

Supplemental Mathematical Operators

Range: 2A00–2AFF

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/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

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

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	2A0	2A1	2A2	2A3	2A4	2A5	2A6	2A7	2A8	2A9	2AA	2AB	2AC	2AD	2AE	2AF
0	 2A00	 2A10	 2A20	 2A30	 2A40	 2A50	 2A60	 2A70	 2A80	 2A90	 2AA0	 2AB0	 2AC0	 2AD0	 2AE0	 2AF0
1	 2A01	 2A11	 2A21	 2A31	 2A41	 2A51	 2A61	 2A71	 2A81	 2A91	 2AA1	 2AB1	 2AC1	 2AD1	 2AE1	 2AF1
2	 2A02	 2A12	 2A22	 2A32	 2A42	 2A52	 2A62	 2A72	 2A82	 2A92	 2AA2	 2AB2	 2AC2	 2AD2	 2AE2	 2AF2
3	 2A03	 2A13	 2A23	 2A33	 2A43	 2A53	 2A63	 2A73	 2A83	 2A93	 2AA3	 2AB3	 2AC3	 2AD3	 2AE3	 2AF3
4	 2A04	 2A14	 2A24	 2A34	 2A44	 2A54	 2A64	 2A74	 2A84	 2A94	 2AA4	 2AB4	 2AC4	 2AD4	 2AE4	 2AF4
5	 2A05	 2A15	 2A25	 2A35	 2A45	 2A55	 2A65	 2A75	 2A85	 2A95	 2AA5	 2AB5	 2AC5	 2AD5	 2AE5	 2AF5
6	 2A06	 2A16	 2A26	 2A36	 2A46	 2A56	 2A66	 2A76	 2A86	 2A96	 2AA6	 2AB6	 2AC6	 2AD6	 2AE6	 2AF6
7	 2A07	 2A17	 2A27	 2A37	 2A47	 2A57	 2A67	 2A77	 2A87	 2A97	 2AA7	 2AB7	 2AC7	 2AD7	 2AE7	 2AF7
8	 2A08	 2A18	 2A28	 2A38	 2A48	 2A58	 2A68	 2A78	 2A88	 2A98	 2AA8	 2AB8	 2AC8	 2AD8	 2AE8	 2AF8
9	 2A09	 2A19	 2A29	 2A39	 2A49	 2A59	 2A69	 2A79	 2A89	 2A99	 2AA9	 2AB9	 2AC9	 2AD9	 2AE9	 2AF9
A	 2A0A	 2A1A	 2A2A	 2A3A	 2A4A	 2A5A	 2A6A	 2A7A	 2A8A	 2A9A	 2AA A	 2AB A	 2AC A	 2AD A	 2AE A	 2AF A
B	 2A0B	 2A1B	 2A2B	 2A3B	 2A4B	 2A5B	 2A6B	 2A7B	 2A8B	 2A9B	 2AA B	 2AB B	 2AC B	 2AD B	 2AE B	 2AF B
C	 2A0C	 2A1C	 2A2C	 2A3C	 2A4C	 2A5C	 2A6C	 2A7C	 2A8C	 2A9C	 2AA C	 2AB C	 2AC C	 2AD C	 2AE C	 2AF C
D	 2A0D	 2A1D	 2A2D	 2A3D	 2A4D	 2A5D	 2A6D	 2A7D	 2A8D	 2A9D	 2AA D	 2AB D	 2AC D	 2AD D	 2AE D	 2AF D
E	 2A0E	 2A1E	 2A2E	 2A3E	 2A4E	 2A5E	 2A6E	 2A7E	 2A8E	 2A9E	 2AA E	 2AB E	 2AC E	 2AD E	 2AE E	 2AF E
F	 2A0F	 2A1F	 2A2F	 2A3F	 2A4F	 2A5F	 2A6F	 2A7F	 2A8F	 2A9F	 2AA F	 2AB F	 2AC F	 2AD F	 2AE F	 2AF F

