

The Unicode Standard 14.0.0 - BETA COMMENTS

U14M210503.lst

Proposed resolution of Unicode 14.0.0 names beta comments.
Based on the 'd9' draft for Unicode 14.0.0 names list.

Editorial Committee Response to Proposed Changes from L2/21-079

A subgroup of the editorial met and discussed L2/21-079. Many of the proposed additions are welcome improvements. In some cases, the group felt that proposed changes would not meet the implicit editorial policy that underlies the existing nameslist and its annotations. In a few cases, a suggestion led to a different solution.

The choice and wording of annotations or the selection of cross references in the nameslist has long followed a number of loosely formulated principles well understood among the code chart editors. The focus for the annotations and cross references is primarily to help the reader identify the character in question, by giving essential guidance that disambiguates usage, and pointing both to similar and distinct (and sometimes even unrelated) characters that help users select the proper character. Cross references within a block are generally avoided on the principle that a user can find the alternate in the same chart.

Particularly for the ASCII block many punctuation characters are used as general fallbacks for the more specialized, dedicated characters added elsewhere. In these instances the list of cross references may be extensive, but there is no intention to make them exhaustive; instead, references to some of the more obscure usage are suppressed to keep the lists manageable.

In some cases, abbreviated discussion of usage can serve as reminders of factors that would influence the selection. However, the principle is that detailed descriptions belong in the core specification.

Brevity is a plus, but since the nameslist no longer takes up physical pages in a book, some duplication may now be permissible. Specifically, if a code point is mentioned in a comment, it should also be in a formal cross-reference; the mention in comments may be overlooked by readers simply scanning the cross references.

In making the recommendations contained in this document, the editors were guided by these principles, as well as the inclination to retain existing cross-references and notes unless their removal or replacement was seen unambiguously as an improvement.

The following excerpt of the code charts implements possible changes in response to document L2/21-079. The affected characters are highlighted, but not the individual changes to the annotations. The review highlighted the large number of punctuation characters used as mathematical operators. Accordingly, it may be appropriate to list these at the head of the Mathematical Operators block, in a similar fashion as used for the currency symbols.



























NOTE








Given the purely editorial nature of code chart annotations and especially that of the cross references, this document should properly be understood as a progress report, suggesting the direction of changes under consideration by the editorial committee and the code chart editors in particular, rather than documenting anything like final wording. The document is provided for information and we do not suggest that the UTC spend time on discussing or reviewing this in detail. The final contents of the nameslist will most likely differ somewhat from the suggestions presented.

	000	001	002	003	004	005	006	007
0	NUL 0000	DLE 0010	SP 0020	0 0030	@ 0040	P 0050	` 0060	p 0070
1	SOH 0001	DC1 0011	! 0021	1 0031	A 0041	Q 0051	a 0061	q 0071
2	STX 0002	DC2 0012	" 0022	2 0032	B 0042	R 0052	b 0062	r 0072
3	ETX 0003	DC3 0013	# 0023	3 0033	C 0043	S 0053	c 0063	s 0073
4	EOT 0004	DC4 0014	\$ 0024	4 0034	D 0044	T 0054	d 0064	t 0074
5	ENQ 0005	NAK 0015	% 0025	5 0035	E 0045	U 0055	e 0065	u 0075
6	ACK 0006	SYN 0016	& 0026	6 0036	F 0046	V 0056	f 0066	v 0076
7	BEL 0007	ETB 0017	' 0027	7 0037	G 0047	W 0057	g 0067	w 0077
8	BS 0008	CAN 0018	(0028	8 0038	H 0048	X 0058	h 0068	x 0078
9	HT 0009	EM 0019	) 0029	9 0039	I 0049	Y 0059	i 0069	y 0079
A	LF 000A	SUB 001A	* 002A	: 003A	J 004A	Z 005A	j 006A	z 007A
B	VT 000B	ESC 001B	+ 002B	; 003B	K 004B	[005B	k 006B	{ 007B
C	FF 000C	FS 001C	, 002C	< 003C	L 004C	\ 005C	l 006C	| 007C
D	CR 000D	GS 001D	- 002D	= 003D	M 004D	] 005D	m 006D	} 007D
E	SO 000E	RS 001E	. 002E	> 003E	N 004E	^ 005E	n 006E	~ 007E
F	SI 000F	US 001F	/ 002F	? 003F	O 004F	_ 005F	o 006F	DEL 007F

C0 controls

































Alias names are those for ISO/IEC 6429:1992. Commonly used alternative aliases are also shown.

0000		<control> = NULL
0001		<control> = START OF HEADING
0002		<control> = START OF TEXT
0003		<control> = END OF TEXT
0004		<control> = END OF TRANSMISSION
0005		<control> = ENQUIRY
0006		<control> = ACKNOWLEDGE
0007		<control> = BELL
0008		<control> = BACKSPACE
0009		<control> = CHARACTER TABULATION = horizontal tabulation (HT) = tab
000A		<control> = LINE FEED (LF) = new line (NL) = end of line (EOL)
000B		<control> = LINE TABULATION = vertical tabulation (VT)
000C		<control> = FORM FEED (FF)
000D		<control> = CARRIAGE RETURN (CR)
000E		<control> = SHIFT OUT • known as LOCKING-SHIFT ONE in 8-bit environments
000F		<control> = SHIFT IN • known as LOCKING-SHIFT ZERO in 8-bit environments
0010		<control> = DATA LINK ESCAPE
0011		<control> = DEVICE CONTROL ONE
0012		<control> = DEVICE CONTROL TWO
0013		<control> = DEVICE CONTROL THREE
0014		<control> = DEVICE CONTROL FOUR
0015		<control> = NEGATIVE ACKNOWLEDGE
0016		<control> = SYNCHRONOUS IDLE
0017		<control> = END OF TRANSMISSION BLOCK
0018		<control> = CANCEL
0019		<control> = END OF MEDIUM

001A		<control> = SUBSTITUTE → FFFD  replacement character
001B		<control> = ESCAPE
001C		<control> = INFORMATION SEPARATOR FOUR = file separator (FS)
001D		<control> = INFORMATION SEPARATOR THREE = group separator (GS)
001E		<control> = INFORMATION SEPARATOR TWO = record separator (RS)
001F		<control> = INFORMATION SEPARATOR ONE = unit separator (US)

ASCII punctuation and symbols

Based on ISO/IEC 646.

0020		SPACE • sometimes considered a control code • other space characters: 2000  —200A  → 00A0  no-break space → 200B  zero width space → 202F  narrow no-break space → 2060  word joiner → 2420  symbol for space → 2422  blank symbol → 2423  open box → 3000  ideographic space → FEFF  zero width no-break space
0021		EXCLAMATION MARK = factorial = bang → 00A1  inverted exclamation mark → 01C3  latin letter retroflex click → 203C  double exclamation mark → 203D  interrobang → 26A0  warning sign → 2757  heavy exclamation mark symbol → 2762  heavy exclamation mark ornament → A71D  modifier letter raised exclamation mark
0022		QUOTATION MARK • neutral (vertical), used as opening or closing quotation mark • preferred characters in English for paired quotation marks are 201C “ & 201D ” • 05F4 ” is preferred for gershayim when writing Hebrew → 02BA  modifier letter double prime → 02DD  double acute accent → 02EE  modifier letter double apostrophe → 030B  combining double acute accent → 030E  combining double vertical line above → 05F4  hebrew punctuation gershayim → 201C  left double quotation mark → 201D  right double quotation mark → 2033  double prime → 3003  ditto mark

0023 # **NUMBER SIGN**
 = pound sign (weight)
 = hashtag, hash
 = crosshatch
 = octothorpe
 • for denoting musical sharp 266F # is preferred
 → 2114 ₣ l b bar symbol
 → 2116 № numero sign
 → 2317 † viewdata square
 → 266F # music sharp sign
 → 29E3 # equals sign and slanted parallel

0024 \$ **DOLLAR SIGN**
 = milréis, escudo
 • used for many peso currencies in Latin America and elsewhere
 • glyph may have one or two vertical bars
 • other currency symbol characters start at 20A0 €
 → 00A2 ¢ cent sign
 → 00A4 Ɱ currency sign
 → 20B1 ₱ peso sign
 → 1F4B2 \$ heavy dollar sign

0025 % **PERCENT SIGN**
 → 066A ‰ arabic percent sign
 → 2030 ‰ per mille sign
 → 2031 ‰ per ten thousand sign
 → 2052 ‰ commercial minus sign

0026 & **AMPERSAND**
 = and
 • from a ligature of 'e' and 't'
 → 204A Ɔ tironian sign et
 → 214B Ɔ turned ampersand
 → 1F674 & heavy ampersand ornament

0027 ' **APOSTROPHE**
 = apostrophe-quote (1.0)
 = single quote
 = APL quote
 • neutral (vertical) glyph with mixed usage
 • 2019 ’ is preferred for apostrophe
 • preferred characters in English for paired quotation marks are 2018 ‘ & 2019 ’
 • 05F3 ׳ is preferred for geresh when writing Hebrew
 → 02B9 ʹ modifier letter prime
 → 02BC ʹ modifier letter apostrophe
 → 02C8 ʹ modifier letter vertical line
 → 0301 ˆ combining acute accent
 → 030D ˆ combining vertical line above
 → 05F3 ׳ hebrew punctuation geresh
 → 2018 ‘ left single quotation mark
 → 2019 ’ right single quotation mark
 → 2032 ʹ prime
 → A78C ˆ latin small letter saltillo

0028 (**LEFT PARENTHESIS**
 = opening parenthesis (1.0)

0029) **RIGHT PARENTHESIS**
 = closing parenthesis (1.0)
 • see discussion on semantics of paired bracketing characters

002A * **ASTERISK**
 = star
 • can have five or six points
 → 066D ★ arabic five pointed star
 → 2042 ✱ asterism
 → 204E * low asterisk
 → 2051 ✳ two asterisks aligned vertically
 → 20F0 ⚡ combining asterisk above
 → 2217 * asterisk operator
 → 26B9 * sextile
 → 2731 ✳ heavy asterisk
 → A673 ⚡ slavonic asterisk
 → 1F7B6 ✳ medium six spoked asterisk

