoons$)	 76
..... 73	 84	<code>\Upparrow</code> ($\Upparrow$)
<code>\uparrow</code> ($\uparrow$)	<code>\updownharpoons</code> ($\updownharpoons$)	 76
..... 85	 84	<code>\Upparrow</code> ($\Upparrow$)
<code>\uparrow</code> ($\uparrow$)	<code>\updownharpoons</code> ($\updownharpoons$)	 73
..... 100	 84	<code>\upModels</code> ($\underline{\mathbb{M}}$)
<code>\uparrow</code> ($\uparrow$)	<code>\updownharpoons</code> ($\updownharpoons$)	 51
..... 83	 72	<code>\upmodels</code> ($\models$)
<code>\uparrowbarred</code> ($\bar{\uparrow}$)	<code>\updownharpoons</code> ($\updownharpoons$)	 53
..... 83	 75	<code>\upmodels</code> ($\models$)
<code>\uparrowbarred</code> ($\bar{\uparrow}$)	<code>\updownharpoons</code> ($\updownharpoons$)	 51
..... 83	 79	<code>\upmu</code> (μ)
<code>\uparrowbarred</code> ($\bar{\uparrow}$)	<code>\updownharpoons</code> ($\updownharpoons$)	 91
..... 138	 84	<code>\upnu</code> (ν)
<code>\uparrowtail</code> ($\uparrowtail$)	<code>\updownharpoons</code> ($\updownharpoons$)	 91
..... 76	 84	<code>\Upomega</code> (Ω)
<code>\uparrowtail</code> ($\uparrowtail$)	<code>\updownharpoons</code> ($\updownharpoons$)	 91
..... 73	 84	<code>\upomega</code> (ω)
<code>\upAssert</code> ($\perp$)	<code>\updownharpoons</code> ($\updownharpoons$)	 91
..... 53	 84	<code>\upp</code> ($\wedge$)
<code>\upassert</code> ($\perp$)	<code>\updownharpoons</code> ($\updownharpoons$)	 24
..... 53	 84	<code>\upparenthfill</code>
<code>\upbackepsilon</code> (ϵ)	<code>\updownharpoons</code> ($\updownharpoons$)	 220
..... 92	 84	<code>\Upphi</code> (Φ)
<code>\upbar</code>	 84	 91
..... 23	 84	<code>\upphi</code> (ϕ)
<code>\upbeta</code> (β)	 84	 91
..... 91	 84	<code>\Uppi</code> (Π)
<code>\upbkarrow</code> ($\Updownarrow$)	 84	 91
..... 76	 84	<code>\uppi</code> (π)
<code>\upblackarrow</code> ($\blacktriangleright$)	 84	 91
..... 81	 84	<code>\uppitchfork</code> ($\pitchfork$)
<code>\upblackspoon</code> ($\upspoon$)	 84	 88
..... 87	 84	<code>\uppitchfork</code> ($\pitchfork$)
<code>\upbow</code> ($\bowtie$)	 84	 86
..... 153	 84	<code>\uppropto</code> ($\propto$)
<code>\upbowtie</code> ($\bowtie$)	 84	 51
..... 31, 32	 84	<code>\Uppsi</code> (Ψ)
<code>\upbracketfill</code>	 84	 91
..... 220	 84	<code>\uppsi</code> (ψ)
<code>\upchi</code> (χ)	 84	 91
..... 91	 84	<code>upquote</code> (package)
<code>\updasharrow</code> ($\dashrightarrow$)	 84	 226
..... 81	 84	<code>\uprcurvearrow</code> ($\curvearrowright$)
<code>\updasharrow</code> ($\dashrightarrow$)	 84	 77
..... 83	 84	<code>\uprho</code> (ρ)
<code>\Udelta</code> (Δ)	 84	 91
..... 91	 84	<code>upright Greek letters</code> ..