N-ary operators

- 2A00 $\odot$ N-ARY CIRCLED DOT OPERATOR
→ 2299 $\odot$ circled dot operator
→ 25C9 $\odot$ fisheye
- 2A01 $\oplus$ N-ARY CIRCLED PLUS OPERATOR
→ 2295 $\oplus$ circled plus
- 2A02 $\otimes$ N-ARY CIRCLED TIMES OPERATOR
→ 2297 $\otimes$ circled times
→ 2B59 $\otimes$ heavy circled saltire
- 2A03 $\cup\!\!\cup$ N-ARY UNION OPERATOR WITH DOT
→ 228D $\cup\!\!\cup$ multiset multiplication
- 2A04 $\uplus$ N-ARY UNION OPERATOR WITH PLUS
→ 228E $\uplus$ multiset union
- 2A05 $\sqcap$ N-ARY SQUARE INTERSECTION OPERATOR
→ 2293 $\sqcap$ square cap
- 2A06 $\sqcup$ N-ARY SQUARE UNION OPERATOR
→ 2294 $\sqcup$ square cup
- 2A07 $\Join$ TWO LOGICAL AND OPERATOR
= merge
→ 2A55 $\Join$ two intersecting logical and
- 2A08 $\curlyvee$ TWO LOGICAL OR OPERATOR
→ 2A56 $\curlyvee$ two intersecting logical or
- 2A09 $\times$ N-ARY TIMES OPERATOR
→ 00D7 $\times$ multiplication sign

Summations and integrals

- 2A0A $\sum\limits_2$ MODULO TWO SUM
→ 2211 $\sum$ n-ary summation
- 2A0B $\int\!\!\int$ SUMMATION WITH INTEGRAL
- 2A0C $\iiint$ QUADRUPLE INTEGRAL OPERATOR
→ 222D $\iiint$ triple integral
≈ 222B $\int$ 222B $\int$ 222B $\int$ 222B $\int$
- 2A0D $\int$ FINITE PART INTEGRAL
- 2A0E $\int\!\!\int$ INTEGRAL WITH DOUBLE STROKE
- 2A0F $\int\!\!\int$ INTEGRAL AVERAGE WITH SLASH
- 2A10 $\oint$ CIRCULATION FUNCTION
- 2A11 $\oint$ ANTICLOCKWISE INTEGRATION
- 2A12 $\oint$ LINE INTEGRATION WITH RECTANGULAR PATH AROUND POLE
- 2A13 $\oint$ LINE INTEGRATION WITH SEMICIRCULAR PATH AROUND POLE
- 2A14 $\oint$ LINE INTEGRATION NOT INCLUDING THE POLE
- 2A15 $\oint$ INTEGRAL AROUND A POINT OPERATOR
→ 222E $\oint$ contour integral
- 2A16 $\int$ QUATERNION INTEGRAL OPERATOR
- 2A17 $\int\!\!\int$ INTEGRAL WITH LEFTWARDS ARROW WITH HOOK
- 2A18 $\int$ INTEGRAL WITH TIMES SIGN
- 2A19 $\int$ INTEGRAL WITH INTERSECTION
- 2A1A $\int$ INTEGRAL WITH UNION
- 2A1B $\int$ INTEGRAL WITH OVERBAR
= upper integral
- 2A1C $\int$ INTEGRAL WITH UNDERBAR
= lower integral

Miscellaneous large operators

- 2A1D $\bowtie$ JOIN
= large bowtie
• relational database theory
→ 22C8 $\bowtie$ bowtie
→ 27D7 $\bowtie$ full outer join
- 2A1E $\triangleleft$ LARGE LEFT TRIANGLE OPERATOR
• relational database theory
→ 25C1 $\triangleleft$ white left-pointing triangle

- 2A1F $\S$ Z NOTATION SCHEMA COMPOSITION
→ 2A3E $\S$ z notation relational composition
- 2A20 $\gg$ Z NOTATION SCHEMA PIPING
→ 226B $\gg$ much greater-than
- 2A21 $\upharpoonright$ Z NOTATION SCHEMA PROJECTION
→ 21BE $\upharpoonright$ upwards harpoon with barb rightwards

