

Miscellaneous Mathematical Symbols-A

Range: 27C0–27EF

DRAFT The Unicode Standard, Version 16.0 BETA REVIEW

This file contains an excerpt from the character code tables and list of character names for
DRAFT The Unicode Standard, Version 16.0 BETA REVIEW

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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-15.1/> for charts showing only the characters added in Unicode 15.1.
See <https://www.unicode.org/Public/15.1.0/charts/> for a complete archived file of character code charts for Unicode 15.1.
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 15.1 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 15.1, online at <https://www.unicode.org/versions/Unicode15.1.0/>, as well as Unicode Standard Annexes #9, #11, #14, #15, #24, #29, #31, #34, #38, #41, #42, #44, #45, and #50, the other Unicode Technical Reports and Standards, and the Unicode Character Database, which are available online.

See <https://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.

Copying characters from the character code tables or list of character names is not recommended, because for production reasons the PDF files for the code charts cannot guarantee that the correct character codes will always be copied.

Fonts

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

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

































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

See <https://www.unicode.org/charts/About.html> for more information concerning the conventions and symbols used in these code charts.

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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 \sphericalangle 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 \Subset OPEN SUBSET
- 27C4 \Supset 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 \And and with dot

Miscellaneous symbols

- 27C8 \lrcorner REVERSE SOLIDUS PRECEDING SUBSET
- 27C9 \rceil SUPerset PRECEDING SOLIDUS

Vertical line operator

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

Miscellaneous symbol

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

Division operator

- 27CC $\}$ 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 \ set minus
 → 29F5 \setminus 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 \And 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 \rfloor 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 \perp LARGE UP TACK
 → 22A5 \perp up tack
- 27D9 \T LARGE DOWN TACK
 → 22A4 \T down tack
- 27DA \Leftarrow LEFT AND RIGHT DOUBLE TURNSTILE
 → 22A8 \Leftarrow true
 → 2AE4 \Leftarrow vertical bar double left turnstile
- 27DB \Leftarrow LEFT AND RIGHT TACK
 → 22A2 \Leftarrow right tack
- 27DC \Leftarrow LEFT MULTIMAP
 → 22B8 \Leftarrow multimap
- 27DD \Leftarrow LONG RIGHT TACK
 → 22A2 \Leftarrow right tack
- 27DE \Leftarrow LONG LEFT TACK
 → 22A3 \Leftarrow left tack
- 27DF \Updownarrow UP TACK WITH CIRCLE ABOVE
 = radial component
 → 2AF1 \Updownarrow down tack with circle below

Modal logic operators

- 27E0 \Diamond LOZENGE DIVIDED BY HORIZONTAL RULE
 • used as form of possibility in modal logic
 → 25CA \Diamond 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 \square WHITE SQUARE WITH LEFTWARDS TICK
 = was always (modal operator)
 → 25A1 \square white square
 → 25FB \square white medium square
- 27E5 \square 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 \lshch MATHEMATICAL LEFT WHITE TORTOISE SHELL BRACKET
→ 2997 \lshch left black tortoise shell bracket
→ 3018 \lshch left white tortoise shell bracket
- 27ED \rshch MATHEMATICAL RIGHT WHITE TORTOISE SHELL BRACKET
→ 2998 \rshch right black tortoise shell bracket
→ 3019 \rshch right white tortoise shell bracket
- 27EE $($ MATHEMATICAL LEFT FLATTENED PARENTHESIS
= lgroup
- 27EF $)$ MATHEMATICAL RIGHT FLATTENED PARENTHESIS
= rgroup