<code>\Udelta</code> (δ)	 84	15, 91
..... 91	 84	<code>\uprightcurvedarrow</code> ($\curvearrowright$)
	 84	 77
	 84	<code>\uprightcurvedarrow</code> ($\curvearrowright$)
	 84	 83
	 84	<code>\uprsquigarrow</code> ($\rightsquigarrow$)
	 84	 77

<code>\varmapsto</code> ($\mapsto$)	85	<code>\varpiup</code> (ϖ)	91	<code>\varswarrow</code> ($\swarrow$)	85
<code>\varmathbb</code>	119	<code>\varPluto</code> ($\mathbb{P}$)	124	<code>\VarTaschenuhr</code> ()	171
<code>\varmodtwosum</code> ($\sum$)	44	<code>\varprod</code> ($\times$)	41	<code>\varTerra</code> (δ)	124
<code>\varMoon</code> ($\mathbb{C}$)	124	<code>\varprod</code> ($\prod$)	44	<code>\vartheta</code> (ϑ)	90
<code>\VarMountain</code> ($\blacktriangle$)	171	<code>\varprojlim</code> ($\varprojlim$)	85, 89	<code>\vartheta</code> (ϑ)	92
<code>\varnearrow</code> ($\nearrow$)	85	<code>\varpropto</code> ($\propto$)	48	<code>\vartheta</code> (ϑ)	92
<code>\varniobar</code> (Ξ)	56	<code>\varpropto</code> ($\propto$)	55	<code>\vartheta</code> (ϑ)	92
<code>\varnis</code> ($\ni$)	55	<code>\varpropto</code> ($\propto$)	53	<code>\vartheta</code> (ϑ)	92
<code>\varnis</code> ($\ni$)	56	<code>\varpropto</code> ($\propto$)	51	<code>\vartheta</code> (ϑ)	92
<code>\varnothing</code> ($\emptyset$)	28, 115	<code>\varpropto</code> ($\propto$)	56	<code>\vartheta</code> (ϑ)	92
<code>\varnothing</code> ($\emptyset$)	117	<code>\varrho</code> (ϱ)	90	<code>\vartheta</code> (ϑ)	92
<code>\varnothing</code> ($\emptyset$)	116	<code>\varrho</code> (ϱ)	92	<code>\vartheta</code> (ϑ)	92
<code>\varnothing</code> ($\emptyset$)	116	<code>\varrho</code> (ϱ)	91	<code>\vartheta</code> (ϑ)	92
<code>\varnothing</code> ($\emptyset$)	114	<code>\varrho</code> (ϱ)	92	<code>\vartheta</code> (ϑ)	92
<code>\varnotin</code> ($\notin$)	93	<code>\varrho</code> (ϱ)	91	<code>\vartheta</code> (ϑ)	92
<code>\varnotowner</code> ($\ni$)	93	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varnwarrow</code> ($\nwarrow$)	85	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varoast</code> ($\otimes$)	29	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varobar</code> ($\oslash$)	29	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varobslash</code> ($\oslash$)	29	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varocircle</code> ($\odot$)	29	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varodot</code> ($\odot$)	29	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varogreatherthan</code> ($\ominus$)	29	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varoiintclockwise</code> ($\oint$)	41	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varoiintctrckwise</code> ($\oint$)	41	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varoiint</code> ($\oint$)	42	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varoiintclockwise</code> ($\oint$)	41	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varoiintctrckwise</code> ($\oint$)	41	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varoint</code> ($\oint$)	39	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varointclockwise</code> ($\oint$)	41	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varointclockwise</code> ($\oint$)	42	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varointclockwise</code> ($\oint$)	44	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varointclockwise</code> ($\oint$)	45	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varointclockwise</code> ($\oint$)	46	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varointclockwise</code> ($\oint$)	