

Miscellaneous Mathematical Symbols-A

Range: 27C0–27EF

This file contains an excerpt from the character code tables and list of character names for *The Unicode Standard, Version 17.0*

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See <https://www.unicode.org/errata/> for an up-to-date list of errata.

See <https://www.unicode.org/charts/> for access to a complete list of the latest character code charts. See <https://www.unicode.org/charts/PDF/Unicode-17.0/> for charts showing only the characters added in Unicode 17.0. See <https://www.unicode.org/Public/17.0.0/charts/> for a complete archived file of character code charts for Unicode 17.0. See <https://www.unicode.org/charts/About.html#Conventions> for conventions used in these code charts, and other general information.

Disclaimer

These charts are provided as the online reference to the character contents of the Unicode Standard, Version 17.0 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 17.0, online at <https://www.unicode.org/versions/Unicode17.0.0/>, as well as the Unicode Standard Annexes, the other Unicode Technical Reports and Standards, and the Unicode Character Database, which are available online.

See <https://www.unicode.org/ucd/> and <https://www.unicode.org/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.

See <https://www.unicode.org/charts/fonts.html> for a list.

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	27C	27D	27E
0	 27C0	 27D0	 27E0
1	 27C1	 27D1	 27E1
2	 27C2	 27D2	 27E2
3	 27C3	 27D3	 27E3
4	 27C4	 27D4	 27E4
5	 27C5	 27D5	 27E5
6	 27C6	 27D6	 27E6
7	 27C7	 27D7	 27E7
8	 27C8	 27D8	 27E8
9	 27C9	 27D9	 27E9
A	 27CA	 27DA	 27EA
B	 27CB	 27DB	 27EB
C	 27CC	 27DC	 27EC
D	 27CD	 27DD	 27ED
E	 27CE	 27DE	 27EE
F	 27CF	 27DF	 27EF

Miscellaneous symbols

- 27C0 $\angle$ THREE DIMENSIONAL ANGLE
 • used by Euclid
- 27C1 $\triangle$ WHITE TRIANGLE CONTAINING SMALL WHITE TRIANGLE
 • used by Euclid
- 27C2 $\perp$ PERPENDICULAR
 = orthogonal to
 • relation, typeset with additional spacing
 → 22A5 $\perp$ up tack
- 27C3 $\subsetneq$ OPEN SUBSET
- 27C4 $\supsetneq$ OPEN SUPERSET

Paired punctuation

- 27C5 $\{$ LEFT S-SHAPED BAG DELIMITER
- 27C6 $\}$ RIGHT S-SHAPED BAG DELIMITER

Operator

- 27C7 $\vee$ OR WITH DOT INSIDE
 → 2228 $\vee$ logical or
 → 228D $\cup$ multiset multiplication
 → 27D1 $\wedge$ and with dot

Miscellaneous symbols

- 27C8 $\preceq$ REVERSE SOLIDUS PRECEDING SUBSET
- 27C9 $\supseteq$ SUPERSET PRECEDING SOLIDUS

Vertical line operator

- 27CA $\dagger$ VERTICAL BAR WITH HORIZONTAL STROKE
 → 2AF2 $\parallel$ parallel with horizontal stroke
 → 2AF5 $\equiv$ triple vertical bar with horizontal stroke

Miscellaneous symbol

- 27CB $\diagup$ MATHEMATICAL RISING DIAGONAL
 = `\diagup`
 → 2215 $/$ division slash

Division operator

- 27CC $\div$ LONG DIVISION
 • graphically extends over the dividend
 → 00F7 $\div$ division sign
 → 2215 $/$ division slash
 → 221A $\sqrt{\quad}$ square root

Miscellaneous symbol

- 27CD $\diagdown$ MATHEMATICAL FALLING DIAGONAL
 = `\diagdown`
 → 2216 $\setminus$ set minus
 → 29F5 $\backslash$ reverse solidus operator

Operators

- 27CE $\boxtimes$ SQUARED LOGICAL AND
 = box min
 • morphological min product operator
 • morphological erosion operator
 • additive minimum operator
- 27CF $\boxplus$ SQUARED LOGICAL OR
 = box max
 • morphological max product operator
 • morphological dilation operator
 • additive maximum operator

Miscellaneous symbol

- 27D0 $\diamond$ WHITE DIAMOND WITH CENTRED DOT
 → 1F4A0 $\diamond$ diamond shape with a dot inside