ASCII math operator

002B + **PLUS SIGN**
 → 0D26 ⚡ modifier letter plus sign
 → 2212 − minus sign
 → 2795 ⚡ heavy plus sign
 → FB29 ⚡ hebrew letter alternative plus sign
 → 1F7A2 ⚡ light greek cross

ASCII punctuation

002C , **COMMA**
 = decimal separator
 → 060C ٫ arabic comma
 → 201A ٫ single low-9 quotation mark
 → 2E41 ٫ reversed comma
 → 2E4C ٫ medieval comma
 → 3001 ٫ ideographic comma

002D - **HYPHEN-MINUS**
 = hyphen, dash
 = minus sign
 • used generically for hyphen, minus sign or en-dash, all of which have dedicated alternatives
 → 00AD ͂ soft hyphen
 → 02D7 - modifier letter minus sign
 → 2010 - hyphen
 → 2011 ͂ non-breaking hyphen
 → 2012 – figure dash
 → 2013 – en dash
 → 2027 · hyphenation point
 → 2043 ▪ hyphen bullet
 → 2212 − minus sign
 → 10191 – roman uncia sign

002E . **FULL STOP**
 = period, dot, decimal point
 • the use as decimal point is locale dependent
 • may be rendered as a raised decimal point in old style numbers
 → 066B ٫ arabic decimal separator
 → 06D4 ٫ arabic full stop
 → 16EE † canadian syllabics full stop
 → 2024 . one dot leader
 → 2026 … horizontal ellipsis
 → 2033 ˙ raised dot
 → 2E3C ٫ stenographic full stop
 → 3002 ٫ ideographic full stop

002F / **SOLIDUS**
 = slash, forward slash, virgule
 → 01C0 | latin letter dental click
 → 0338 ⁄ combining long solidus overlay
 → 2044 ⁄ fraction slash
 → 2215 ⁄ division slash
 → 27CB ⁄ mathematical rising diagonal
 → 29F8 ⁄ big solidus
 → 2AFD ⁄ double solidus operator
 → 2E4A ⁄ dotted solidus

ASCII digits

0030 0 **DIGIT ZERO**
 ~ 0030 FE00 0 short diagonal stroke form

0031 1 **DIGIT ONE**

0032 2 **DIGIT TWO**

0033 3 **DIGIT THREE**

0034 4 **DIGIT FOUR**

0035 5 **DIGIT FIVE**

0036 6 **DIGIT SIX**

0037 7 **DIGIT SEVEN**

0038 8 **DIGIT EIGHT**

0039 9 **DIGIT NINE**

ASCII punctuation

003A : **COLON**

- also used to denote division or scale; for that mathematical use 2236 : is preferred
- in Finnish and Swedish, also used as intra-word punctuation (abbreviation mark)

→ 02D0 : modifier letter triangular colon
 → 02F8 : modifier letter raised colon
 → 0589 : armenian full stop
 → 05C3 : hebrew punctuation sof pasuq
 → 1361 : ethiopic wordspace
 → 1365 : ethiopic colon
 → 205A : two dot punctuation
 → 295D † tricolon
 → 2236 : ratio
 → A789 : modifier letter colon
 → FE30 : presentation form for vertical two dot leader

003B ; **SEMICOLON**

- this, and not 037E ; , is the preferred character for 'Greek question mark'

→ 037E ; greek question mark
 → 061B ؛ arabic semicolon
 → 204F ; reversed semicolon
 → 2E35 ; reversed semicolon

ASCII mathematical operators

Other mathematical operators start at 2200

003C < **LESS-THAN SIGN**

→ 02C2 < modifier letter left arrowhead
 → 2039 ‹ single left-pointing angle quotation mark
 → 2329 ‹ left-pointing angle bracket
 → 27E8 ‹ mathematical left angle bracket
 → 3008 ‹ left angle bracket

003D = **EQUALS SIGN**

- other related characters: 2241 ≈ –2263 ≡

→ 1400 = canadian syllabics hyphen
 → 2248 ≈ almost equal to
 → 2260 ≠ not equal to
 → 2261 ≡ identical to
 → 2E40 = double hyphen
 → 30A0 = katakana-hiragana double hyphen
 → A78A = modifier letter short equals sign
 → 10190 = roman sextans sign
 → 1F7F0 = heavy equals sign

003E > **GREATER-THAN SIGN**

→ 02C3 > modifier letter left arrowhead
 → 203A › single right-pointing angle quotation mark
 → 232A › right-pointing angle bracket
 → 27E9 › mathematical right angle bracket
 → 3009 › right angle bracket

ASCII punctuation

003F ? **QUESTION MARK**

→ 00BF ¿ inverted question mark
 → 037E ; greek question mark
 → 055E ր armenian question mark
 → 061F ؟ arabic question mark
 → 203D ？ interrobang
 → 2047 ?? double question mark
 → 2048 ?! question exclamation mark
 → 2049 !? exclamation question mark
 → 2753 ？ black question mark ornament
 → 2BD1 ⚡ uncertainty sign
 → 2E3E ？ reversed question mark

0040 @ **COMMERCIAL AT**
 = at sign

Uppercase Latin alphabet

0041 A **LATIN CAPITAL LETTER A**

0042 B **LATIN CAPITAL LETTER B**
 → 212C ℬ script capital b

0043 C **LATIN CAPITAL LETTER C**

→ 0421 С cyrillic capital letter es
 → 2102 С double-struck capital c
 → 2013 – degree celsius
 → 212D ℄ black-letter capital c
 → 216D С roman numeral one hundred
 → 2183 ㊀ roman numeral reversed one hundred

0044 D **LATIN CAPITAL LETTER D**
 → 216E Ⅰ roman numeral five hundred

0045 E **LATIN CAPITAL LETTER E**

→ 2107 ℰ euler constant
 → 2130 ℰ script capital e

0046 F **LATIN CAPITAL LETTER F**

→ 2109 °F degree fahrenheit
 → 2131 ℱ script capital f
 → 2132 Ⅰ turned capital f

0047 G **LATIN CAPITAL LETTER G**

0048 H **LATIN CAPITAL LETTER H**

→ 210B ℋ script capital h
 → 210C ℣ black-letter capital h
 → 210D Ⅱ double-struck capital h

0049	I	LATIN CAPITAL LETTER I	<ul style="list-style-type: none"> Turkish and Azerbaijani use 0131 ı for lowercase → 0130 İ latin capital letter i with dot above → 0399 Ι greek capital letter iota → 0406 І cyrillic capital letter byelorussian-ukrainian i → 04C0 И cyrillic letter palochka → 2110 ℳ script capital i → 2111 Ꝛ black-letter capital i → 2160 I roman numeral one
004A	J	LATIN CAPITAL LETTER J	→ 037F Ϛ greek capital letter yot
004B	K	LATIN CAPITAL LETTER K	→ 212A ℔ kelvin sign
004C	L	LATIN CAPITAL LETTER L	→ 2112 ℒ script capital l → 216C L roman numeral fifty
004D	M	LATIN CAPITAL LETTER M	→ 2133 ℳ script capital m → 216F M roman numeral one thousand
004E	N	LATIN CAPITAL LETTER N	→ 2115 ℕ double-struck capital n → 2116 № numero sign
004F	O	LATIN CAPITAL LETTER O	
0050	P	LATIN CAPITAL LETTER P	→ 2119 ℙ double-struck capital p
0051	Q	LATIN CAPITAL LETTER Q	→ 051A Қ cyrillic capital letter qa → 211A Ⓚ double-struck capital q → 213A Ⓞ rotated capital q
0052	R	LATIN CAPITAL LETTER R	→ 211B ℞ script capital r → 211C Ꝛ black-letter capital r → 211D ℞ double-struck capital r → 211E ℞ prescription take → 211F ℞ response
0053	S	LATIN CAPITAL LETTER S	
0054	T	LATIN CAPITAL LETTER T	
0055	U	LATIN CAPITAL LETTER U	
0056	V	LATIN CAPITAL LETTER V	→ 2123 ℵ versicle → 2164 V roman numeral five
0057	W	LATIN CAPITAL LETTER W	→ 051C Ѡ cyrillic capital letter we
0058	X	LATIN CAPITAL LETTER X	→ 2169 X roman numeral tenter iota
0059	Y	LATIN CAPITAL LETTER Y	→ 00A5 ¥ yen sign → 04AE Ѹ cyrillic capital letter straight u
005A	Z	LATIN CAPITAL LETTER Z	→ 01B5 Ƶ latin capital letter z with stroke → 2124 ℤ double-struck capital z → 2128 ꝛ black-letter capital z

ASCII punctuation and symbols

005B	[LEFT SQUARE BRACKET	<ul style="list-style-type: none"> = opening square bracket (1.0) • other bracket characters: 27E6 [–27EB], 2983 [–2998], 3008 <–301B]
------	---	---------------------	--

005C	\	REVERSE SOLIDUS	<ul style="list-style-type: none"> = backslash → 20E5 ⵲ combining reverse solidus overlay → 2216 - set minus → 27CD ↘ mathematical falling diagonal r i → 29F9 ⵲ big reverse solidus small letter i
005D	]	RIGHT SQUARE BRACKET	= closing square bracket (1.0)
005E	^	CIRCUMFLEX ACCENT	<ul style="list-style-type: none"> • this is a spacing character • use as fallback to indicate exponentiation → 02C4 ^ modifier letter up arrowhead → 02C6 ˆ modifier letter circumflex accent → 0302 ˆ combining circumflex accent → 2038 ˆ caret → 2303 ⤴ up arrowhead
005F	_	LOW LINE	<ul style="list-style-type: none"> = spacing underscore (1.0) • this is a spacing character • joins with adjacent instances of itself → 02CD _ modifier letter low macron → 0331 ◌̄ combining macron below → 0332 ◌̅ combining low line → 0640 . arabic tatweel → 2017 = double low line → FE2D ◌̅ combining conjoining macron below
0060	`	GRAVE ACCENT	<ul style="list-style-type: none"> • this is a spacing character → 02CB ` modifier letter grave accent → 0300 ◌̄ combining grave accent → 2035 ` reversed prime