46	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varointctrckwise</code> ($\oint$)	41	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varointctrckwise</code> ($\oint$)	42	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varointctrckwise</code> ($\oint$)	44	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varolessthan</code> ($\ominus$)	29	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varomega</code> (ω)	19	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varominus</code> ($\ominus$)	29	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varopeno</code> ($\circ$)	19	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varoplus</code> ($\oplus$)	29	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varoslash</code> ($\oslash$)	29	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varosum</code> ($\sum$)	44	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varotimes</code> ($\otimes$)	29	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varovee</code> ($\vee$)	29	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varowedge</code> ($\wedge$)	29	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varparallel</code> ($\parallel$)	49	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varparallelin</code> ($\parallel$)	49	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varpartialdiff</code> (∂)	95	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varphi</code> (φ)	90	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varphi</code> (φ)	92	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varphi</code> (φ)	92	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varphiup</code> (φ)	91	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varphoton</code> ($\text{\textsf{f}}$)	129	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varpi</code> (ϖ)	90	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varpi</code> (ϖ)	92	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varpi</code> (ϖ)	91	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92
<code>\varpi</code> (ϖ)	92	<code>\varrightarrow</code> ($\rightarrow$)	85	<code>\vartheta</code> (ϑ)	92

<code>\vDash</code> ($\models$)	48
<code>\vDash</code> ($\models$)	55
<code>\vDash</code> ($\models$)	53
<code>\vDash</code> ($\models$)	51
<code>\vDash</code> ($\models$)	57
<code>\vdash</code> ($\vdash$)	48
<code>\vdash</code> ($\vdash$)	53
<code>\vdash</code> ($\vdash$)	51
<code>\vdash</code> ($\vdash$)	56
<code>\vdash</code> ($\models$)	53
<code>\vdash</code> ($\models$)	57
<code>\vdots</code> ($\vdots$)	31, 111
<code>\vdots</code> ($\vdots$)	31, 111
<code>\vdots</code> ($\vdots$)	112
<code>\vdots</code> ($\vdots$)	110
<code>\vdots</code> ($\vdots$)	31
<code>\vdots</code> ($\vdots$)	111
<code>\vdots</code> ($\vdots$)	57
<code>\vec</code> ($\vec$)	103
<code>\vec</code> ($\vec$)	103
<code>\vec</code> ($\vec$)	102
<code>\vec</code> ($\vec$)	103
<code>\vec</code> ($\vec$)	102
<code>\vectimes</code> ($\times$)	33
<code>\Vee</code> ($\vee$)	32
<code>\Vee</code> ($\vee$)	33
<code>\vee</code> ($\vee$)	30
<code>\vee</code> ($\vee$)	29
<code>\vee</code> ($\vee$)	32
<code>\vee</code> ($\vee$)	31, 32
<code>\vee</code> ($\vee$)	31
<code>\vee</code> ($\vee$)	33
<code>\veebar</code> ($\veebar$)	30
<code>\veebar</code> ($\veebar$)	29
<code>\veebar</code> ($\veebar$)	32
<code>\veebar</code> ($\veebar$)	31
<code>\veebar</code> ($\veebar$)	33
<code>\veedot</code> ($\veedot$)	32
<code>\veedot</code> ($\veedot$)	31
<code>\veedot</code> ($\veedot$)	33