Plus and minus sign operators

- 2A22 $\mathrel{+}$ PLUS SIGN WITH SMALL CIRCLE ABOVE
- 2A23 $\mathrel{+}$ PLUS SIGN WITH CIRCUMFLEX ACCENT ABOVE
- 2A24 $\mathrel{+}$ PLUS SIGN WITH TILDE ABOVE
= positive difference or sum
- 2A25 $\mathrel{+}$ PLUS SIGN WITH DOT BELOW
→ 2214 $\mathrel{+}$ dot plus
- 2A26 $\mathrel{+}$ PLUS SIGN WITH TILDE BELOW
= sum or positive difference
- 2A27 $\mathrel{+}$ PLUS SIGN WITH SUBSCRIPT TWO
= nim-addition
- 2A28 $\mathrel{+}$ PLUS SIGN WITH BLACK TRIANGLE
- 2A29 $\mathrel{-}$ MINUS SIGN WITH COMMA ABOVE
- 2A2A $\mathrel{-}$ MINUS SIGN WITH DOT BELOW
→ 2238 $\mathrel{-}$ dot minus
- 2A2B $\mathrel{-}$ MINUS SIGN WITH FALLING DOTS
- 2A2C $\mathrel{-}$ MINUS SIGN WITH RISING DOTS
- 2A2D $\mathrel{-}$ PLUS SIGN IN LEFT HALF CIRCLE
- 2A2E $\mathrel{-}$ PLUS SIGN IN RIGHT HALF CIRCLE

Multiplication and division sign operators

- 2A2F $\times$ VECTOR OR CROSS PRODUCT
→ 00D7 $\times$ multiplication sign
- 2A30 $\times$ MULTIPLICATION SIGN WITH DOT ABOVE
- 2A31 $\times$ MULTIPLICATION SIGN WITH UNDERBAR
- 2A32 $\times$ SEMIDIRECT PRODUCT WITH BOTTOM CLOSED
- 2A33 $\times$ SMASH PRODUCT
- 2A34 $\times$ MULTIPLICATION SIGN IN LEFT HALF CIRCLE
- 2A35 $\times$ MULTIPLICATION SIGN IN RIGHT HALF CIRCLE
- 2A36 $\otimes$ CIRCLED MULTIPLICATION SIGN WITH CIRCUMFLEX ACCENT
- 2A37 $\otimes$ MULTIPLICATION SIGN IN DOUBLE CIRCLE
- 2A38 $\oplus$ CIRCLED DIVISION SIGN

Miscellaneous mathematical operators

- 2A39 $\triangle$ PLUS SIGN IN TRIANGLE
- 2A3A $\triangle$ MINUS SIGN IN TRIANGLE
- 2A3B $\triangle$ MULTIPLICATION SIGN IN TRIANGLE
- 2A3C $\lrcorner$ INTERIOR PRODUCT
→ 230B $\lrcorner$ right floor
~ 2A3C FE00 $\lrcorner$ tall variant with narrow foot
- 2A3D $\llcorner$ RIGHTHAND INTERIOR PRODUCT
→ 230A $\llcorner$ left floor
→ 2319 $\llcorner$ turned not sign
~ 2A3D FE00 $\llcorner$ tall variant with narrow foot
- 2A3E $\S$ Z NOTATION RELATIONAL COMPOSITION
→ 2A1F $\S$ z notation schema composition
- 2A3F $\amalg$ AMALGAMATION OR COPRODUCT
→ 2210 $\amalg$ n-ary coproduct

Intersections and unions

- 2A40 $\cap$ INTERSECTION WITH DOT
→ 2227 $\cap$ logical and
→ 27D1 $\cap$ and with dot
- 2A41 $\cup$ UNION WITH MINUS SIGN
= z notation bag subtraction
→ 228E $\cup$ multiset union