Lowercase Latin alphabet

0061	a	LATIN SMALL LETTER A	
0062	b	LATIN SMALL LETTER B	
0063	c	LATIN SMALL LETTER C	
0064	d	LATIN SMALL LETTER D	→ 0501 д cyrillic small letter komi de
0065	e	LATIN SMALL LETTER E	→ 212E ℵ estimated symbol → 212F ℵ script small e
0066	f	LATIN SMALL LETTER F	
0067	g	LATIN SMALL LETTER G	→ 0261 ɡ latin small letter script g → 210A Ꝑ script small g
0068	h	LATIN SMALL LETTER H	→ 04BB һ cyrillic small letter shha → 210E ℏ planck constant
0069	i	LATIN SMALL LETTER I	<ul style="list-style-type: none"> • Turkish and Azerbaijani use 0130 İ for uppercase → 0131 ı latin small letter dotless i → 2071 ⁱ superscript latin small letter i → 2139 і information source → 1D6A4 ℹ mathematical italic small dotless i
006A	j	LATIN SMALL LETTER J	→ 0237 ȵ latin small letter dotless j → 03F3 Ϛ greek letter yot → 1D6A5 ℹ mathematical italic small dotless j
006B	k	LATIN SMALL LETTER K	
006C	l	LATIN SMALL LETTER L	→ 04CF и cyrillic small letter palochka → 2113 ℓ script small l → 1D4C1 ℓ mathematical script small l

006D	m	LATIN SMALL LETTER M
006E	n	LATIN SMALL LETTER N → 207F ⁿ superscript latin small letter n
006F	o	LATIN SMALL LETTER O → 2134 <i>o</i> script small o
0070	p	LATIN SMALL LETTER P → 2118 <i>p</i> script capital p → 214C <i>p</i> per sign
0071	q	LATIN SMALL LETTER Q → 051B <i>q</i> cyrillic small letter qas
0072	r	LATIN SMALL LETTER R
0073	s	LATIN SMALL LETTER S → 017F <i>f</i> latin small letter long s
0074	t	LATIN SMALL LETTER T
0075	u	LATIN SMALL LETTER U
0076	v	LATIN SMALL LETTER V
0077	w	LATIN SMALL LETTER W → 051D <i>w</i> cyrillic small letter we
0078	x	LATIN SMALL LETTER X → 00D7 <i>x</i> multiplication signveay
0079	y	LATIN SMALL LETTER Y
007A	z	LATIN SMALL LETTER Z → 01B6 <i>z</i> latin small letter z with stroke

ASCII punctuation and symbols

007B	{	LEFT CURLY BRACKET = opening curly bracket (1.0) = left brace
007C	|	VERTICAL LINE = vertical bar, pipe <ul style="list-style-type: none"> used in pairs to indicate absolute value, for example also used as unpaired separator or as fence → 00A6 <i>|</i> broken bar → 01C0 <i>|</i> latin letter dental click → 05C0 <i>|</i> hebrew punctuation paseq → 0964 <i>|</i> devanagari danda → 2016 <i>||</i> double vertical line → 20D2 <i>ϕ</i> combining long vertical line overlay → 2223 <i>|</i> divides → 2758 <i>|</i> light vertical bar
007D	}	RIGHT CURLY BRACKET = closing curly bracket (1.0) = right brace
007E	~	TILDE <ul style="list-style-type: none"> this is a spacing character → 02DC <i>~</i> small tilde → 0303 <i>̃</i> combining tilde → 0334 <i>̄</i> combining tilde overlay → 2053 <i>~</i> swung dash → 223C <i>~</i> tilde operator → 2E1B <i>̂</i> tilde with ring above → 2E2F <i>̈́</i> vertical tilde → FF5E <i>~</i> fullwidth tilde

Control character

007F		<control> = DELETE
------	---	-----------------------

	008	009	00A	00B	00C	00D	00E	00F
0	XXX 0080	DCS 0090	NB SP 00A0	◊ 00B0	À 00C0	Ð 00D0	à 00E0	ð 00F0
1	XXX 0081	PU1 0091	¡ 00A1	± 00B1	Á 00C1	Ñ 00D1	á 00E1	ñ 00F1
2	BPH 0082	PU2 0092	¢ 00A2	² 00B2	Â 00C2	Ò 00D2	â 00E2	ò 00F2
3	NBH 0083	STS 0093	£ 00A3	³ 00B3	Ã 00C3	Ó 00D3	ã 00E3	ó 00F3
4	IND 0084	CCH 0094	¤ 00A4	´ 00B4	Ä 00C4	Ô 00D4	ä 00E4	ô 00F4
5	NEL 0085	MW 0095	¥ 00A5	µ 00B5	Å 00C5	Õ 00D5	å 00E5	õ 00F5
6	SSA 0086	SPA 0096	¦ 00A6	¶ 00B6	Æ 00C6	Ö 00D6	æ 00E6	ö 00F6
7	ESA 0087	EPA 0097	§ 00A7	· 00B7	Ç 00C7	× 00D7	ç 00E7	÷ 00F7
8	HTS 0088	SOS 0098	¨ 00A8	¸ 00B8	È 00C8	Ø 00D8	è 00E8	ø 00F8
9	HTJ 0089	XXX 0099	© 00A9	¹ 00B9	É 00C9	Ù 00D9	é 00E9	ù 00F9
A	VTS 008A	SCI 009A	ª 00AA	º 00BA	Ê 00CA	Ú 00DA	ê 00EA	ú 00FA
B	PLD 008B	CSI 009B	« 00AB	» 00BB	Ë 00CB	Û 00DB	ë 00EB	û 00FB
C	PLU 008C	ST 009C	¬ 00AC	¼ 00BC	Ì 00CC	Ü 00DC	ì 00EC	ü 00FC
D	RI 008D	OSC 009D	SHY 00AD	½ 00BD	Í 00CD	Ý 00DD	í 00ED	ý 00FD
E	SS2 008E	PM 009E	® 00AE	¾ 00BE	Î 00CE	Þ 00DE	î 00EE	þ 00FE
F	SS3 008F	APC 009F	¯ 00AF	¿ 00BF	Ï 00CF	ß 00DF	ï 00EF	ÿ 00FF

C1 controls

Alias names are those for ISO/IEC 6429:1992.

0080		<control>
0081		<control>
0082		<control> = BREAK PERMITTED HERE → 200B zero width space
0083		<control> = NO BREAK HERE → 2060 word joiner
0084		<control> • formerly known as INDEX
0085		<control> = NEXT LINE (NEL)
0086		<control> = START OF SELECTED AREA
0087		<control> = END OF SELECTED AREA
0088		<control> = CHARACTER TABULATION SET
0089		<control> = CHARACTER TABULATION WITH JUSTIFICATION
008A		<control> = LINE TABULATION SET
008B		<control> = PARTIAL LINE FORWARD
008C		<control> = PARTIAL LINE BACKWARD
008D		<control> = REVERSE LINE FEED
008E		<control> = SINGLE SHIFT TWO
008F		<control> = SINGLE SHIFT THREE
0090		<control> = DEVICE CONTROL STRING
0091		<control> = PRIVATE USE ONE
0092		<control> = PRIVATE USE TWO
0093		<control> = SET TRANSMIT STATE
0094		<control> = CANCEL CHARACTER
0095		<control> = MESSAGE WAITING
0096		<control> = START OF GUARDED AREA
0097		<control> = END OF GUARDED AREA
0098		<control> = START OF STRING
0099		<control>
009A		<control> = SINGLE CHARACTER INTRODUCER
009B		<control> = CONTROL SEQUENCE INTRODUCER
009C		<control> = STRING TERMINATOR
009D		<control> = OPERATING SYSTEM COMMAND
009E		<control> = PRIVACY MESSAGE

009F <control>
= APPLICATION PROGRAM COMMAND

Latin-1 punctuation and symbols

Based on ISO/IEC 8859-1 (aka Latin-1) from here.

00A0		NO-BREAK SPACE • commonly abbreviated as NBSP → 0020 space → 2007 figure space → 202F narrow no-break space → 2060 word joiner → 237D shouldered open box → FEFF zero width no-break space ≈ <noBreak> 0020
00A1		INVERTED EXCLAMATION MARK • Spanish, Asturian, Galician • used in extended IPA to represent sublingual lower alveolar percussive → 0021 ! exclamation mark → A71E modifier letter raised inverted exclamation mark → A71F modifier letter low inverted exclamation mark
00A2		CENT SIGN → 023C latin small letter c with stroke → 20A5 mill sign → 20B5 cedi sign → 1D135 musical symbol cut time
00A3		POUND SIGN = pound sterling, Irish punt, lira etc. • glyph may have one or two crossbars, in distinction from 20A4 → 20A4 lira sign → 20BA turkish lira sign → 10192 roman semuncia sign
00A4		CURRENCY SIGN • generic or unknown currency • other currency symbol characters: 20A0 – 20BF → 0024 dollar sign
00A5		YEN SIGN = yuan sign (renminbi) • glyph may have one or two crossbars, but the official symbol in Japan and the PR China has two • in native contexts, specific ideographs may also be used for units of these currencies → 5143 → 5186
00A6		BROKEN BAR = broken vertical bar (1.0) = parted rule (in typography) → 007C vertical line
00A7		SECTION SIGN • used in referencing numbered sections or paragraphs → 2E39 top half section sign
00A8		DIAERESIS • this is a spacing character → 0308 combining diaeresis ≈ 0020 0308

00A9 © COPYRIGHT SIGN
 → 2117 ® sound recording copyright
 → 24B8 © circled latin capital letter c
 → 1F12F ☺ copyleft symbol
 → 1F1AD ™ mask work symbol