<code>\veedoublebar</code> ($\veedoublebar$)	30
<code>\veedoublebar</code> ($\veedoublebar$)	32
<code>\veedoublebar</code> ($\veedoublebar$)	33
<code>\veeeq</code> ($\equiv$)	55
<code>\veeeq</code> ($\equiv$)	53
<code>\veeeq</code> ($\equiv$)	57
<code>\veemidvert</code> ($\veemidvert$)	33
<code>\veeodot</code> ($\veeodot$)	33
<code>\veeonvee</code> ($\veeonvee$)	32
<code>\veeonvee</code> ($\veeonvee$)	32
<code>\veeonvee</code> ($\veeonvee$)	33
<code>\veeonwedge</code> ($\veeonwedge$)	57
<code>\Venus</code> ($\text{\textcircled{V}}$)	123
<code>\Venus</code> ($\text{\textcircled{V}}$)	124
<code>\Venus</code> ($\text{\textcircled{V}}$)	122
<code>\venus</code> ($\text{\textcircled{v}}$)	122
<code>\vernal</code> ($\text{\textcircled{V}}$)	122
<code>versicle</code> ($\text{\textcircled{V}}$)	229, 230
<code>\VERT</code> ($\text{\textcircled{V}}$)	101
<code>\Vert</code> ($\text{\textcircled{V}}$)	96, 98

<code>\Vert</code> ($\text{\textcircled{V}}$)	99
<code>\Vert</code> ($\text{\textcircled{V}}$)	99
<code>\Vert</code> ($\text{\textcircled{V}}$)	100
<code>\vert</code> ($\text{\textcircled{V}}$)	96, 98
<code>\vert</code> ($\text{\textcircled{V}}$)	99
<code>\vert</code> ($\text{\textcircled{V}}$)	99
<code>\vert</code> ($\text{\textcircled{V}}$)	100
<code>\vertbowtie</code> ($\text{\textcircled{V}}$)	31
<code>\vertdiv</code> ($\text{\textcircled{V}}$)	31
<code>\Vertex</code> ($\text{\textcircled{V}}$)	124
<code>\vertoverlay</code> ($\text{\textcircled{V}}$)	57
<code>\Vesta</code> ($\text{\textcircled{V}}$)	124
<code>\VHF</code> ($\text{\textcircled{V}}$)	121
<code>\Vier</code> ($\text{\textcircled{V}}$)	154
<code>vietnam</code> (package)	231
<code>\viewdata</code> ($\text{\textcircled{V}}$)	117
<code>\Village</code> ($\text{\textcircled{V}}$)	171
<code>\vin</code> ($\text{\textcircled{V}}$)	95
<code>vinculum</code>	<i>see</i> <code>\overline</code>
<code>\ViPa</code> ($\text{\textcircled{V}}$)	154
<code>virga</code>	<i>see</i> <code>musixgre</code>
<code>\Virgo</code> ($\text{\textcircled{V}}$)	124
<code>\Virgo</code> ($\text{\textcircled{V}}$)	122
<code>\virgo</code> ($\text{\textcircled{V}}$)	122
<code>\vlongdash</code> ($\text{\textcircled{V}}$)	53
<code>\vlongdash</code> ($\text{\textcircled{V}}$)	57
<code>\VM</code> ($\text{\textcircled{V}}$)	154
<code>vntex</code> (package)	16, 20
<code>\vod</code> ($\text{\textcircled{V}}$)	19
<code>\voicedh</code> ($\text{\textcircled{V}}$)	19
<code>\Vomey</code> ($\text{\textcircled{V}}$)	184
<code>\vppm</code> ($\text{\textcircled{V}}$)	176
<code>\vpppm</code> ($\text{\textcircled{V}}$)	176
<code>\vrectangle</code> ($\text{\textcircled{V}}$)	138
<code>\vrectangleblack</code> ($\text{\textcircled{V}}$)	138
<code>\vrule</code>	178
<code>\VT</code> ($\text{\textcircled{V}}$)	126
<code>\Vulkanus</code> ($\text{\textcircled{V}}$)	124
<code>\vv</code> ($\text{\textcircled{V}}$)	106
<code>\VvDash</code> ($\text{\textcircled{V}}$)	49
<code>\Vvdash</code> ($\text{\textcircled{V}}$)	50
<code>\Vvdash</code> ($\text{\textcircled{V}}$)	48
<code>\Vvdash</code> ($\text{\textcircled{V}}$)	55
<code>\Vvdash</code> ($\text{\textcircled{V}}$)	53
<code>\Vvdash</code> ($\text{\textcircled{V}}$)	51
<code>\Vvdash</code> ($\text{\textcircled{V}}$)	57
<code>\Vvert</code> ($\text{\textcircled{V}}$)	99
<code>\Vvert</code> ($\text{\textcircled{V}}$)	100
<code>\vvvert</code> ($\text{\textcircled{V}}$)	97
<code>\vsymbkcircle</code> ($\text{\textcircled{V}}$)	37
<code>\vsymbklsquare</code> ($\text{\textcircled{V}}$)	138