2A42	∪	UNION WITH OVERBAR
2A43	∩	INTERSECTION WITH OVERBAR
2A44	∩	INTERSECTION WITH LOGICAL AND
2A45	∪	UNION WITH LOGICAL OR
2A46	∩	UNION ABOVE INTERSECTION
2A47	∩	INTERSECTION ABOVE UNION
2A48	∩	UNION ABOVE BAR ABOVE INTERSECTION
2A49	∩	INTERSECTION ABOVE BAR ABOVE UNION
2A4A	∩	UNION BESIDE AND JOINED WITH UNION
2A4B	∩	INTERSECTION BESIDE AND JOINED WITH INTERSECTION
2A4C	∪	CLOSED UNION WITH SERIFS → 222A ∪ union
2A4D	∩	CLOSED INTERSECTION WITH SERIFS → 2229 ∩ intersection
2A4E	∩	DOUBLE SQUARE INTERSECTION
2A4F	∩	DOUBLE SQUARE UNION
2A50	∩	CLOSED UNION WITH SERIFS AND SMASH PRODUCT

Logical ands and ors

2A51	∧	LOGICAL AND WITH DOT ABOVE
2A52	∨	LOGICAL OR WITH DOT ABOVE
2A53	∧	DOUBLE LOGICAL AND
2A54	∨	DOUBLE LOGICAL OR
2A55	∧	TWO INTERSECTING LOGICAL AND → 2A07 ∩ two logical and operator
2A56	∨	TWO INTERSECTING LOGICAL OR → 2A08 ∪ two logical or operator
2A57	∨	SLOPING LARGE OR
2A58	∧	SLOPING LARGE AND
2A59	∧	LOGICAL OR OVERLAPPING LOGICAL AND
2A5A	∧	LOGICAL AND WITH MIDDLE STEM
2A5B	∨	LOGICAL OR WITH MIDDLE STEM
2A5C	∧	LOGICAL AND WITH HORIZONTAL DASH
2A5D	∨	LOGICAL OR WITH HORIZONTAL DASH
2A5E	∧	LOGICAL AND WITH DOUBLE OVERBAR → 2306 ∩ perspective
2A5F	∧	LOGICAL AND WITH UNDERBAR
2A60	∧	LOGICAL AND WITH DOUBLE UNDERBAR → 2259 ∩ estimates
2A61	∨	SMALL VEE WITH UNDERBAR → 225A ∩ equiangular to
2A62	∧	LOGICAL OR WITH DOUBLE OVERBAR
2A63	∨	LOGICAL OR WITH DOUBLE UNDERBAR → 225A ∩ equiangular to

Miscellaneous mathematical operators

2A64	∠	Z NOTATION DOMAIN ANTIRESTRICTION
2A65	∠	Z NOTATION RANGE ANTIRESTRICTION → 2332 ∠ conical taper

Relational operators

2A66	≈	EQUALS SIGN WITH DOT BELOW → 2250 ∩ approaches the limit
2A67	≡	IDENTICAL WITH DOT ABOVE
2A68	≡	TRIPLE HORIZONTAL BAR WITH DOUBLE VERTICAL STROKE = identical and parallel to → 22D5 ≡ equal and parallel to → 29E5 ≡ identical to and slanted parallel
2A69	≡	TRIPLE HORIZONTAL BAR WITH TRIPLE VERTICAL STROKE
2A6A	~	TILDE OPERATOR WITH DOT ABOVE

