

Miscellaneous Mathematical Symbols-B

Range: 2980–29FF

This file contains an excerpt from the character code tables and list of character names for *The Unicode Standard, Version 10.0*

This file may be changed at any time without notice to reflect errata or other updates to the Unicode Standard. See <http://www.unicode.org/errata/> for an up-to-date list of errata.

See <http://www.unicode.org/charts/> for access to a complete list of the latest character code charts.
See <http://www.unicode.org/charts/PDF/Unicode-10.0/> for charts showing only the characters added in Unicode 10.0.
See <http://www.unicode.org/Public/10.0.0/charts/> for a complete archived file of character code charts for Unicode 10.0.

Disclaimer

These charts are provided as the online reference to the character contents of the Unicode Standard, Version 10.0 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 file, please consult the appropriate sections of The Unicode Standard, Version 10.0, online at <http://www.unicode.org/versions/Unicode10.0.0/>, as well as Unicode Standard Annexes #9, #11, #14, #15, #24, #29, #31, #34, #38, #41, #42, #44, and #45, the other Unicode Technical Reports and Standards, and the Unicode Character Database, which are available online.

See <http://www.unicode.org/ucd/> and <http://www.unicode.org/reports/>

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

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See <http://www.unicode.org/charts/fonts.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/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 bcad

Brackets

- 2983 { LEFT WHITE CURLY BRACKET
- 2984 } RIGHT WHITE CURLY BRACKET
- 2985 (LEFT WHITE PARENTHESIS
→ 2E28 (left double parenthesis
→ FF5F ((fullwidth left white parenthesis
- 2986) RIGHT WHITE PARENTHESIS
• used for Bourbakist intervals
→ 2E29)) right double parenthesis
→ 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

Brackets with ticks

For bidirectional processing, the brackets with ticks are paired on the basis of their left/right symmetric glyphs, rather than on the basis of an open/close pairing inferred from code point order.

- 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

Brackets

- 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
→ 27EC (mathematical left white 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

→ 2220 ∟ 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 ⊖ CIRCLE WITH HORIZONTAL BAR
• used in superscripted form to mean standard state (chemistry)
→ 2296 ⊖ circled minus

- 29B6 ⊕ CIRCLED VERTICAL BAR
→ 1F715 ⊕ alchemical symbol for nitre

- 29B7 ⊖ CIRCLED PARALLEL

- 29B8 ⊖ CIRCLED REVERSE SOLIDUS

- 29B9 ⊖ CIRCLED PERPENDICULAR

- 29BA ⊖ CIRCLE DIVIDED BY HORIZONTAL BAR AND TOP HALF DIVIDED BY VERTICAL BAR

- 29BB ⊗ CIRCLE WITH SUPERIMPOSED X
→ 2297 ⊗ circled times

- 29BC ⊗ CIRCLED ANTICLOCKWISE-ROTATED DIVISION SIGN

- 29BD ⊕ UP ARROW THROUGH CIRCLE

- 29BE ⊙ CIRCLED WHITE BULLET

→ 229A ⊙ circled ring operator

→ 233E ⊙ apl functional symbol circle jot

→ 25CE ⊙ bullseye

- 29BF ● CIRCLED BULLET
 • forms part of a graduated set of circles with enclosed black circle of different sizes
 → 2299 ⊙ circled dot operator
 → 25C9 ● fisheye
 → 2A00 ⊙ n-ary circled dot operator
- 29C0 ⊖ CIRCLED LESS-THAN
- 29C1 ⊕ CIRCLED GREATER-THAN
- 29C2 ⊖ CIRCLE WITH SMALL CIRCLE TO THE RIGHT
- 29C3 ⊖ CIRCLE WITH TWO HORIZONTAL STROKES TO THE RIGHT

Square symbols

- 29C4 ☒ SQUARED RISING DIAGONAL SLASH
 → 2341 ☒ apl functional symbol quad slash
 → 303C ☒ masu mark
- 29C5 ☓ SQUARED FALLING DIAGONAL SLASH
 → 2342 ☓ apl functional symbol quad backslash
- 29C6 ☒ SQUARED ASTERISK
- 29C7 ◻ SQUARED SMALL CIRCLE
 → 233B ◻ apl functional symbol quad jot
- 29C8 ◻ SQUARED SQUARE
- 29C9 ◻ TWO JOINED SQUARES

Triangle symbols

- 29CA ▲ TRIANGLE WITH DOT ABOVE
- 29CB ▴ TRIANGLE WITH UNDERBAR
- 29CC ▲ S IN TRIANGLE
- 29CD ▲ TRIANGLE WITH SERIFS AT BOTTOM
 → 25B3 ▲ white up-pointing triangle
- 29CE ▴ RIGHT TRIANGLE ABOVE LEFT TRIANGLE
- 29CF ◁ LEFT TRIANGLE BESIDE VERTICAL BAR
- 29D0 ▷ VERTICAL BAR BESIDE RIGHT TRIANGLE

Bowtie symbols

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

Fences

- 29D8 } LEFT WIGGLY FENCE
 → FE34 } presentation form for vertical wavy low line
- 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 ∞ DOUBLE-ENDED MULTIMAP
 → 22B8 ∞ multimap
 → 1F73A ∞ alchemical symbol for arsenic
- 29E0 ◻ SQUARE WITH CONTOURED OUTLINE
 = D'Alembertian
 → 274F ◻ lower right drop-shadowed white square
- 29E1 ≧ INCREASES AS
 → 22B4 ≧ normal subgroup of or equal to
- 29E2 ≍ SHUFFLE PRODUCT
 → 22FF ≍ 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
 → 2BD2 ‡ group mark
- 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
 → 27CD \ mathematical falling diagonal
- 29F6 ̄ SOLIDUS WITH OVERBAR
- 29F7 ↗ REVERSE SOLIDUS WITH HORIZONTAL STROKE
 → 2340 ↗ apl functional symbol backslash bar

Large operators

- 29F8 / BIG SOLIDUS
 → 2215 / division slash

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

Specialized plus sign operators

29FA $\#$ DOUBLE PLUS
29FB $\#$ TRIPLE PLUS

Brackets

29FC \langle LEFT-POINTING CURVED ANGLE BRACKET
→ 227A \langle precedes
→ 2329 \langle left-pointing angle bracket
29FD \rangle RIGHT-POINTING CURVED ANGLE BRACKET
→ 227B \rangle succeeds
→ 232A \rangle right-pointing angle bracket

Miscellaneous mathematical symbols

29FE $+$ TINY
→ 002B $+$ plus sign
29FF $-$ MINY
→ 2212 $-$ minus sign