<code>\vsymwhtcircle</code> ($\text{\textcircled{V}}$)	37
<code>\vsymwhtsquare</code> ($\text{\textcircled{V}}$)	138
<code>\vzigzag</code> ($\text{\textcircled{V}}$)	117

W

<code>w</code> ($\text{\textcircled{W}}$)	151
---	-----

<code>\Walley</code> ($\text{\textcircled{W}}$)	184
<code>\warning</code> ($\text{\textcircled{W}}$)	183
<code>\WashCotton</code> ($\text{\textcircled{W}}$)	170
<code>\WashSynthetics</code> ($\text{\textcircled{W}}$)	170
<code>\WashWool</code> ($\text{\textcircled{W}}$)	170
<code>\wasylounge</code> ($\text{\textcircled{W}}$)	169
<code>\wasypropto</code> ($\propto$)	49
<code>wasysym</code> (package)	19, 25, 27, 30, 39, 49, 60, 63, 111, 115, 121, 122, 124, 127, 134–136, 152, 169, 212, 231
<code>\wasythetefore</code> ($\text{\textcircled{W}}$)	111
<code>\Water</code> ($\text{\textcircled{W}}$)	124
<code>\water</code> ($\text{\textcircled{W}}$)	129
<code>wavy-line delimiters</code>	97–100
<code>\wbetter</code> ($\text{\textcircled{W}}$)	174
<code>\Wbason</code> (W)	129
<code>\Wbasonminus</code> (W^-)	129
<code>\Wbasonplus</code> (W^+)	129
<code>\wdecisive</code> ($\text{\textcircled{W}}$)	174
<code>\weakpt</code> ($\text{\textcircled{W}}$)	174
<code>\WeakRain</code> ($\text{\textcircled{W}}$)	171
<code>\WeakRainCloud</code> ($\text{\textcircled{W}}$)	171
<code>weather symbols</code>	171, 185–186
<code>Web symbols</code>	186–189
<code>webomints</code> (package)	196, 231
<code>\Wecker</code> ($\text{\textcircled{W}}$)	171
<code>\Wedge</code> ($\text{\textcircled{W}}$)	32
<code>\Wedge</code> ($\text{\textcircled{W}}$)	33
<code>\wedge</code> ($\text{\textcircled{W}}$)	30
<code>\wedge</code> ($\text{\textcircled{W}}$)	29
<code>\wedge</code> ($\text{\textcircled{W}}$)	32
<code>\wedge</code> ($\text{\textcircled{W}}$)	32
<code>\wedge</code> ($\text{\textcircled{W}}$)	31
<code>\wedge</code> ($\text{\textcircled{W}}$)	33
<code>\wedgebar</code> ($\text{\textcircled{W}}$)	33
<code>\wedgedot</code> ($\text{\textcircled{W}}$)	32
<code>\wedgedot</code> ($\text{\textcircled{W}}$)	31
<code>\wedgedot</code> ($\text{\textcircled{W}}$)	33
<code>\wedgedoublebar</code> ($\text{\textcircled{W}}$)	33
<code>\wedgemidvert</code> ($\text{\textcircled{W}}$)	33
<code>\wedgedot</code> ($\text{\textcircled{W}}$)	33
<code>\wedgedonwedge</code> ($\text{\textcircled{W}}$)	32
<code>\wedgedonwedge</code> ($\text{\textcircled{W}}$)	33
<code>\wedgedot</code> ($\text{\textcircled{W}}$)	53
<code>\wedgedot</code> ($\text{\textcircled{W}}$)	57
<code>Weierstrass $\wp$ function</code>	<i>see</i> <code>\wp</code>
<code>\westcross</code> ($\text{\textcircled{W}}$)	133
<code>\wfermion</code> ($\text{\textcircled{W}}$)	128
<code>\Wheelchair</code> ($\text{\textcircled{W}}$)	170
<code>\whfermion</code> ($\text{\textcircled{W}}$)	128
<code>\whistle</code> ($\text{\textcircled{W}}$)	22
<code>\white</code>	176
<code>\whitearrowupfrombar</code> ($\text{\textcircled{W}}$)	81
<code>\whitearrowupfrombar</code> ($\text{\textcircled{W}}$)	83
<code>\whitearrowuppedestal</code> ($\text{\textcircled{W}}$)	81
<code>\whitearrowuppedestalhbar</code> ($\text{\textcircled{W}}$)	81
<code>\whitearrowuppedestalvbar</code> ($\text{\textcircled{W}}$)	81

$\backslash$ WhiteBishopOnBlack (♗) .
 175
 $\backslash$ WhiteBishopOnWhite (♖) .
 175
 $\backslash$ whiteblackspoon (♣) .. 87
 $\backslash$ WhiteEmptySquare () 175
 $\backslash$ whiteinwhitetriangle (♠) .
 138
 $\backslash$ WhiteKingOnBlack (♔) 175
 $\backslash$ WhiteKingOnWhite (♕) 175
 $\backslash$ WhiteKnightOnBlack (♘) .