2A6B	~	TILDE OPERATOR WITH RISING DOTS → 223B ~ homothetic
2A6C	≈	SIMILAR MINUS SIMILAR
2A6D	≡	CONGRUENT WITH DOT ABOVE → 2245 ∩ approximately equal to
2A6E	≡	EQUALS WITH ASTERISK → 225B ∩ star equals
2A6F	≈	ALMOST EQUAL TO WITH CIRCUMFLEX ACCENT
2A70	≡	APPROXIMATELY EQUAL OR EQUAL TO → 2245 ∩ approximately equal to
2A71	≡	EQUALS SIGN ABOVE PLUS SIGN • black stands slightly better (chess notation)
2A72	≡	PLUS SIGN ABOVE EQUALS SIGN • white stands slightly better (chess notation)
2A73	≡	EQUALS SIGN ABOVE TILDE OPERATOR
2A74	≡	DOUBLE COLON EQUAL ≈ 003A : 003A : 003D =
2A75	≡	TWO CONSECUTIVE EQUALS SIGNS ≈ 003D = 003D =
2A76	≡	THREE CONSECUTIVE EQUALS SIGNS ≈ 003D = 003D = 003D =
2A77	≡	EQUALS SIGN WITH TWO DOTS ABOVE AND TWO DOTS BELOW
2A78	≡	EQUIVALENT WITH FOUR DOTS ABOVE
2A79	≡	LESS-THAN WITH CIRCLE INSIDE
2A7A	≡	GREATER-THAN WITH CIRCLE INSIDE
2A7B	≡	LESS-THAN WITH QUESTION MARK ABOVE
2A7C	≡	GREATER-THAN WITH QUESTION MARK ABOVE
2A7D	≡	LESS-THAN OR SLANTED EQUAL TO → 2264 ≤ less-than or equal to
2A7E	≡	GREATER-THAN OR SLANTED EQUAL TO → 2265 ≥ greater-than or equal to
2A7F	≡	LESS-THAN OR SLANTED EQUAL TO WITH DOT INSIDE
2A80	≡	GREATER-THAN OR SLANTED EQUAL TO WITH DOT INSIDE
2A81	≡	LESS-THAN OR SLANTED EQUAL TO WITH DOT ABOVE
2A82	≡	GREATER-THAN OR SLANTED EQUAL TO WITH DOT ABOVE
2A83	≡	LESS-THAN OR SLANTED EQUAL TO WITH DOT ABOVE RIGHT
2A84	≡	GREATER-THAN OR SLANTED EQUAL TO WITH DOT ABOVE LEFT
2A85	≡	LESS-THAN OR APPROXIMATE
2A86	≡	GREATER-THAN OR APPROXIMATE
2A87	≡	LESS-THAN AND SINGLE-LINE NOT EQUAL TO → 2268 ≡ less-than but not equal to
2A88	≡	GREATER-THAN AND SINGLE-LINE NOT EQUAL TO → 2269 ≡ greater-than but not equal to
2A89	≡	LESS-THAN AND NOT APPROXIMATE
2A8A	≡	GREATER-THAN AND NOT APPROXIMATE
2A8B	≡	LESS-THAN ABOVE DOUBLE-LINE EQUAL ABOVE GREATER-THAN → 22DA ≡ less-than equal to or greater-than
2A8C	≡	GREATER-THAN ABOVE DOUBLE-LINE EQUAL ABOVE LESS-THAN → 22DB ≡ greater-than equal to or less-than
2A8D	≡	LESS-THAN ABOVE SIMILAR OR EQUAL
2A8E	≡	GREATER-THAN ABOVE SIMILAR OR EQUAL
2A8F	≡	LESS-THAN ABOVE SIMILAR ABOVE GREATER-THAN

