

Miscellaneous Mathematical Symbols-B

Range: 2980–29FF

The Unicode Standard, Version 3.2

This file contains an excerpt from the character code tables and list of character names for *The Unicode Standard, Version 3.2*.

Characters in this chart that are new for The Unicode Standard, Version 3.2 are shown in conjunction with any existing characters. For ease of reference, the new characters have been highlighted in the chart grid and in the names list.

This file will not be updated with errata, or when additional characters are assigned to the Unicode Standard. See <http://www.unicode.org/charts> for access to a complete list of the latest character charts.

Disclaimer

These charts are provided as the on-line reference to the character contents of the Unicode Standard, Version 3.2 but do not provide all the information needed to fully support individual scripts using the Unicode Standard. For a complete understanding of the use of the characters contained in this excerpt file, please consult the appropriate sections of The Unicode Standard, Version 3.0 (ISBN 0-201-61633-5), as well as Unicode Standard Annexes #28 and #27, the other Unicode Technical Reports and the Unicode Character Database, which are available on-line.

See <http://www.unicode.org/Public/UNIDATA/UnicodeCharacterDatabase.html> and <http://www.unicode.org/unicode/reports>

A thorough understanding of the information contained in these additional sources is required for a successful implementation.

Fonts

The shapes of the reference glyphs used in these code charts are not prescriptive. Considerable variation is to be expected in actual fonts. The particular fonts used in these charts were provided to the Unicode Consortium by a number of different font designers, who own the rights to the fonts.

See <http://www.unicode.org/unicode/uni2book/u2fonts.html> for a list.

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















































































































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See <http://www.unicode.org/pending/pending.html> and <http://www.unicode.org/unicode/alloc/Pipeline.html>.

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	298	299	29A	29B	29C	29D	29E	29F
0	 2980	 2990	 29A0	 29B0	 29C0	 29D0	 29E0	 29F0
1	 2981	 2991	 29A1	 29B1	 29C1	 29D1	 29E1	 29F1
2	 2982	 2992	 29A2	 29B2	 29C2	 29D2	 29E2	 29F2
3	 2983	 2993	 29A3	 29B3	 29C3	 29D3	 29E3	 29F3
4	 2984	 2994	 29A4	 29B4	 29C4	 29D4	 29E4	 29F4
5	 2985	 2995	 29A5	 29B5	 29C5	 29D5	 29E5	 29F5
6	 2986	 2996	 29A6	 29B6	 29C6	 29D6	 29E6	 29F6
7	 2987	 2997	 29A7	 29B7	 29C7	 29D7	 29E7	 29F7
8	 2988	 2998	 29A8	 29B8	 29C8	 29D8	 29E8	 29F8
9	 2989	 2999	 29A9	 29B9	 29C9	 29D9	 29E9	 29F9
A	 298A	 299A	 29AA	 29BA	 29CA	 29DA	 29EA	 29FA
B	 298B	 299B	 29AB	 29BB	 29CB	 29DB	 29EB	 29FB
C	 298C	 299C	 29AC	 29BC	 29CC	 29DC	 29EC	 29FC
D	 298D	 299D	 29AD	 29BD	 29CD	 29DD	 29ED	 29FD
E	 298E	 299E	 29AE	 29BE	 29CE	 29DE	 29EE	 29FE
F	 298F	 299F	 29AF	 29BF	 29CF	 29DF	 29EF	 29FF

Miscellaneous mathematical symbols

- 2980 **|||** TRIPLE VERTICAL BAR DELIMITER
 → 2AF4 **|||** triple vertical bar binary relation
 → 2AFC **|||** large triple vertical bar operator
- 2981 **•** Z NOTATION SPOT
 • medium-small-sized black circle
 → 2219 **•** bullet operator
 → 25CF **●** black circle
- 2982 **⋈** Z NOTATION TYPE COLON
 → 0F7F **།** tibetan sign rnam bcaid