Operators

- 27D1 $\wedge$ AND WITH DOT
 → 2227 $\wedge$ logical and
 → 27C7 $\vee$ or with dot inside
 → 2A40 $\cap$ intersection with dot
- 27D2 $\Updownarrow$ ELEMENT OF OPENING UPWARDS
 → 2AD9 $\Downarrow$ element of opening downwards
- 27D3 $\lrcorner$ LOWER RIGHT CORNER WITH DOT
 = pullback
 → 230B $\lfloor$ right floor
- 27D4 $\ulcorner$ UPPER LEFT CORNER WITH DOT
 = pushout
 → 2308 $\lceil$ left ceiling

Database theory operators

- 27D5 $\Join$ LEFT OUTER JOIN
- 27D6 $\Join$ RIGHT OUTER JOIN
- 27D7 $\Join$ FULL OUTER JOIN
 → 2A1D $\Join$ join

Tacks and turnstiles

- 27D8 $\Uparrow$ LARGE UP TACK
 → 22A5 $\perp$ up tack
- 27D9 $\Downarrow$ LARGE DOWN TACK
 → 22A4 $\top$ down tack
- 27DA $\Leftrightarrow$ LEFT AND RIGHT DOUBLE TURNSTILE
 → 22A8 $\models$ true
 → 2AE4 $\Leftrightarrow$ vertical bar double left turnstile
- 27DB $\dashv$ LEFT AND RIGHT TACK
 → 22A2 $\vdash$ right tack
- 27DC $\multimap$ LEFT MULTIMAP
 → 22B8 $\multimap$ multimap
- 27DD $\dashv$ LONG RIGHT TACK
 → 22A2 $\vdash$ right tack
- 27DE $\dashv$ LONG LEFT TACK
 → 22A3 $\dashv$ left tack
- 27DF $\circlearrowright$ UP TACK WITH CIRCLE ABOVE
 = radial component
 → 2AF1 $\circlearrowleft$ down tack with circle below

Modal logic operators

- 27E0 $\lozenge$ LOZENGE DIVIDED BY HORIZONTAL RULE
 • used as form of possibility in modal logic
 → 25CA $\lozenge$ lozenge
- 27E1 $\Diamond$ WHITE CONCAVE-SIDED DIAMOND
 = never (modal operator)
 → 25C7 $\Diamond$ white diamond
- 27E2 $\Diamond$ WHITE CONCAVE-SIDED DIAMOND WITH LEFTWARDS TICK
 = was never (modal operator)
- 27E3 $\Diamond$ WHITE CONCAVE-SIDED DIAMOND WITH RIGHTWARDS TICK
 = will never be (modal operator)
- 27E4 $\Box$ WHITE SQUARE WITH LEFTWARDS TICK
 = was always (modal operator)
 → 25A1 $\Box$ white square
 → 25FB $\Box$ white medium square
- 27E5 $\Box$ WHITE SQUARE WITH RIGHTWARDS TICK
 = will always be (modal operator)

Mathematical brackets

These bracket characters are also used as punctuation outside of a mathematical context.

- 27E6 $\llcorner$ MATHEMATICAL LEFT WHITE SQUARE BRACKET
 = z notation left bag bracket
 → 301A $\llcorner$ left white square bracket
- 27E7 $\lrcorner$ MATHEMATICAL RIGHT WHITE SQUARE BRACKET
 = z notation right bag bracket
 → 301B $\lrcorner$ right white square bracket
- 27E8 $\langle$ MATHEMATICAL LEFT ANGLE BRACKET
 = bra
 = z notation left sequence bracket
 → 2329 $\langle$ left-pointing angle bracket
 → 3008 $\langle$ left angle bracket
- 27E9 $\rangle$ MATHEMATICAL RIGHT ANGLE BRACKET
 = ket
 = z notation right sequence bracket
 → 232A $\rangle$ right-pointing angle bracket
 → 3009 $\rangle$ right angle bracket
- 27EA $\langle\langle$ MATHEMATICAL LEFT DOUBLE ANGLE BRACKET
 = z notation left chevron bracket
 → 300A $\langle\langle$ left double angle bracket
- 27EB $\rangle\rangle$ MATHEMATICAL RIGHT DOUBLE ANGLE BRACKET
 = z notation right chevron bracket
 → 300B $\rangle\rangle$ right double angle bracket
- 27EC $\lceil$ MATHEMATICAL LEFT WHITE TORTOISE SHELL BRACKET
 → 2997 $\lceil$ left black tortoise shell bracket
 → 3018 $\lceil$ left white tortoise shell bracket
- 27ED $\rceil$ MATHEMATICAL RIGHT WHITE TORTOISE SHELL BRACKET
 → 2998 $\rceil$ right black tortoise shell bracket
 → 3019 $\rceil$ right white tortoise shell bracket
- 27EE $($ MATHEMATICAL LEFT FLATTENED PARENTHESIS
 = lgroup
- 27EF $)$ MATHEMATICAL RIGHT FLATTENED PARENTHESIS
 = rgroup