 175
 $\backslash$ WhiteKnightOnWhite (♞) .
 175
 $\backslash$ WhitePawnOnBlack (♟) 175
 $\backslash$ WhitePawnOnWhite (♙) 175
 $\backslash$ whitepointerleft (◁) . 138
 $\backslash$ whitepointerright (▷) . 138
 $\backslash$ WhiteQueenOnBlack (♚) .
 175
 $\backslash$ WhiteQueenOnWhite (♛) .
 175
 $\backslash$ WhiteRookOnBlack (♜) 175
 $\backslash$ WhiteRookOnWhite (♝) 175
 $\backslash$ whitesquaretickleft (◻) 37
 $\backslash$ whitesquaretickright (◻) .
 37
 $\backslash$ whitestone 175
 whole note *see* musical symbols
 $\backslash$ wholeNote (♩) 155
 $\backslash$ wholeNoteDotted (♩.) .. 155
 $\backslash$ wholeNoteRest (—) 156
 $\backslash$ wholeNoteRestDotted (—.) .
 156
 $\backslash$ wholeof (ℰ) 214
 $\backslash$ whthorzoval (○) 138
 $\backslash$ whtvertoval (○) 138
 Wick contractions 220
 $\backslash$ wideangledown (∟) 115
 $\backslash$ wideangleup (∟) 115
 $\backslash$ widearc (⌒) 106
 $\backslash$ widearrow (→) 106
 $\backslash$ widebar (▮) 106
 $\backslash$ widebridgeabove (⌢) ... 103
 $\backslash$ widecheck (♣) 106
 $\backslash$ widecheck (♣) 105
 $\backslash$ widehat (̂) 105
 $\backslash$ widehat (̂) 105
 $\backslash$ widehat (̂) 105
 $\backslash$ widehat (̂) 104

$\backslash$ widehat (̂) 104
 $\backslash$ wideOarc (⌒) 106
 $\backslash$ wideparen (⌈) 106
 $\backslash$ wideparen (⌈) 105
 $\backslash$ wideparen (⌈) 106
 $\backslash$ wideparen (⌈) 105
 $\backslash$ wideparen (⌈) 104
 $\backslash$ widering (̂) 106
 $\backslash$ widering (̂) 106
 $\backslash$ widering (̂) 104
 $\backslash$ widetilde (̃) 105
 $\backslash$ widetilde (̃) 105
 $\backslash$ widetilde (̃) 105
 $\backslash$ widetilde (̃) 104
 $\backslash$ widetilde (̃) 104, 107
 $\backslash$ widetriangle (▴) 104
 $\backslash$ wind 171
 Windows® 228
 $\backslash$ Winkey (☺) 184
 $\backslash$ wInnocey (☺) 184
 $\backslash$ Wintertree (♣) 184
 witches 37, 110
 $\backslash$ with (&) 34
 $\backslash$ with (L) 174
 $\backslash$ withattack (→) 174
 $\backslash$ withidea (△) 174
 $\backslash$ withinit (†) 174
 $\backslash$ without (⊔) 174
 Wizards of the Coast 209
 $\backslash$ wn (?) 28
 woman 142, 170
 $\backslash$ WomanFace (♠) 170
 won *see* $\backslash$ textwon
 world 170
 $\backslash$ WorstTree (♣) 184
 $\backslash$ wp (φ) 93
 $\backslash$ wp (ρ) 94
 $\backslash$ wp (ρ) 94
 $\backslash$ wp (ρ) 93
 $\backslash$ wp (ρ) 94
 $\backslash$ wq (♣) 153
 $\backslash$ wqq (♣) 153
 $\backslash$ wr (i) 29
 $\backslash$ wr (i) 32
 $\backslash$ wr (i) 31
 $\backslash$ wr (i) 33
 $\backslash$ wreath (i) 32
 $\backslash$ wreath (i) 31
 wreath product *see* $\backslash$ wr