Brackets

- 2983 **(** LEFT WHITE CURLY BRACKET
- 2984 **)** RIGHT WHITE CURLY BRACKET
- 2985 **(** LEFT WHITE PARENTHESIS
 → FF5F **(** fullwidth left white parenthesis
- 2986 **)** RIGHT WHITE PARENTHESIS
 • used for Bourbakist intervals
 → FF60 **)** fullwidth right white parenthesis
- 2987 **(** Z NOTATION LEFT IMAGE BRACKET
- 2988 **)** Z NOTATION RIGHT IMAGE BRACKET
- 2989 **(** Z NOTATION LEFT BINDING BRACKET
- 298A **)** Z NOTATION RIGHT BINDING BRACKET
- 298B **[** LEFT SQUARE BRACKET WITH UNDERBAR
- 298C **]** RIGHT SQUARE BRACKET WITH UNDERBAR
- 298D **[** LEFT SQUARE BRACKET WITH TICK IN TOP CORNER
- 298E **]** RIGHT SQUARE BRACKET WITH TICK IN BOTTOM CORNER
- 298F **[** LEFT SQUARE BRACKET WITH TICK IN BOTTOM CORNER
- 2990 **]** RIGHT SQUARE BRACKET WITH TICK IN TOP CORNER
- 2991 **<** LEFT ANGLE BRACKET WITH DOT
- 2992 **>** RIGHT ANGLE BRACKET WITH DOT
- 2993 **<** LEFT ARC LESS-THAN BRACKET
- 2994 **>** RIGHT ARC GREATER-THAN BRACKET
- 2995 **<** DOUBLE LEFT ARC GREATER-THAN BRACKET
- 2996 **>** DOUBLE RIGHT ARC LESS-THAN BRACKET
- 2997 **(** LEFT BLACK TORTOISE SHELL BRACKET
 → 3014 **(** left tortoise shell bracket
 → 3018 **(** left white tortoise shell bracket
- 2998 **)** RIGHT BLACK TORTOISE SHELL BRACKET

Fences

- 2999 **⋮** DOTTED FENCE
 • four close dots vertical

- 299A **∟** VERTICAL ZIGZAG LINE
 → 2307 **∟** wavy line

Angles

- 299B **∠** MEASURED ANGLE OPENING LEFT
 → 2221 **∠** measured angle
- 299C **∟** RIGHT ANGLE VARIANT WITH SQUARE
 → 221F **∟** right angle
- 299D **∟** MEASURED RIGHT ANGLE WITH DOT
- 299E **∠** ANGLE WITH S INSIDE
- 299F **∠** ACUTE ANGLE
- 29A0 **∠** SPHERICAL ANGLE OPENING LEFT
 → 2222 **∠** spherical angle
- 29A1 **∠** SPHERICAL ANGLE OPENING UP
- 29A2 **∠** TURNED ANGLE
 → 2220 **∠** angle
- 29A3 **∠** REVERSED ANGLE
- 29A4 **∠** ANGLE WITH UNDERBAR
- 29A5 **∠** REVERSED ANGLE WITH UNDERBAR
- 29A6 **∠** OBLIQUE ANGLE OPENING UP
- 29A7 **∠** OBLIQUE ANGLE OPENING DOWN
- 29A8 **∠** MEASURED ANGLE WITH OPEN ARM ENDING IN ARROW POINTING UP AND RIGHT
- 29A9 **∠** MEASURED ANGLE WITH OPEN ARM ENDING IN ARROW POINTING UP AND LEFT
- 29AA **∠** MEASURED ANGLE WITH OPEN ARM ENDING IN ARROW POINTING DOWN AND RIGHT
- 29AB **∠** MEASURED ANGLE WITH OPEN ARM ENDING IN ARROW POINTING DOWN AND LEFT
- 29AC **∠** MEASURED ANGLE WITH OPEN ARM ENDING IN ARROW POINTING RIGHT AND UP
- 29AD **∠** MEASURED ANGLE WITH OPEN ARM ENDING IN ARROW POINTING LEFT AND UP
- 29AE **∠** MEASURED ANGLE WITH OPEN ARM ENDING IN ARROW POINTING RIGHT AND DOWN
- 29AF **∠** MEASURED ANGLE WITH OPEN ARM ENDING IN ARROW POINTING LEFT AND DOWN