00AA ^a FEMININE ORDINAL INDICATOR

• Spanish
 1D43 ^a modifier letter small a
 ≈ <super> 0061 a

00AB « LEFT-POINTING DOUBLE ANGLE QUOTATION MARK

= left guillemet
 = chevrons (in typography)
 • usually opening, sometimes closing
 → 226A « much less-than
 → 300A ≪ left double angle bracket

00AC ¬ NOT SIGN

= angled dash (in typography)
 → 2310 ¬ reversed not sign
 → 2319 ⌵ turned not sign

00AD ^{SHY} SOFT HYPHEN

= discretionary hyphen
 • commonly abbreviated as SHY
 • an invisible format character indicating a possible hyphenation location

00AE ® REGISTERED SIGN

= registered trade mark sign (1.0)
 → 2122 ™ trade mark sign
 → 24C7 ® circled latin capital letter r
 → 1F16B ^{MD} raised md sign
 → 1F16C ^{MR} raised mr sign

00AF ¯ MACRON

= overline, APL overbar
 • this is a spacing character
 • unlike 203E ¯, adjacent instances of this character do not join
 → 02C9 ¯ modifier letter macron
 → 0304 ¯ combining macron
 → 0305 ¯ combining overline
 → 203E ¯ overline
 → FE26 ¯ combining conjoining macron
 ≈ 0020 ^{SP} 0304 ¯

00B0 ° DEGREE SIGN

• this is a spacing character
 → 02DA ° ring above
 → 030A ° combining ring above
 → 1D52 ° modifier letter small o
 → 2070 ° superscript zero
 → 2103 °C degree celsius small o
 → 2109 °F degree fahrenheit
 → 2218 ° ring operator

00B1 ± PLUS-MINUS SIGN

= biquintile (astrological aspect; 144°)
 → 2213 ± minus-or-plus sign

00B2 ² SUPERSCRIP TWO

= squared
 • other superscript digit characters:
 2070 ⁰–2079 ⁹
 → 00B9 ¹ superscript one
 ≈ <super> 0032 2

00B3 ³ SUPERSCRIP THREE

= cubed
 → 00B9 ¹ superscript one
 ≈ <super> 0033 3

00B4 ´ ACUTE ACCENT

• this is a spacing character
 → 02B9 ´ modifier letter prime
 → 02CA ´ modifier letter acute accent
 → 0301 ´ combining acute accent
 → 0384 ´ greek tonos
 → 1FFD ´ greek oxia
 → 2032 ´ prime
 ≈ 0020 ^{SP} 0301 ´

00B5 µ MICRO SIGN

≈ 03BC µ greek small letter mu

00B6 ¶ PILCROW SIGN

= paragraph sign
 • section sign in some European usage
 → 204B ¶ reversed pilcrow sign
 → 2761 ¶ curved stem paragraph sign ornament
 → 2E3F ¶ capitulum

00B7 · MIDDLE DOT

= midpoint (in typography), centered dot
 = Georgian comma
 = Greek semicolon (ano teleia)
 • also used as a raised decimal point or to denote multiplication; for multiplication 22C5 · is preferred
 → 002E · full stop
 → 02D9 · dot above
 → 0387 · greek ano teleia
 → 2022 · bullet
 → 2024 · one dot leader
 → 2027 · hyphenation point
 → 2219 · bullet operator
 → 22C5 · dot operator
 → 2E31 · word separator middle dot
 → 2E33 · raised dot
 → 30FB · katakana middle dot
 → A78F · latin letter sinological dot

00B8 ˇ CEDILLA

• this is a spacing character
 • other spacing accent characters:
 02D8 ˇ–02DB ˇ
 → 0327 ˇ combining cedilla
 ≈ 0020 ^{SP} 0327 ˇ

00B9 ¹ SUPERSCRIP ONE

→ 00B2 ² superscript two
 → 00B3 ³ superscript three
 → 2070 ⁰ superscript zero
 ≈ <super> 0031 1

00BA ° MASCULINE ORDINAL INDICATOR

• Spanish
 → 1D52 ° modifier letter small o
 → 2116 № numero sign
 ≈ <super> 006F o

00BB » RIGHT-POINTING DOUBLE ANGLE QUOTATION MARK

= right guillemet
 • usually closing, sometimes opening
 → 226B » much greater-than
 → 300B ≫ right double angle bracket

Vulgar fractions

The fraction bar for these may be rendered horizontally or at a slant. For other fraction characters, see 2150-215E.

00BC	¼	VULGAR FRACTION ONE QUARTER ≈ <fraction> 0031 1 2044/ 0034 4
00BD	½	VULGAR FRACTION ONE HALF ≈ <fraction> 0031 1 2044/ 0032 2
00BE	¾	VULGAR FRACTION THREE QUARTERS ≈ <fraction> 0033 3 2044/ 0034 4

Punctuation

00BF	¿	INVERTED QUESTION MARK = turned question mark • Spanish → 003F ? question mark → 2E2E ʔ reversed question mark
------	---	--

Letters

00C0	À	LATIN CAPITAL LETTER A WITH GRAVE ≡ 0041 A 0300 ò
00C1	Á	LATIN CAPITAL LETTER A WITH ACUTE ≡ 0041 A 0301 ó
00C2	Â	LATIN CAPITAL LETTER A WITH CIRCUMFLEX ≡ 0041 A 0302 ô
00C3	Ã	LATIN CAPITAL LETTER A WITH TILDE ≡ 0041 A 0303 õ
00C4	Ä	LATIN CAPITAL LETTER A WITH DIAERESIS ≡ 0041 A 0308 ö
00C5	Å	LATIN CAPITAL LETTER A WITH RING ABOVE → 212B Å angstrom sign ≡ 0041 A 030A å
00C6	Æ	LATIN CAPITAL LETTER AE = latin capital ligature ae (1.1)
00C7	Ç	LATIN CAPITAL LETTER C WITH CEDILLA ≡ 0043 C 0327 ç
00C8	È	LATIN CAPITAL LETTER E WITH GRAVE ≡ 0045 E 0300 è
00C9	É	LATIN CAPITAL LETTER E WITH ACUTE ≡ 0045 E 0301 é
00CA	Ê	LATIN CAPITAL LETTER E WITH CIRCUMFLEX ≡ 0045 E 0302 ê
00CB	Ë	LATIN CAPITAL LETTER E WITH DIAERESIS ≡ 0045 E 0308 ë
00CC	Ì	LATIN CAPITAL LETTER I WITH GRAVE ≡ 0049 I 0300 ì
00CD	Í	LATIN CAPITAL LETTER I WITH ACUTE ≡ 0049 I 0301 í
00CE	Î	LATIN CAPITAL LETTER I WITH CIRCUMFLEX ≡ 0049 I 0302 î
00CF	Ï	LATIN CAPITAL LETTER I WITH DIAERESIS ≡ 0049 I 0308 ï
00D0	Ð	LATIN CAPITAL LETTER ETH • lowercase is 00F0 ð → 0110 Ð latin capital letter d with stroke → 0189 Ð latin capital letter african d → A7C7 Ð latin capital letter d with short stroke overlay
00D1	Ñ	LATIN CAPITAL LETTER N WITH TILDE ≡ 004E N 0303 ñ
00D2	Ò	LATIN CAPITAL LETTER O WITH GRAVE ≡ 004F O 0300 ò
00D3	Ó	LATIN CAPITAL LETTER O WITH ACUTE ≡ 004F O 0301 ó

00D4	Ô	LATIN CAPITAL LETTER O WITH CIRCUMFLEX ≡ 004F O 0302 ô
00D5	Õ	LATIN CAPITAL LETTER O WITH TILDE ≡ 004F O 0303 õ
00D6	Ö	LATIN CAPITAL LETTER O WITH DIAERESIS ≡ 004F O 0308 ö

Mathematical operator

00D7	×	MULTIPLICATION SIGN = z notation Cartesian product → 0078 x latin small letter x → 2613 X saltire → 2715 X multiplication x → 2718 X ballot x → 274C X cross mark → 2A2F x vector or cross product → 1F5D9 X cancellation x → 1F7A9 X light saltire
------	---	--

Letters

00D8	Ø	LATIN CAPITAL LETTER O WITH STROKE = o slash → 2205 ø empty set
00D9	Ù	LATIN CAPITAL LETTER U WITH GRAVE ≡ 0055 U 0300 ù
00DA	Ú	LATIN CAPITAL LETTER U WITH ACUTE ≡ 0055 U 0301 ú
00DB	Û	LATIN CAPITAL LETTER U WITH CIRCUMFLEX ≡ 0055 U 0302 û
00DC	Ü	LATIN CAPITAL LETTER U WITH DIAERESIS ≡ 0055 U 0308 ü
00DD	Ý	LATIN CAPITAL LETTER Y WITH ACUTE ≡ 0059 Y 0301 ý
00DE	Þ	LATIN CAPITAL LETTER THORN → 03F7 Þ greek capital letter sho → 16A6 þ runic letter thurisaz thurs thorn
00DF	ß	LATIN SMALL LETTER SHARP S = Eszett • German • not used in Swiss High German • uppercase is "SS" (standard case mapping), alternatively 1E9E Š • typographically the glyph for this character can be based on a ligature of 017F f with either 0073 s or with an old-style glyph for 007A z (the latter similar in appearance to 0292 Ʒ). Both forms exist interchangeably today. → 017F f . latin small letter long s → 0292 Ʒ . latin small letter ezhg s → 03B2 ß greek small letter beta → 1E9E Š . latin capital letter sharp s
00E0	à	LATIN SMALL LETTER A WITH GRAVE ≡ 0061 a 0300 à
00E1	á	LATIN SMALL LETTER A WITH ACUTE ≡ 0061 a 0301 á
00E2	â	LATIN SMALL LETTER A WITH CIRCUMFLEX ≡ 0061 a 0302 â
00E3	ã	LATIN SMALL LETTER A WITH TILDE • Portuguese ≡ 0061 a 0303 ã
00E4	ä	LATIN SMALL LETTER A WITH DIAERESIS ≡ 0061 a 0308 ä