 $\backslash$ WritingHand (♠) 170
 wsuipa (package) .. 19, 22, 24,
 212, 214, 219, 231
 $\backslash$ wupperhand (±) 174

X

$\backslash$ x (℄) 113
 $\backslash$ x (::) 176
 $\backslash$ XBox (⊠) 134
 $\backslash$ xsol (∖) 45
 Xdvi 85, 214
 Xe_{La}TeX 90, 152, 229

Xe_{La}TeX 23
 $\backslash$ Xkey (☺) 184
 xfrac (package) 117
 $\backslash$ xhookleftarrow (↵) ... 108
 $\backslash$ xhookleftarrow (↵) ... 85
 $\backslash$ xhookrightarrow (↶) .. 108
 $\backslash$ xhookrightarrow (↶) ... 85
 $\backslash$ Xi (Ξ) 90
 $\backslash$ xi (ξ) 90
 $\backslash$ xiup (ξ) 91
 $\backslash$ xLeftarrow (⇐) 108
 $\backslash$ xleftarrow (↵) ... 85, 107
 $\backslash$ xleftharpoondown (↵) . 108
 $\backslash$ xleftharpoonup (↵) ... 108
 $\backslash$ xLeftrightarrow (⇔) . 108
 $\backslash$ xLeftrightarrow (⇔) . 108
 $\backslash$ xleftrightharpoonup (↵) . 108
 $\backslash$ xleftrightharpoonup (↵) ... 85
 $\backslash$ xleftrightharpoons (⇔) 108
 $\backslash$ xleftswishingghost (↵) ..
 110
 $\backslash$ xleftwitchonbroom (↵) 110
 $\backslash$ xleftwitchonbroom* (↵) .
 110
 $\backslash$ xlongequal (≐) 109
 $\backslash$ xlongequal (≐) 108
 $\backslash$ xLongleftarrow (⇐) .. 108
 $\backslash$ xLongleftarrow (⇐) .. 108
 $\backslash$ xLongleftrightarrow (⇔))
 108
 $\backslash$ xLongleftrightarrow (⇔))
 108
 $\backslash$ xLongrightarrow (⇒) . 108
 $\backslash$ xlongrightarrow (⇒) . 108
 $\backslash$ xmapsto (↦) 108
 $\backslash$ xmapsto (↦) 109
 $\backslash$ Xmapsto (⌢) 85
 XML 228
 $\backslash$ XQ (♠) 125
 $\backslash$ xRightarrow (⇒) 108
 $\backslash$ xrightarrow (⇒) .. 85, 107
 $\backslash$ xrightharpoondown (↵) 108
 $\backslash$ xrightharpoonup (↵) .. 108
 $\backslash$ xrightleftharpoons (⇔) 108
 $\backslash$ xrightleftharpoons (⇔) 108
 $\backslash$ xrightswishingghost (↵) .
 110
 $\backslash$ xrightwitchonbroom (↵) .
 110

$\backslash\mathrm{xrightwiconbroom}^*$ () .	$\backslash\mathrm{Yleft}$ ($\prec$) 29	$\backslash\mathrm{ZJ}$ ($\mathcal{J}$) 125
. 110	$\backslash\mathrm{Yleft}$ ($\prec$) 32	$\backslash\mathrm{ZK}$ ($\mathcal{K}$) 125
Xs 133, 134, 170	$\backslash\mathrm{yogh}$ ($\mathfrak{z}$) 19	$\backslash\mathrm{ZL}$ ($\mathcal{L}$) 125
$\backslash\mathrm{xsol}$ ($/$) 45	$\backslash\mathrm{yogh}$ ($\mathfrak{z}$) 19	$\backslash\mathrm{ZM}$ ($\mathcal{M}$) 125
$\backslash\mathrm{XSolid}$ ($\times$) 133	$\backslash\mathrm{Yright}$ ($\succ$) 29	$\backslash\mathrm{ZN}$ ($\mathcal{N}$) 125
$\backslash\mathrm{XSolidBold}$ ($\otimes$) 133	$\backslash\mathrm{Yright}$ ($\succ$) 32	$\backslash\mathrm{ZO}$ ($\mathcal{O}$) 125
$\backslash\mathrm{XSolidBrush}$ ($\times$) 133	Yu, Billy 219	$\backslash\mathrm{Zodiac}$ 122