2A90	⋈	GREATER-THAN ABOVE SIMILAR ABOVE LESS-THAN	2AB3	⋈	PRECEDES ABOVE EQUALS SIGN
2A91	⋈	LESS-THAN ABOVE GREATER-THAN ABOVE DOUBLE-LINE EQUAL	2AB4	⋈	SUCCEEDS ABOVE EQUALS SIGN
2A92	⋈	GREATER-THAN ABOVE LESS-THAN ABOVE DOUBLE-LINE EQUAL	2AB5	⋈	PRECEDES ABOVE NOT EQUAL TO
2A93	⋈	LESS-THAN ABOVE SLANTED EQUAL ABOVE GREATER-THAN ABOVE SLANTED EQUAL	2AB6	⋈	SUCCEEDS ABOVE NOT EQUAL TO
2A94	⋈	GREATER-THAN ABOVE SLANTED EQUAL ABOVE LESS-THAN ABOVE SLANTED EQUAL	2AB7	⋈	PRECEDES ABOVE ALMOST EQUAL TO
2A95	⋈	SLANTED EQUAL TO OR LESS-THAN → 22DC ⋈ equal to or less-than	2AB8	⋈	SUCCEEDS ABOVE ALMOST EQUAL TO
2A96	⋈	SLANTED EQUAL TO OR GREATER-THAN → 22DD ⋈ equal to or greater-than	2AB9	⋈	PRECEDES ABOVE NOT ALMOST EQUAL TO
2A97	⋈	SLANTED EQUAL TO OR LESS-THAN WITH DOT INSIDE	2ABA	⋈	SUCCEEDS ABOVE NOT ALMOST EQUAL TO
2A98	⋈	SLANTED EQUAL TO OR GREATER-THAN WITH DOT INSIDE	2ABB	⋈	DOUBLE PRECEDES
2A99	⋈	DOUBLE-LINE EQUAL TO OR LESS-THAN → 22DC ⋈ equal to or less-than	2ABC	⋈	DOUBLE SUCCEEDS
2A9A	⋈	DOUBLE-LINE EQUAL TO OR GREATER-THAN → 22DD ⋈ equal to or greater-than	Subset and superset relations		
2A9B	⋈	DOUBLE-LINE SLANTED EQUAL TO OR LESS-THAN	2ABD	⋈	SUBSET WITH DOT
2A9C	⋈	DOUBLE-LINE SLANTED EQUAL TO OR GREATER-THAN	2ABE	⋈	SUPERSET WITH DOT
2A9D	⋈	SIMILAR OR LESS-THAN ~ 2A9D FE00 ⋈ with similar following the slant of the upper leg	2ABF	⋈	SUBSET WITH PLUS SIGN BELOW
2A9E	⋈	SIMILAR OR GREATER-THAN ~ 2A9E FE00 ⋈ with similar following the slant of the upper leg	2AC0	⋈	SUPERSET WITH PLUS SIGN BELOW
2A9F	⋈	SIMILAR ABOVE LESS-THAN ABOVE EQUALS SIGN	2AC1	⋈	SUBSET WITH MULTIPLICATION SIGN BELOW
2AA0	⋈	SIMILAR ABOVE GREATER-THAN ABOVE EQUALS SIGN	2AC2	⋈	SUPERSET WITH MULTIPLICATION SIGN BELOW
2AA1	⋈	DOUBLE NESTED LESS-THAN = absolute continuity → 226A ⋈ much less-than	2AC3	⋈	SUBSET OF OR EQUAL TO WITH DOT ABOVE
2AA2	⋈	DOUBLE NESTED GREATER-THAN → 226B ⋈ much greater-than	2AC4	⋈	SUPERSET OF OR EQUAL TO WITH DOT ABOVE
2AA3	⋈	DOUBLE NESTED LESS-THAN WITH UNDERBAR	2AC5	⋈	SUBSET OF ABOVE EQUALS SIGN
2AA4	⋈	GREATER-THAN OVERLAPPING LESS-THAN	2AC6	⋈	SUPERSET OF ABOVE EQUALS SIGN
2AA5	⋈	GREATER-THAN BESIDE LESS-THAN	2AC7	⋈	SUBSET OF ABOVE TILDE OPERATOR
2AA6	⋈	LESS-THAN CLOSED BY CURVE	2AC8	⋈	SUPERSET OF ABOVE TILDE OPERATOR
2AA7	⋈	GREATER-THAN CLOSED BY CURVE	2AC9	⋈	SUBSET OF ABOVE ALMOST EQUAL TO
2AA8	⋈	LESS-THAN CLOSED BY CURVE ABOVE SLANTED EQUAL	2ACA	⋈	SUPERSET OF ABOVE ALMOST EQUAL TO
2AA9	⋈	GREATER-THAN CLOSED BY CURVE ABOVE SLANTED EQUAL	2ACB	⋈	SUBSET OF ABOVE NOT EQUAL TO ~ 2ACB FE00 ⋈ with stroke through bottom members
2AAA	⋈	SMALLER THAN	2ACC	⋈	SUPERSET OF ABOVE NOT EQUAL TO ~ 2ACC FE00 ⋈ with stroke through bottom members
2AAB	⋈	LARGER THAN	2ACD	⋈	SQUARE LEFT OPEN BOX OPERATOR
2AAC	⋈	SMALLER THAN OR EQUAL TO ~ 2AAC FE00 ⋈ with slanted equal	2ACE	⋈	SQUARE RIGHT OPEN BOX OPERATOR
2AAD	⋈	LARGER THAN OR EQUAL TO ~ 2AAD FE00 ⋈ with slanted equal	2ACF	⋈	CLOSED SUBSET → 2282 ⋈ subset of
2AAE	⋈	EQUALS SIGN WITH BUMPY ABOVE → 224F ⋈ difference between	2AD0	⋈	CLOSED SUPERSET → 2283 ⋈ superset of
2AAF	⋈	PRECEDES ABOVE SINGLE-LINE EQUALS SIGN → 227C ⋈ precedes or equal to	2AD1	⋈	CLOSED SUBSET OR EQUAL TO
2AB0	⋈	SUCCEEDS ABOVE SINGLE-LINE EQUALS SIGN → 227D ⋈ succeeds or equal to	2AD2	⋈	CLOSED SUPERSET OR EQUAL TO
2AB1	⋈	PRECEDES ABOVE SINGLE-LINE NOT EQUAL TO	2AD3	⋈	SUBSET ABOVE SUPERSET
2AB2	⋈	SUCCEEDS ABOVE SINGLE-LINE NOT EQUAL TO	2AD4	⋈	SUPERSET ABOVE SUBSET
			2AD5	⋈	SUBSET ABOVE SUBSET
			2AD6	⋈	SUPERSET ABOVE SUPERSET
			2AD7	⋈	SUPERSET BESIDE SUBSET
			2AD8	⋈	SUPERSET BESIDE AND JOINED BY DASH WITH SUBSET
			Forks		
			2AD9	⋈	ELEMENT OF OPENING DOWNWARDS → 2208 ⋈ element of → 27D2 ⋈ element of opening upwards
			2ADA	⋈	PITCHFORK WITH TEE TOP → 22D4 ⋈ pitchfork
			2ADB	⋈	TRANSVERSAL INTERSECTION → 22D4 ⋈ pitchfork
			2ADC	⋈	FORKING = not independent • an equational logic symbol, not a computing science symbol • non-independence (original concept) is related to forking ≡ 2ADD ⋈ 0338 ⋈