00E5	å	LATIN SMALL LETTER A WITH RING ABOVE
		• Danish, Norwegian, Swedish, Walloon ≡ 0061 a 030A Ǻ
00E6	æ	LATIN SMALL LETTER AE
		= latin small ligature ae (1.1) = ash (from Old English æsc) • Danish, Norwegian, Icelandic, Faroese, Old English, French, IPA → 0153 œ latin small ligature oe → 04D5 æ cyrillic small ligature a ie
00E7	ç	LATIN SMALL LETTER C WITH CEDILLA
		≡ 0063 c 0327 ç
00E8	è	LATIN SMALL LETTER E WITH GRAVE
		≡ 0065 e 0300 è
00E9	é	LATIN SMALL LETTER E WITH ACUTE
		≡ 0065 e 0301 é
00EA	ê	LATIN SMALL LETTER E WITH CIRCUMFLEX
		≡ 0065 e 0302 ê
00EB	ë	LATIN SMALL LETTER E WITH DIAERESIS
		≡ 0065 e 0308 ë
00EC	ì	LATIN SMALL LETTER I WITH GRAVE
		• Italian, Malagasy ≡ 0069 i 0300 ì
00ED	í	LATIN SMALL LETTER I WITH ACUTE
		≡ 0069 i 0301 í
00EE	î	LATIN SMALL LETTER I WITH CIRCUMFLEX
		≡ 0069 i 0302 î
00EF	ï	LATIN SMALL LETTER I WITH DIAERESIS
		≡ 0069 i 0308 ï
00F0	ð	LATIN SMALL LETTER ETH
		• Icelandic, Faroese, Old English, IPA • uppercase is 00D0 Ð → 0111 đ latin small letter d with stroke → 03B4 δ greek small letter delta → 2202 ∂ partial differential
00F1	ñ	LATIN SMALL LETTER N WITH TILDE
		≡ 006E n 0303 ñ
00F2	ò	LATIN SMALL LETTER O WITH GRAVE
		≡ 006F o 0300 ò
00F3	ó	LATIN SMALL LETTER O WITH ACUTE
		≡ 006F o 0301 ó
00F4	ô	LATIN SMALL LETTER O WITH CIRCUMFLEX
		≡ 006F o 0302 ô
00F5	õ	LATIN SMALL LETTER O WITH TILDE
		• Portuguese, Estonian, Livonian ≡ 006F o 0303 õ
00F6	ö	LATIN SMALL LETTER O WITH DIAERESIS
		≡ 006F o 0308 ö

Mathematical operator

00F7	÷	DIVISION SIGN
		= obelus
		• used as an alternate, more visually distinct shape for a hyphen in some contexts
		• historically used as a punctuation mark to denote questionable passages in manuscripts
		→ 070B 𐤎 syriac harklean obelus
		→ 2052 ⅃ commercial minus sign
		→ 2212 − minus sign
		→ 2215 / division slash
		→ 2223 | divides
		→ 2236 : ratio
		→ 2797 ⅈ heavy division sign
		→ 27CC } long division
		→ 2E13 ⅆ dotted obelos

Letters

00F8	ø	LATIN SMALL LETTER O WITH STROKE
		= o slash
		• Danish, Norwegian, Faroese, IPA → 2300 ø diameter sign
00F9	ù	LATIN SMALL LETTER U WITH GRAVE
		• French, Italian ≡ 0075 u 0300 ù
00FA	ú	LATIN SMALL LETTER U WITH ACUTE
		≡ 0075 u 0301 ú
00FB	û	LATIN SMALL LETTER U WITH CIRCUMFLEX
		≡ 0075 u 0302 û
00FC	ü	LATIN SMALL LETTER U WITH DIAERESIS
		≡ 0075 u 0308 ü
00FD	ý	LATIN SMALL LETTER Y WITH ACUTE
		• Czech, Slovak, Icelandic, Faroese, Welsh, Malagasy ≡ 0079 y 0301 ý
00FE	þ	LATIN SMALL LETTER THORN
		• Icelandic, Old English, and various phonetic notations
		• Runic letter borrowed into the Latin script
		→ 03F8 þ greek small letter sho
		→ 16A6 𐀚 runic letter thurisaz thurs thorn
00FF	ÿ	LATIN SMALL LETTER Y WITH DIAERESIS
		• French, medieval Hungarian orthography
		• uppercase is 0178 Ÿ
		≡ 0079 y 0308 ÿ

	220	221	222	223	224	225	226	227	228	229	22A	22B	22C	22D	22E	22F
0	∇ 2200	\sqcup 2210	\sphericalangle 2220	$\rlap{-}\int$ 2230	ζ 2240	\doteq 2250	\neq 2260	$\not\approx$ 2270	$\not\sim$ 2280	\sqsupset 2290	\boxtimes 22A0	\wp 22B0	\bigwedge 22C0	\in 22D0	$\not\in$ 22E0	\ddots 22F0
1	\complement 2201	\sum 2211	\triangleleft 2221	f 2231	\approx 2241	\doteq 2251	\equiv 2261	$\not\approx$ 2271	$\not\sim$ 2281	\sqsubseteq 2291	\boxdot 22A1	\wp 22B1	\bigvee 22C1	\supset 22D1	$\not\in$ 22E1	\ddots 22F1
2	∂ 2202	$-$ 2212	\triangleleft 2222	f 2232	\approx 2242	\doteq 2252	\neq 2262	$\not\approx$ 2272	\subset 2282	\sqsubseteq 2292	\vdash 22A2	\triangleleft 22B2	\cap 22C2	\supset 22D2	$\not\in$ 22E2	\in 22F2
3	\exists 2203	\mp 2213	$|$ 2223	f 2233	\approx 2243	\doteq 2253	\equiv 2263	$\not\approx$ 2273	\supset 2283	\sqsupset 2293	\vdash 22A3	\triangleleft 22B3	\cup 22C3	\supset 22D3	$\not\in$ 22E3	\in 22F3
4	$\not\approx$ 2204	$\dot{+}$ 2214	\dagger 2224	\ddots 2234	$\not\approx$ 2244	\doteq 2254	\leq 2264	$\not\approx$ 2274	$\not\sim$ 2284	\sqsupset 2294	\vdash 22A4	\triangleleft 22B4	\diamond 22C4	\supset 22D4	\sqsupset 22E4	\in 22F4
5	\emptyset 2205	$/$ 2215	\parallel 2225	\ddots 2235	\approx 2245	\doteq 2255	\geq 2265	$\not\approx$ 2275	$\not\sim$ 2285	\oplus 2295	\perp 22A5	\triangleleft 22B5	\cdot 22C5	$\#$ 22D5	\sqsupset 22E5	\in 22F5
6	\triangle 2206	\setminus 2216	$\#$ 2226	\cdot 2236	\approx 2246	H 2256	\leq 2266	\geq 2276	\subset 2286	\ominus 2296	\vdash 22A6	key 22B6	\star 22C6	\triangleleft 22D6	$\not\approx$ 22E6	\in 22F6
7	∇ 2207	$*$ 2217	\wedge 2227	\ddots 2237	$\not\approx$ 2247	\doteq 2257	\geq 2267	\geq 2277	\supset 2287	\otimes 2297	F 22A7	key 22B7	\ast 22C7	\triangleleft 22D7	$\not\approx$ 22E7	\in 22F7
8	\in 2208	\circ 2218	\vee 2228	$\dot{-}$ 2238	\approx 2248	\doteq 2258	\leq 2268	$\not\approx$ 2278	$\not\sim$ 2288	\ominus 2298	F 22A8	key 22B8	\boxtimes 22C8	\lll 22D8	$\not\approx$ 22E8	\in 22F8
9	\notin 2209	\cdot 2219	\cap 2229	$\dot{-}$ 2239	\approx 2249	\doteq 2259	\geq 2269	$\not\approx$ 2279	$\not\sim$ 2289	\odot 2299	F 22A9	$\dot{+}$ 22B9	\boxtimes 22C9	\lll 22D9	$\not\approx$ 22E9	\in 22F9
A	\in 220A	$\sqrt{\quad}$ 221A	\cup 222A	\ddots 223A	\approx 224A	\doteq 225A	\lll 226A	\lrcorner 227A	C 228A	\odot 229A	F 22AA	T 22BA	\boxtimes 22CA	\lll 22DA	$\not\approx$ 22EA	\in 22FA
B	\supset 220B	$\sqrt[3]{\quad}$ 221B	\int 222B	\approx 223B	\approx 224B	\doteq 225B	\lll 226B	\lrcorner 227B	C 228B	\otimes 229B	F 22AB	\vee 22BB	\wedge 22CB	\lll 22DB	$\not\approx$ 22EB	\in 22FB
C	$\not\approx$ 220C	$\sqrt[4]{\quad}$ 221C	\iint 222C	\approx 223C	\approx 224C	\doteq 225C	$\not\approx$ 226C	\lrcorner 227C	\in 228C	\ominus 229C	$\not\approx$ 22AC	\wedge 22BC	\wedge 22CC	\leq 22DC	$\not\approx$ 22EC	\in 22FC
D	\supset 220D	α 221D	\iiint 222D	\sim 223D	C 224D	def 225D	$\not\approx$ 226D	\lrcorner 227D	C 228D	\ominus 229D	$\not\approx$ 22AD	∇ 22BD	C 22CD	\leq 22DD	$\not\approx$ 22ED	\in 22FD
E	\blacksquare 220E	∞ 221E	f 222E	\approx 223E	C 224E	m 225E	$\not\approx$ 226E	$\not\approx$ 227E	\in 228E	\boxplus 229E	$\not\approx$ 22AE	C 22BE	\vee 22CE	\wedge 22DE	\ddots 22EE	\in 22FE
F	\prod 220F	L 221F	$\rlap{-}\int$ 222F	\approx 223F	C 224F	\doteq 225F	$\not\approx$ 226F	$\not\approx$ 227F	\sqsupset 228F	\boxplus 229F	$\not\approx$ 22AF	\triangleleft 22BF	\wedge 22CF	\wedge 22DF	\ddots 22EF	\in 22FF