Empty sets

- 29B0 **∅** REVERSED EMPTY SET
 → 2205 **∅** empty set
 → 2349 **∅** apl functional symbol circle backslash
- 29B1 **∅** EMPTY SET WITH OVERBAR
- 29B2 **∅** EMPTY SET WITH SMALL CIRCLE ABOVE
- 29B3 **∅** EMPTY SET WITH RIGHT ARROW ABOVE
- 29B4 **∅** EMPTY SET WITH LEFT ARROW ABOVE

Circle symbols

- 29B5 \ominus CIRCLE WITH HORIZONTAL BAR
→ 2296 \ominus circled minus
- 29B6 \odot CIRCLED VERTICAL BAR
- 29B7 $\parallel\!\!\!\circ$ CIRCLED PARALLEL
- 29B8 \oslash CIRCLED REVERSE SOLIDUS
- 29B9 $\perp\!\!\!\circ$ CIRCLED PERPENDICULAR
- 29BA \oplus CIRCLE DIVIDED BY HORIZONTAL BAR AND TOP HALF DIVIDED BY VERTICAL BAR
- 29BB \otimes CIRCLE WITH SUPERIMPOSED X
→ 2297 \otimes circled times
- 29BC \otimes CIRCLED ANTICLOCKWISE-ROTATED DIVISION SIGN
- 29BD $\uparrow\!\!\!\circ$ UP ARROW THROUGH CIRCLE
- 29BE \circ CIRCLED WHITE BULLET
→ 229A \circ circled ring operator
→ 233E \circ apl functional symbol circle jot
→ 25CE \circ bullseye
- 29BF \bullet CIRCLED BULLET
• forms part of a graduated set of circles with enclosed black circle of different sizes
→ 2299 \circ circled dot operator
→ 25C9 \bullet fisheye
→ 2A00 \circ n-ary circled dot operator
- 29C0 \lessdot CIRCLED LESS-THAN
- 29C1 \gtrdot CIRCLED GREATER-THAN
- 29C2 $\circ\!\!\!\circ$ CIRCLE WITH SMALL CIRCLE TO THE RIGHT
- 29C3 $\circ\!\!\!\circ\!\!\!\circ$ CIRCLE WITH TWO HORIZONTAL STROKES TO THE RIGHT

Square symbols

- 29C4 \diagup SQUARED RISING DIAGONAL SLASH
→ 2341 \diagup apl functional symbol quad slash
→ 303C \diagup masu mark
- 29C5 \diagdown SQUARED FALLING DIAGONAL SLASH
→ 2342 \diagdown apl functional symbol quad backslash
- 29C6 \ast SQUARED ASTERISK
- 29C7 \smallcirc SQUARED SMALL CIRCLE
→ 233C \smallcirc apl functional symbol quad circle
- 29C8 \square SQUARED SQUARE
- 29C9 \boxplus TWO JOINED SQUARES

Triangle symbols

- 29CA \blacktriangleup TRIANGLE WITH DOT ABOVE
- 29CB \blacktriangledown TRIANGLE WITH UNDERBAR
- 29CC \blacktriangle S IN TRIANGLE
- 29CD \blacktriangle TRIANGLE WITH SERIFS AT BOTTOM
→ 25B3 \blacktriangle white up-pointing triangle
- 29CE \blacktriangleright RIGHT TRIANGLE ABOVE LEFT TRIANGLE
- 29CF \blacktriangleleft LEFT TRIANGLE BESIDE VERTICAL BAR

- 29D0 $\bar{\triangle}$ VERTICAL BAR BESIDE RIGHT TRIANGLE

Bowtie symbols

- 29D1 \bowtie BOWTIE WITH LEFT HALF BLACK
→ 22C8 \bowtie bowtie
- 29D2 \bowtie BOWTIE WITH RIGHT HALF BLACK
- 29D3 \bowtie BLACK BOWTIE
- 29D4 \bowtie TIMES WITH LEFT HALF BLACK
→ 22C9 \bowtie left normal factor semidirect product
- 29D5 \bowtie TIMES WITH RIGHT HALF BLACK
→ 22CA \bowtie right normal factor semidirect product
- 29D6 \bowtie WHITE HOURGLASS
= vertical bowtie
= white framus
→ 231B \bowtie hourglass
- 29D7 \bowtie BLACK HOURGLASS