- 2ADD ↯ NONFORKING
= independent
• an equational logic symbol, not a computing science symbol
• independence (original concept) is related to non-forking

Tacks and turnstiles

- 2ADE ⇐ SHORT LEFT TACK
→ 22A3 ⇐ left tack
- 2ADF ⇐ SHORT DOWN TACK
→ 22A4 ⇐ down tack
- 2AE0 ⊥ SHORT UP TACK
→ 22A5 ⊥ up tack
- 2AE1 ⊥ PERPENDICULAR WITH S
- 2AE2 ≡ VERTICAL BAR TRIPLE RIGHT TURNSTILE
= ordinarily satisfies
- 2AE3 ⇐ DOUBLE VERTICAL BAR LEFT TURNSTILE
→ 22A9 ⇐ forces
- 2AE4 ⇐ VERTICAL BAR DOUBLE LEFT TURNSTILE
→ 22A8 ⇐ true
- 2AE5 ⇐ DOUBLE VERTICAL BAR DOUBLE LEFT TURNSTILE
- 2AE6 ⇐ LONG DASH FROM LEFT MEMBER OF DOUBLE VERTICAL
→ 22A9 ⇐ forces
- 2AE7 ⇐ SHORT DOWN TACK WITH OVERBAR
→ 22A4 ⇐ down tack
→ 2351 ⇐ apl functional symbol up tack overbar
→ 3012 ⇐ postal mark
- 2AE8 ⊥ SHORT UP TACK WITH UNDERBAR
→ 22A5 ⊥ up tack
→ 234A ⊥ apl functional symbol down tack underbar
- 2AE9 ⊥ SHORT UP TACK ABOVE SHORT DOWN TACK
- 2AEA ⇐ DOUBLE DOWN TACK
- 2AEB ⊥ DOUBLE UP TACK
= independence
• probability theory
- 2AEC ⇐ DOUBLE STROKE NOT SIGN
→ 00AC ⇐ not sign
- 2AED ⇐ REVERSED DOUBLE STROKE NOT SIGN
→ 2310 ⇐ reversed not sign