Additional mathematical operators are found in the supplemental mathematical operator blocks starting at 27C0, 2980, 2A00 and individually as part of Basic Latin, Latin-1 and General Punctuation blocks

- 0021 ! exclamation mark
- 002B + plus sign
- 003C < less-than sign
- 003D = equals sign
- 003E > greater than sign
- 00B1 ± plus-minus sign
- 00D7 × multiplication sign
- 00F7 ÷ division sign
- 2061 $f()$ function application
- 2062 \times invisible times
- 2063 $,$ invisible separator
- 2064 $+$ invisible plus

Floors and ceilings: 2308 to 230B

Miscellaneous mathematical symbols

- 2200 \forall FOR ALL
= universal quantifier
- 2201 \complement COMPLEMENT
→ 0297 \complement latin letter stretched c
- 2202 ∂ PARTIAL DIFFERENTIAL
- 2203 \exists THERE EXISTS
= existential quantifier
- 2204 \nexists THERE DOES NOT EXIST
≡ 2203 \exists 0338 $\not\exists$
- 2205 \emptyset EMPTY SET
= null set
• used in linguistics to indicate a null morpheme or phonological “zero”
→ 00D8 \emptyset latin capital letter o with stroke
→ 2300 \emptyset diameter sign
~ 2205 FE00 \emptyset zero with long diagonal stroke overlay form
- 2206 Δ INCREMENT
= Laplace operator
= forward difference
= symmetric difference (in set theory)
• other symbols may also be used for symmetric difference
→ 0394 Δ greek capital letter delta
→ 25B3 Δ white up-pointing triangle
- 2207 ∇ NABLA
= backward difference
= gradient, del
• used for Laplacian operator (written with superscript 2)
→ 25BD ∇ white down-pointing triangle

Set membership

- 2208 \in ELEMENT OF
- 2209 \notin NOT AN ELEMENT OF
≡ 2208 \in 0338 $\not\in$
- 220A ϵ SMALL ELEMENT OF
• originates in math pi fonts; not the straight epsilon
→ 03F5 ϵ greek lunate epsilon symbol
- 220B \ni CONTAINS AS MEMBER
= such that
- 220C \nni DOES NOT CONTAIN AS MEMBER
≡ 220B \ni 0338 $\not\ni$

- 220D \ni SMALL CONTAINS AS MEMBER
→ 03F6 \ni greek reversed lunate epsilon symbol

Miscellaneous mathematical symbol

- 220E \blacksquare END OF PROOF
= q.e.d.
→ 2023 \blacktriangleright triangular bullet
→ 25AE \blacksquare black vertical rectangle

N-ary operators

- 220F \prod N-ARY PRODUCT
= product sign
→ 03A0 \prod greek capital letter pi
- 2210 \coprod N-ARY COPRODUCT
= coproduct sign
- 2211 \sum N-ARY SUMMATION
= summation sign
→ 03A3 \sum greek capital letter sigma
→ 2140 $\sum\limits$ double-struck n-ary summation

Operators

- 2212 $-$ MINUS SIGN
→ 002D $-$ hyphen-minus
→ 2796 — heavy minus sign
- 2213 \mp MINUS-OR-PLUS SIGN
→ 00B1 \pm plus-minus sign
- 2214 \dagger DOT PLUS
- 2215 $/$ DIVISION SLASH
• generic division operator
→ 002F $/$ solidus
→ 2044 $/$ fraction slash
→ 27CB $/$ mathematical rising diagonal
- 2216 \setminus SET MINUS
→ 005C \setminus reverse solidus
→ 27CD \setminus mathematical falling diagonal
→ 29F5 \setminus reverse solidus operator
- 2217 $*$ ASTERISK OPERATOR
→ 002A $*$ asterisk
- 2218 \circ RING OPERATOR
= composite function
= APL jot
→ 00B0 $^\circ$ degree sign
→ 0970 $^\circ$ devanagari abbreviation sign
→ 25E6 \circ white bullet
→ 10B39 $^\circ$ avestan abbreviation mark
- 2219 \cdot BULLET OPERATOR
→ 00B7 \cdot middle dot
→ 2022 \bullet bullet
→ 2024 \cdot one dot leader
- 221A $\sqrt{\quad}$ SQUARE ROOT
= radical sign
→ 2713 \checkmark check mark
- 221B $\sqrt[3]{\quad}$ CUBE ROOT
→ 0606 $\sqrt[3]{\quad}$ arabic-indic cube root
- 221C $\sqrt[4]{\quad}$ FOURTH ROOT
→ 0607 $\sqrt[4]{\quad}$ arabic-indic fourth root
- 221D \propto PROPORTIONAL TO
→ 03B1 α greek small letter alpha

Miscellaneous mathematical symbol

- 221E ∞ INFINITY

Angles

Other angle symbols are found at 299B-29AF.

- 221F \perp RIGHT ANGLE
= with (in chess notation)
→ 2BFE \perp reversed right angle
- 2220 \sphericalangle ANGLE
• used in astrological contexts for aspect semisquare
→ 299F \sphericalangle acute angle
- 2221 \sphericalangle MEASURED ANGLE
- 2222 \sphericalangle SPHERICAL ANGLE
= angle arc

Relations

- 2223 \mid DIVIDES
= such that
= APL stile
→ 007C \mid vertical line
→ 01C0 \mid latin letter dental click
- 2224 \nmid DOES NOT DIVIDE
 \equiv 2223 \mid 0338 \nmid
- 2225 \parallel PARALLEL TO
→ 01C1 \parallel latin letter lateral click
→ 2016 \parallel double vertical line
- 2226 \nparallel NOT PARALLEL TO
 \equiv 2225 \parallel 0338 \nparallel

Logical and set operators

- 2227 \wedge LOGICAL AND
= wedge, conjunction
→ 22C0 \wedge n-ary logical and
→ 2303 \wedge up arrowhead
→ 27D1 \wedge and with dot
- 2228 \vee LOGICAL OR
= vee, disjunction
→ 22C1 \vee n-ary logical or
→ 2304 \vee down arrowhead
→ 27C7 \vee or with dot inside
- 2229 \cap INTERSECTION
= cap, hat
→ 22C2 \cap n-ary intersection
~ 2229 FE00 \cap with serifs
- 222A \cup UNION
= cup
→ 22C3 \cup n-ary union
~ 222A FE00 \cup with serifs

Integrals

- 222B \int INTEGRAL
→ 0283 \int latin small letter esh
- 222C \iint DOUBLE INTEGRAL
 \approx 222B \int 222B \int
- 222D \iiint TRIPLE INTEGRAL
→ 2A0C \iiint quadruple integral operator
 \approx 222B \int 222B \int 222B \int
- 222E \oint CONTOUR INTEGRAL
→ 2A15 \oint integral around a point operator
- 222F \oiint SURFACE INTEGRAL
 \approx 222E \oint 222E \oint
- 2230 \iiint VOLUME INTEGRAL
 \approx 222E \oint 222E \oint 222E \oint
- 2231 \int CLOCKWISE INTEGRAL
- 2232 \oint CLOCKWISE CONTOUR INTEGRAL

- 2233 \oint ANTICLOCKWISE CONTOUR INTEGRAL
• clockwise or anticlockwise arrows do not reverse during layout mirroring

Miscellaneous mathematical symbols

- 2234 \therefore THEREFORE
→ 26EC \therefore historic site
- 2235 \because BECAUSE

Relations

- 2236 $:$ RATIO
• preferred to 003A $:$ for denotation of division or scale in mathematical use
→ 003A $:$ colon
- 2237 $::$ PROPORTION

Operator

- 2238 $\dot{-}$ DOT MINUS
= saturating subtraction
• sometimes claimed as notation for symmetric set difference, but 2206 Δ is preferred

Relation

- 2239 -- EXCESS

Operator

- 223A :: GEOMETRIC PROPORTION

Relations

- 223B \sphericalsim HOMOTHETIC
→ 2A6B \sphericalsim tilde operator with rising dots
- 223C \sim TILDE OPERATOR
= varies with (proportional to)
= difference between
= similar to
= not
= cycle
= APL tilde
→ 007E \sim tilde
→ 00AC \sim not sign
→ 02DC \sim small tilde
- 223D \smile REVERSED TILDE
= lazy S
• reversed tilde and lazy S are glyph variants
- 223E \smile INVERTED LAZY S
= most positive

Miscellaneous mathematical symbol

- 223F \sim SINE WAVE
= alternating current

Operator

- 2240 \wr WREATH PRODUCT

Relations

- 2241 \sim NOT TILDE
 \equiv 223C \sim 0338 \nmid
- 2242 \approx MINUS TILDE
- 2243 \approx ASYMPTOTICALLY EQUAL TO
- 2244 $\not\approx$ NOT ASYMPTOTICALLY EQUAL TO
 \equiv 2243 \approx 0338 \nmid
- 2245 \cong APPROXIMATELY EQUAL TO
→ 2A70 \cong approximately equal or equal to
- 2246 $\not\cong$ APPROXIMATELY BUT NOT ACTUALLY EQUAL TO
- 2247 $\not\cong$ NEITHER APPROXIMATELY NOR ACTUALLY EQUAL TO
 \equiv 2245 \cong 0338 \nmid