Fences

- FE34 $\{$ presentation form for vertical wavy low line
- 29D8 $\{$ LEFT WIGGLY FENCE
- 29D9 $\}$ RIGHT WIGGLY FENCE
- 29DA $\{ \}$ LEFT DOUBLE WIGGLY FENCE
- 29DB $\} \}$ RIGHT DOUBLE WIGGLY FENCE

Miscellaneous mathematical symbols

- 29DC ∞ INCOMPLETE INFINITY
= ISOtech entity ⧜
→ 221E ∞ infinity
- 29DD ∞ TIE OVER INFINITY
- 29DE ∞ INFINITY NEGATED WITH VERTICAL BAR
- 29DF \multimap DOUBLE-ENDED MULTIMAP
→ 22B8 \multimap multimap
- 29E0 \square SQUARE WITH CONTOURED OUTLINE
= D'Alembertian
→ 274F \square lower right drop-shadowed white square
- 29E1 \preceq INCREASES AS
→ 22B4 \preceq normal subgroup of or equal to
- 29E2 \shuf SHUFFLE PRODUCT
→ 22FF \shuf z notation bag membership

Relations

- 29E3 $\#$ EQUALS SIGN AND SLANTED PARALLEL
→ 0023 $\#$ number sign
→ 22D5 $\#$ equal and parallel to
- 29E4 $\#$ EQUALS SIGN AND SLANTED PARALLEL WITH TILDE ABOVE
- 29E5 $\#$ IDENTICAL TO AND SLANTED PARALLEL
→ 2A68 $\#$ triple horizontal bar with double vertical stroke

29E6 ⇌ GLEICH STARK
= tautological equivalent

Miscellaneous mathematical symbols

29E7 + THERMODYNAMIC
• vertical bar crossed by two horizontals
→ 2260 ≠ not equal to

29E8 ▼ DOWN-POINTING TRIANGLE WITH LEFT HALF BLACK
→ 25ED ▲ up-pointing triangle with left half black

29E9 ▼ DOWN-POINTING TRIANGLE WITH RIGHT HALF BLACK
→ 25EE ▲ up-pointing triangle with right half black

29EA ◆ BLACK DIAMOND WITH DOWN ARROW

29EB ◆ BLACK LOZENGE
→ 25CA ◇ lozenge

29EC ♀ WHITE CIRCLE WITH DOWN ARROW

29ED ● BLACK CIRCLE WITH DOWN ARROW

Error bar symbols

29EE ◻ ERROR-BARRED WHITE SQUARE

29EF ◼ ERROR-BARRED BLACK SQUARE

29F0 ◊ ERROR-BARRED WHITE DIAMOND

29F1 ◆ ERROR-BARRED BLACK DIAMOND

29F2 ○ ERROR-BARRED WHITE CIRCLE

29F3 ● ERROR-BARRED BLACK CIRCLE

Miscellaneous mathematical symbols

29F4 ⇨ RULE-DELAYED
= colon right arrow

29F5 \ REVERSE SOLIDUS OPERATOR
→ 005C \ reverse solidus
→ 2216 \ set minus

29F6 / SOLIDUS WITH OVERBAR

29F7 \ REVERSE SOLIDUS WITH HORIZONTAL STROKE

Large operators

29F8 / BIG SOLIDUS
→ 2215 / division slash

29F9 \ BIG REVERSE SOLIDUS
= z notation schema hiding
→ 2216 \ set minus

Specialized plus sign operators

29FA + DOUBLE PLUS

29FB # TRIPLE PLUS

Brackets

29FC ‹ LEFT-POINTING CURVED ANGLE BRACKET
→ 227A ‹ precedes
→ 2329 ‹ left-pointing angle bracket

29FD › RIGHT-POINTING CURVED ANGLE BRACKET
→ 227B › succeeds
→ 232A › right-pointing angle bracket

Miscellaneous mathematical symbols

29FE + TINY
→ 002B + plus sign

29FF - MINY
→ 2212 - minus sign