$\backslash\mathrm{xsworddown}$ ($\times$) 170	$\backslash\mathrm{Yup}$ (λ) 29	zodiacal symbols . . . 122–124,
$\backslash\mathrm{xswordsup}$ ($\times$) 170	$\backslash\mathrm{Yup}$ (λ) 32	193–195
$\backslash\mathrm{xtofrom}$ ($\longleftrightarrow$) 109	$\backslash\mathrm{Yup}$ (λ) 94	$\backslash\mathrm{ZP}$ ($\mathcal{P}$) 125
$\backslash\mathrm{xtwoheadleftarrow}$ ($\longleftrightarrow$) .		$\backslash\mathrm{zpipe}$ ($\gg$) 117
. 109		$\backslash\mathrm{zproject}$ ($\dagger$) 117
$\backslash\mathrm{xtwoheadrightarrow}$ ($\longrightarrow$)		$\backslash\mathrm{ZQ}$ ($\mathcal{Q}$) 125
. 109		$\backslash\mathrm{ZR}$ ($\mathcal{R}$) 125
$\mathrm{Xy-pic}$ 218		$\backslash\mathrm{ZS}$ ($\mathcal{S}$) 125
		$\backslash\mathrm{ZT}$ ($\mathcal{T}$) 125
	Z	$\backslash\mathrm{Ztransf}$ ($\bullet\rightarrow\circ$) 59
Y	$\backslash\mathrm{ZA}$ ($\mathcal{A}$) 125	$\backslash\mathrm{Ztransf}$ ($\bullet\leftarrow\circ$) 55
$\backslash\mathrm{Ydown}$ (γ) 29	Zapf Chancery (font) 119	$\backslash\mathrm{ztransf}$ ($\circ\rightarrow\bullet$) 59
$\backslash\mathrm{Ydown}$ (γ) 32	Zapf Dingbats (font) 130, 134	$\backslash\mathrm{ztransf}$ ($\circ\leftarrow\bullet$) 55
yen <i>see</i> $\backslash\mathrm{textyen}$	$\backslash\mathrm{ZB}$ ($\mathcal{B}$) 125	$\backslash\mathrm{ZU}$ ($\mathcal{U}$) 125
$\backslash\mathrm{yen}$ ($\yen$) 117	$\backslash\mathrm{Zbar}$ ($\mathcal{Z}$) 94	$\backslash\mathrm{zugzwang}$ ($\odot$) 174
yfonts (package) . 119, 120, 231	$\backslash\mathrm{Zborder}$ ($\boxminus$) 141	$\backslash\mathrm{ZV}$ ($\mathcal{V}$) 125
yhmath (package) . . . 103, 104,	$\backslash\mathrm{Zboson}$ ($\mathcal{Z}$) 129	$\backslash\mathrm{ZW}$ ($\mathcal{W}$) 125
107, 112, 218, 231	$\backslash\mathrm{ZC}$ ($\mathcal{C}$) 125	$\backslash\mathrm{Zwdr}$ () 154
yin-yang symbols . . . 170, 183,	$\backslash\mathrm{zcmp}$ ($\mathfrak{z}$) 117	$\backslash\mathrm{ZwPa}$ () 154
185–186, 197	$\backslash\mathrm{ZD}$ ($\mathcal{D}$) 125	$\backslash\mathrm{ZX}$ ($\mathcal{X}$) 125
$\backslash\mathrm{Yinyang}$ () 170	$\backslash\mathrm{ZE}$ ($\mathcal{E}$) 125	$\backslash\mathrm{ZY}$ ($\mathcal{Y}$) 125
$\backslash\mathrm{yinyang}$ () 183	$\backslash\mathrm{Zeta}$ ($\mathcal{Z}$) 90	$\backslash\mathrm{ZZ}$ ($\mathcal{Z}$) 125
	$\backslash\mathrm{zeta}$ (ζ) 90	
	$\backslash\mathrm{zetaup}$ (ζ) 91	
	$\backslash\mathrm{Zeus}$ ($\mathfrak{z}$) 124	
	$\backslash\mathrm{ZF}$ ($\mathcal{F}$) 125	
	$\backslash\mathrm{ZG}$ ($\mathcal{G}$) 125	
	$\backslash\mathrm{ZH}$ ($\mathcal{H}$) 125	
	$\backslash\mathrm{ZI}$ ($\mathcal{I}$) 125	