2248	\approx	ALMOST EQUAL TO = asymptotic to	226F	\nlessgtr	NOT GREATER-THAN \equiv 003E $>$ 0338 $\not\lessgtr$
2249	\napprox	NOT ALMOST EQUAL TO \equiv 2248 \approx 0338 $\not\approx$	2270	\nlessgtr	NEITHER LESS-THAN NOR EQUAL TO \equiv 2264 \leq 0338 $\not\lessgtr$
224A	\approx	ALMOST EQUAL OR EQUAL TO	2271	\nlessgtr	NEITHER GREATER-THAN NOR EQUAL TO \equiv 2265 \geq 0338 $\not\lessgtr$
224B	\approx	TRIPLE TILDE	2272	\lesssim	LESS-THAN OR EQUIVALENT TO \sim 2272 FE00 \lesssim following the slant of the lower leg
224C	\equiv	ALL EQUAL TO • reversed tilde and lazy S are glyph variants	2273	\gtrsim	GREATER-THAN OR EQUIVALENT TO \sim 2273 FE00 \gtrsim following the slant of the lower leg
224D	\asymp	EQUIVALENT TO	2274	\nlessgtr	NEITHER LESS-THAN NOR EQUIVALENT TO \equiv 2272 \lesssim 0338 $\not\lessgtr$
224E	\doteq	GEOMETRICALLY EQUIVALENT TO	2275	\nlessgtr	NEITHER GREATER-THAN NOR EQUIVALENT TO \equiv 2273 \gtrsim 0338 $\not\lessgtr$
224F	\triangleright	DIFFERENCE BETWEEN	2276	\lesseqgtr	LESS-THAN OR GREATER-THAN
2250	\doteq	APPROACHES THE LIMIT	2277	\gtrseq	GREATER-THAN OR LESS-THAN
2251	\doteq	GEOMETRICALLY EQUAL TO	2278	\nlessgtr	NEITHER LESS-THAN NOR GREATER-THAN \equiv 2276 \lesseqgtr 0338 $\not\lessgtr$
2252	\doteq	APPROXIMATELY EQUAL TO OR THE IMAGE OF = nearly equals	2279	\nlessgtr	NEITHER GREATER-THAN NOR LESS-THAN \equiv 2277 \gtrseq 0338 $\not\lessgtr$
2253	\doteq	IMAGE OF OR APPROXIMATELY EQUAL TO	227A	\prec	PRECEDES = lower rank than \rightarrow 22B0 \prec precedes under relation
2254	\equiv	COLON EQUALS	227B	\succ	SUCCEEDS = higher rank than \rightarrow 22B1 \succ succeeds under relation
2255	\equiv	EQUALS COLON	227C	\lesseqgtr	PRECEDES OR EQUAL TO
2256	\Rrightarrow	RING IN EQUAL TO	227D	\gtrseq	SUCCEEDS OR EQUAL TO
2257	\Rrightarrow	RING EQUAL TO = approximately equal to	227E	\nlessgtr	PRECEDES OR EQUIVALENT TO
2258	\Rrightarrow	CORRESPONDS TO	227F	\nlessgtr	SUCCEEDS OR EQUIVALENT TO
2259	\Rrightarrow	ESTIMATES = corresponds to	2280	\nlessgtr	DOES NOT PRECEDE \equiv 227A $<$ 0338 $\not\lessgtr$
225A	\Rrightarrow	EQUIANGULAR TO	2281	\nlessgtr	DOES NOT SUCCEED \equiv 227B $>$ 0338 $\not\lessgtr$
225B	\Rrightarrow	STAR EQUALS	2282	\subset	SUBSET OF = included in set \rightarrow 2E26 \subset left sideways u bracket
225C	\Rrightarrow	DELTA EQUAL TO = equiangular = equal to by definition	2283	\supset	SUPERSET OF = includes in set \rightarrow 2E27 \supset right sideways u bracket
225D	\Rrightarrow	EQUAL TO BY DEFINITION	2284	\nsubset	NOT A SUBSET OF \equiv 2282 \subset 0338 $\not\subset$
225E	\Rrightarrow	MEASURED BY	2285	\nsubset	NOT A SUPERSET OF \equiv 2283 \supset 0338 $\not\subset$
225F	\Rrightarrow	QUESTIONED EQUAL TO	2286	\subseteq	SUBSET OF OR EQUAL TO
2260	\nneq	NOT EQUAL TO \rightarrow 003D = equals sign \rightarrow 01C2 † latin letter alveolar click \equiv 003D = 0338 $\not\neq$	2287	\supseteq	SUPERSET OF OR EQUAL TO
2261	\equiv	IDENTICAL TO	2288	\nsubset	NEITHER A SUBSET OF NOR EQUAL TO \equiv 2286 \subseteq 0338 $\not\subset$
2262	\nneq	NOT IDENTICAL TO \equiv 2261 \equiv 0338 $\not\neq$	2289	\nsubset	NEITHER A SUPERSET OF NOR EQUAL TO \equiv 2287 \supseteq 0338 $\not\subset$
2263	\equiv	STRICTLY EQUIVALENT TO	228A	\nsubseteq	SUBSET OF WITH NOT EQUAL TO \sim 228A FE00 \nsubseteq with stroke through bottom members
2264	\lesseqgtr	LESS-THAN OR EQUAL TO 003C < less-than sign	228B	\nsupseteq	SUPERSET OF WITH NOT EQUAL TO \sim 228B FE00 \nsupseteq with stroke through bottom members
2265	\gtrseq	GREATER-THAN OR EQUAL TO 003E > greater than sign			
2266	\lesseqgtr	LESS-THAN OVER EQUAL TO			
2267	\gtrseq	GREATER-THAN OVER EQUAL TO			
2268	\nlessgtr	LESS-THAN BUT NOT EQUAL TO \sim 2268 FE00 \nlessgtr with vertical stroke			
2269	\nlessgtr	GREATER-THAN BUT NOT EQUAL TO \sim 2269 FE00 \nlessgtr with vertical stroke			
226A	\ll	MUCH LESS-THAN \rightarrow 00AB \ll left-pointing double angle quotation mark			
226B	\gg	MUCH GREATER-THAN \rightarrow 00BB \gg right-pointing double angle quotation mark			
226C	\nlessgtr	BETWEEN = plaintiff, quantic			
226D	\nneq	NOT EQUIVALENT TO \equiv 224D \asymp 0338 $\not\neq$			
226E	\nlessgtr	NOT LESS-THAN \equiv 003C $<$ 0338 $\not\lessgtr$			

Operators

228C	\cup	MULTISET
228D	\cup	MULTISET MULTIPLICATION \rightarrow 2A03 \cup n-ary union operator with dot \rightarrow 2A40 \cap intersection with dot

- 228E \uplus MULTISET UNION
= z notation bag addition
→ 2A04 \uplus n-ary union operator with plus

Relations

- 228F \sqsubset SQUARE IMAGE OF
2290 \sqsupset SQUARE ORIGINAL OF
2291 \sqsubseteq SQUARE IMAGE OF OR EQUAL TO
2292 \sqsupseteq SQUARE ORIGINAL OF OR EQUAL TO

Operators

- 2293 \sqcap SQUARE CAP
→ 2A05 \sqcap n-ary square intersection operator
~ 2293 FE00 \sqcap with serifs
- 2294 \sqcup SQUARE CUP
→ 2A06 \sqcup n-ary square union operator
~ 2294 FE00 \sqcup with serifs
- 2295 \oplus CIRCLED PLUS
= direct sum
= vector pointing into page
→ 2A01 \oplus n-ary circled plus operator
→ 1F728 \oplus alchemical symbol for verdigris
~ 2295 FE00 \oplus with white rim
- 2296 \ominus CIRCLED MINUS
= symmetric difference
→ 29B5 \ominus circle with horizontal bar
→ 1F714 \ominus alchemical symbol for salt
- 2297 \otimes CIRCLED TIMES
= tensor product
= vector pointing into page
→ 26D2 \otimes circled crossing lanes
→ 2A02 \otimes n-ary circled times operator
→ 2BBE \otimes circled x
~ 2297 FE00 \otimes with white rim
- 2298 \oslash CIRCLED DIVISION SLASH
- 2299 \odot CIRCLED DOT OPERATOR
= direct product
= vector pointing out of page
→ 0298 \odot latin letter bilabial click
→ 2609 \odot sun
→ 2A00 \odot n-ary circled dot operator
- 229A \odot CIRCLED RING OPERATOR
→ 233E \odot apl functional symbol circle jot
→ 25CE \odot bullseye
- 229B \otimes CIRCLED ASTERISK OPERATOR
→ 235F \otimes apl functional symbol circle star
- 229C \odot CIRCLED EQUALS
= NoDerivatives (symbol used for Creative Commons licenses)
→ 1F16D \odot circled cc
~ 229C FE00 \odot with equal sign touching the circle
- 229D \ominus CIRCLED DASH
- 229E \boxplus SQUARED PLUS
- 229F \boxminus SQUARED MINUS
- 22A0 \boxtimes SQUARED TIMES
→ 2612 \boxtimes ballot box with x
→ 26DD \boxtimes squared saltire
→ 1F771 \boxtimes alchemical symbol for month
- 22A1 \boxdot SQUARED DOT OPERATOR
→ 1F755 \boxdot alchemical symbol for urine
→ 1FBBC \boxdot right open squared dot

- 22A2 \dashv RIGHT TACK
= turnstile
= proves, implies, yields
= reducible
- 22A3 \dashv LEFT TACK
= reverse turnstile
= non-theorem, does not yield

Miscellaneous mathematical symbols

- 22A4 \top DOWN TACK
= top
→ 2E06 \top raised interpolation marker
→ 1F768 \top alchemical symbol for crucible-4
- 22A5 \perp UP TACK
= base, bottom
→ 27C2 \perp perpendicular