Vertical line operators

- 2AEE ⇐ DOES NOT DIVIDE WITH REVERSED NEGATION SLASH
→ 2224 ⇐ does not divide
- 2AEF ⇐ VERTICAL LINE WITH CIRCLE ABOVE
- 2AF0 ⇐ VERTICAL LINE WITH CIRCLE BELOW
- 2AF1 ⇐ DOWN TACK WITH CIRCLE BELOW
= necessarily satisfies
→ 27DF ⇐ up tack with circle above
- 2AF2 ⇐ PARALLEL WITH HORIZONTAL STROKE
→ 2226 ⇐ not parallel to
→ 27CA ⇐ vertical bar with horizontal stroke
- 2AF3 ⇐ PARALLEL WITH TILDE OPERATOR
- 2AF4 ⇐ TRIPLE VERTICAL BAR BINARY RELATION
= interleave
→ 2980 ⇐ triple vertical bar delimiter
- 2AF5 ⇐ TRIPLE VERTICAL BAR WITH HORIZONTAL STROKE
→ 27CA ⇐ vertical bar with horizontal stroke

Miscellaneous mathematical operator

- 2AF6 ⇐ TRIPLE COLON OPERATOR
• logic
→ 205D ⇐ tricolon
→ 22EE ⇐ vertical ellipsis

Relations

- 2AF7 ⇐ TRIPLE NESTED LESS-THAN
→ 22D8 ⇐ very much less-than
- 2AF8 ⇐ TRIPLE NESTED GREATER-THAN
→ 22D9 ⇐ very much greater-than
- 2AF9 ⇐ DOUBLE-LINE SLANTED LESS-THAN OR EQUAL TO
→ 2266 ⇐ less-than over equal to
- 2AFA ⇐ DOUBLE-LINE SLANTED GREATER-THAN OR EQUAL TO
→ 2267 ⇐ greater-than over equal to
- 2AFB ⇐ TRIPLE SOLIDUS BINARY RELATION
→ 2AF4 ⇐ triple vertical bar binary relation

Operators

- 2AFC ⇐ LARGE TRIPLE VERTICAL BAR OPERATOR
• often n-ary
→ 2AF4 ⇐ triple vertical bar binary relation
→ 2980 ⇐ triple vertical bar delimiter
- 2AFD ⇐ DOUBLE SOLIDUS OPERATOR
→ 2225 ⇐ parallel to
- 2AFE ⇐ WHITE VERTICAL BAR
= Dijkstra choice
- 2AFF ⇐ N-ARY WHITE VERTICAL BAR
= n-ary Dijkstra choice

Standardized Variation Sequences

2A3C



INTERIOR PRODUCT

2A3C



tall variant with narrow foot

2A3C FE00

2A3D



RIGHTHAND INTERIOR PRODUCT

2A3D



tall variant with narrow foot

2A3D FE00

2A9D



SIMILAR OR LESS-THAN

2A9D



with similar following the slant of the upper leg

2A9D FE00

2A9E



SIMILAR OR GREATER-THAN

2A9E



with similar following the slant of the upper leg

2A9E FE00

2AAC



SMALLER THAN OR EQUAL TO

2AAC



with slanted equal

2AAC FE00

2AAD



LARGER THAN OR EQUAL TO

2AAD



with slanted equal

2AAD FE00

2ACB



SUBSET OF ABOVE NOT EQUAL TO

2ACB



with stroke through bottom members

2ACB FE00

2ACC



SUPERSET OF ABOVE NOT EQUAL TO

2ACC



with stroke through bottom members

2ACC FE00