Relations

- 22A6 \vdash ASSERTION
= reduces to
- 22A7 \vDash MODELS
- 22A8 \vDash TRUE
= statement is true, valid
= is a tautology
= satisfies
= results in
- 22A9 \Vdash FORCES
- 22AA \equiv TRIPLE VERTICAL BAR RIGHT TURNSTILE
- 22AB \equiv DOUBLE VERTICAL BAR DOUBLE RIGHT TURNSTILE
- 22AC \nVdash DOES NOT PROVE
 \equiv 22A2 \vdash 0338 $\not\vdash$
- 22AD $\n\vDash$ NOT TRUE
 \equiv 22A8 \vDash 0338 $\not\vDash$
- 22AE \nVdash DOES NOT FORCE
 \equiv 22A9 \Vdash 0338 $\not\Vdash$
- 22AF $\n\vDash$ NEGATED DOUBLE VERTICAL BAR DOUBLE RIGHT TURNSTILE
 \equiv 22AB \equiv 0338 $\not\vDash$
- 22B0 \prec PRECEDES UNDER RELATION
→ 227A $<$ precedes
- 22B1 \succ SUCCEEDS UNDER RELATION
→ 227B $>$ succeeds
- 22B2 \triangleleft NORMAL SUBGROUP OF
→ 25C5 \triangleleft white left-pointing pointer
- 22B3 \triangleright CONTAINS AS NORMAL SUBGROUP
→ 25BB \triangleright white right-pointing pointer
- 22B4 \trianglelefteq NORMAL SUBGROUP OF OR EQUAL TO
- 22B5 \trianglerighteq CONTAINS AS NORMAL SUBGROUP OR EQUAL TO
- 22B6 $\circ\rightarrow$ ORIGINAL OF
- 22B7 $\circ\leftarrow$ IMAGE OF
- 22B8 \rightarrow MULTIMAP
- 22B9 \dagger HERMITIAN CONJUGATE MATRIX

Operators

- 22BA $\upbar{\top}$ INTERCALATE
- 22BB $\underline{\vee}$ XOR
→ 26BA $\underline{\vee}$ semisextile
- 22BC $\bar{\wedge}$ NAND
→ 2305 $\bar{\wedge}$ projective
→ 26BB $\bar{\wedge}$ quincunx
- 22BD ∇ NOR

Miscellaneous mathematical symbols

- 22BE \sphericalangle RIGHT ANGLE WITH ARC

22BF \triangle RIGHT TRIANGLE

N-ary operators

22C0 \bigwedge N-ARY LOGICAL AND

- also used to denote the universal quantifier
- 2227 \wedge logical and

22C1 \bigvee N-ARY LOGICAL OR

- also used to denote the existential quantifier
- 2228 \vee logical or

22C2 \cap N-ARY INTERSECTION

- = z notation generalised intersection
- 2229 \cap intersection

22C3 \cup N-ARY UNION

- = z notation generalised union
- 222A \cup union

Operators

22C4 \diamond DIAMOND OPERATOR

- 25C7 \diamond white diamond
- 2B29 \blacklozenge black small diamond

22C5 \cdot DOT OPERATOR

- preferred to 00B7 \cdot for denotation of multiplication
- 00B7 \cdot middle dot

22C6 \star STAR OPERATOR

- APL
- 066D \star arabic five pointed star
- 2605 \blackstar black star
- 2B50 \star white medium star

22C7 \times DIVISION TIMES

- 00D7 \times multiplication sign
- 00F7 \div division sign
- 2715 \times multiplication x

Relation

22C8 \bowtie BOWTIE

- 2445 \bowtie ocr bow tie

Operators

22C9 \ltimes LEFT NORMAL FACTOR SEMIDIRECT PRODUCT

22CA \rtimes RIGHT NORMAL FACTOR SEMIDIRECT PRODUCT

22CB \lrcorner LEFT SEMIDIRECT PRODUCT

22CC \rccorner RIGHT SEMIDIRECT PRODUCT

- 2041 \wedge caret insertion point

Relation

22CD \asymp REVERSED TILDE EQUALS

Logical operators

22CE \curlyvee CURLY LOGICAL OR

22CF \curlywedge CURLY LOGICAL AND

Relations

22D0 \Subset DOUBLE SUBSET

22D1 \Supset DOUBLE SUPERSET

Operators

22D2 \pitchfork DOUBLE INTERSECTION

22D3 \pitchfork DOUBLE UNION

Relations

22D4 \pitchfork PITCHFORK

- = proper intersection

22D5 $\#$ EQUAL AND PARALLEL TO

- 2317 $\#$ viewdata square

22D6 \lessdot LESS-THAN WITH DOT

22D7 \gtrdot GREATER-THAN WITH DOT

22D8 \lll VERY MUCH LESS-THAN

22D9 \ggg VERY MUCH GREATER-THAN

22DA \lessgtr LESS-THAN EQUAL TO OR GREATER-THAN

- ~ 22DA FE00 \lesseqgtr with slanted equal

22DB \gtrless GREATER-THAN EQUAL TO OR LESS-THAN

- ~ 22DB FE00 \gtrlessgtr with slanted equal

22DC \lesseqgtr EQUAL TO OR LESS-THAN

22DD \gtrlessgtr EQUAL TO OR GREATER-THAN

22DE \leqslant EQUAL TO OR PRECEDES

22DF \geqslant EQUAL TO OR SUCCEEDS

22E0 \nlessgtr DOES NOT PRECEDE OR EQUAL

- \equiv 227C \leq 0338 $\not\leq$

22E1 \ngtrless DOES NOT SUCCEED OR EQUAL

- \equiv 227D \geq 0338 $\not\geq$

22E2 \nlessgtr NOT SQUARE IMAGE OF OR EQUAL TO

- \equiv 2291 \sqsubseteq 0338 $\not\sqsubseteq$

22E3 \nlessgtr NOT SQUARE ORIGINAL OF OR EQUAL TO

- \equiv 2292 \sqsubset 0338 $\not\sqsubset$

22E4 \nlessgtr SQUARE IMAGE OF OR NOT EQUAL TO

22E5 \nlessgtr SQUARE ORIGINAL OF OR NOT EQUAL TO

22E6 \nlessgtr LESS-THAN BUT NOT EQUIVALENT TO

22E7 \nlessgtr GREATER-THAN BUT NOT EQUIVALENT TO

22E8 \nlessgtr PRECEDES BUT NOT EQUIVALENT TO

22E9 \nlessgtr SUCCEEDS BUT NOT EQUIVALENT TO

22EA \nlessgtr NOT NORMAL SUBGROUP OF

- \equiv 22B2 \triangleleft 0338 $\not\triangleleft$

22EB \nlessgtr DOES NOT CONTAIN AS NORMAL SUBGROUP

- \equiv 22B3 \triangleright 0338 $\not\triangleright$

22EC \nlessgtr NOT NORMAL SUBGROUP OF OR EQUAL TO

- \equiv 22B4 \trianglelefteq 0338 $\not\trianglelefteq$

22ED \nlessgtr DOES NOT CONTAIN AS NORMAL SUBGROUP OR EQUAL

- \equiv 22B5 \trianglerighteq 0338 $\not\trianglerighteq$

Matrix ellipses

These four ellipsis characters are used for matrix row/column elision.

22EE \vdots VERTICAL ELLIPSIS

- 205D \vdots tricolon

- 2026 \dots horizontal ellipsis

- FE19 \vdots presentation form for vertical horizontal ellipsis

22EF \cdots MIDLINE HORIZONTAL ELLIPSIS

22F0 \ddots UP RIGHT DIAGONAL ELLIPSIS

22F1 $\ddot{\cdot}$ DOWN RIGHT DIAGONAL ELLIPSIS

Relations

22F2 \inlrcorner ELEMENT OF WITH LONG HORIZONTAL STROKE

22F3 \inlrcorner ELEMENT OF WITH VERTICAL BAR AT END OF HORIZONTAL STROKE

22F4 \inlrcorner SMALL ELEMENT OF WITH VERTICAL BAR AT END OF HORIZONTAL STROKE

22F5 \inlrcorner ELEMENT OF WITH DOT ABOVE

22F6 \inlrcorner ELEMENT OF WITH OVERBAR

22F7 \inlrcorner SMALL ELEMENT OF WITH OVERBAR

































22F8 \inlrcorner ELEMENT OF WITH UNDERBAR

22F9 \inlrcorner ELEMENT OF WITH TWO HORIZONTAL STROKES

22FA \ni CONTAINS WITH LONG HORIZONTAL STROKE

22FB \ni CONTAINS WITH VERTICAL BAR AT END OF HORIZONTAL STROKE

22FC	⊃	SMALL CONTAINS WITH VERTICAL BAR AT END OF HORIZONTAL STROKE
22FD	⊄	CONTAINS WITH OVERBAR
22FE	⊆	SMALL CONTAINS WITH OVERBAR
22FF	⊇	Z NOTATION BAG MEMBERSHIP

Standardized Variation Sequences	
2205	 EMPTY SET <small>2205</small>  zero with long diagonal stroke overlay form <small>2205 FE00</small>
2229	 INTERSECTION <small>2229</small>  with serifs <small>2229 FE00</small>
222A	 UNION <small>222A</small>  with serifs <small>222A FE00</small>
2268	 LESS-THAN BUT NOT EQUAL TO <small>2268</small>  with vertical stroke <small>2268 FE00</small>
2269	 GREATER-THAN BUT NOT EQUAL TO <small>2269</small>  with vertical stroke <small>2269 FE00</small>
2272	 LESS-THAN OR EQUIVALENT TO <small>2272</small>  following the slant of the lower leg <small>2272 FE00</small>
2273	 GREATER-THAN OR EQUIVALENT TO <small>2273</small>  following the slant of the lower leg <small>2273 FE00</small>
228A	 SUBSET OF WITH NOT EQUAL TO <small>228A</small>  with stroke through bottom members <small>228A FE00</small>
228B	 SUPERSET OF WITH NOT EQUAL TO <small>228B</small>  with stroke through bottom members <small>228B FE00</small>
2293	 SQUARE CAP <small>2293</small>  with serifs <small>2293 FE00</small>
2294	 SQUARE CUP <small>2294</small>  with serifs <small>2294 FE00</small>
2295	 CIRCLED PLUS <small>2295</small>  with white rim <small>2295 FE00</small>
2297	 CIRCLED TIMES <small>2297</small>  with white rim <small>2297 FE00</small>
229C	 CIRCLED EQUALS <small>229C</small>  with equal sign touching the circle <small>229C FE00</small>
22DA	 LESS-THAN EQUAL TO OR GREATER-THAN <small>22DA</small>  with slanted equal <small>22DA FE00</small>
22DB	 GREATER-THAN EQUAL TO OR LESS-THAN <small>22DB</small>  with slanted equal <small>22DB FE00</small>