

# Nomenclature: Functions and Operators

## Functions

Glyph	Glyph Name	Unicode Glyph Name	Code	Monadic Function	Dyadic Function
+	Plus	Plus Sign	002B	Conjugate	Plus
-	Minus	Hyphen-Minus	002D	Negate	Minus
×	Times	Multiplication Sign	00D7	Direction	Times
÷	Divide	Division Sign	00F7	Reciprocal	Divide
└	Downstile	Left Floor	230A	Floor	Minimum
┌	Upstile	Left Ceiling	2308	Ceiling	Maximum
	Stile	Vertical Line	007C	Magnitude	Residue
*	Star	Asterisk	002A	Exponential	Power
⊛	Log	*Circle Star	235F	Natural Logarithm	Logarithm
○	Circle	White Circle	25CB	Pi Times	Circular Functions
!	Exclamation Mark	Exclamation Mark	0021	Factorial	Binomial
^	Logical AND	Logical AND	2227		Lowest Common Multiple/AND
∨	Logical OR	Logical OR	2228		Greatest Common Divisor/OR
⋈	Logical NAND	*Up Caret Tilde	2372		NAND
⋇	Logical NOR	*Down Caret Tilde	2371		NOR
<	Less Than	Less-Than Sign	003C		Less Than
≤	Less Than Or Equal To	Less-Than Or Equal To	2264		Less Than Or Equal To
=	Equal	Equals Sign	003D		Equal To
≥	Greater Than Or Equal To	Great-Than Or Equal To	2265		Greater Than Or Equal To
>	Greater Than	Greater-Than Sign	003E		Greater Than
≠	Not Equal	Not Equal To	2260		Not Equal To
~	Tilde	Tilde	007E	NOT	Without
?	Question Mark	Question Mark	003F	Roll	Deal
ε	Epsilon	Small Element Of	220A	Enlist (Type if $\square_{ML}=0$ )	Membership
ε̄	Epsilon Underbar	*Epsilon Underbar	2377		Find
,	Comma	Comma	002C	Ravel	Catenate/Laminate
⌣	Comma Bar	*Comma Bar	236A	Table	Catenate First/Laminate
□	Squad	*Squish Quad	2337	Materialise	Index
ι	Iota	*Iota	2373	Index Generator	Index Of
ρ	Rho	*Rho	2374	Shape	Reshape
↑	Up Arrow	Upwards Arrow	2191	$\square_{ML} \leq 1$ Mix $\square_{ML} \geq 2$ First	Take
↓	Down Arrow	Downwards Arrow	2193	Split	Drop
↵	Left Tack	Left Tack	22A3	Same	Left
↶	Right Tack	Right Tack	22A2	Same	Right
⌞	Down Tack	Down Tack	22A4		Encode
⌟	Up Tack	Up Tack	22A5		Decode
/	Slash	Solidus	002F		Replicate
/̄	Slash Bar	*Slash Bar	233F		Replicate First

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Glyph	Glyph Name	Unicode Glyph Name	Code	Monadic Function	Dyadic Function
\	Backslash	Reverse Solidus	005C		Expand
ⵧ	Backslash Bar	*Backslash Bar	2340		Expand First
ϕ	Circle Stile	*Circle Stile	233D	Reverse	Rotate
⊖	Circle Bar	Circled Minus	2296	Reverse First	Rotate First
⊗	Circle Backslash	*Circle Backslash	2349	Transpose	Dyadic Transpose
⤴	Grade Up	*Delta Stile	234B	Grade Up	Dyadic Grade Up
⤵	Grade Down	*Del Stile	2352	Grade Down	Dyadic Grade Down
⊞	Domino	*Quad Divide	2339	Matrix Inverse	Matrix Divide
≡	Equal Underbar	Identical To	2261	Depth	Match
≠	Equal Underbar Slash	Not Identical To	2262	Tally	Not Match
⊂	Left Shoe	Subset Of	2282	Enclose	⊞ML ≤ 2 Partitioned Enclose ⊞ML = 3 Partition
⊃	Right Shoe	Superset Of	2283	⊞ML ≤ 1 First ⊞ML ≥ 2 Mix	Pick
∩	Up Shoe	Intersection	2229		Intersection
∪	Down Shoe	Union	222A	Unique	Union
⚡	Hydrant	*** *Down Tack Jot	234E	Execute	Dyadic Execute
⚡	Thorn	*** *Up Tack Jot	2355	Format	Format by Specification

\* The Unicode Glyph Name is preceded by "APL FUNCTIONAL SYMBOL"

\*\*These glyphs are *hybrids*, that is, the argument/operand to the left of the glyph determines whether it acts as a function or an operator

\*\*\* The Unicode naming of \*Up Tack Jot and \*Down Tack Jot is counter to the way the APL community recognises these glyphs

## Operators

Glyph	Glyph Name	Unicode Glyph Name	Code	Operator	Resulting Derived Function
/	Slash	Solidus	002F	Reduce (monadic)	monadic and dyadic
ⵧ	Slash Bar	*Slash Bar	233F	Reduce First (monadic)	monadic and dyadic
\	Backslash	Reverse Solidus	005C	Scan (monadic)	monadic
ⵧ	Backslash Bar	*Backslash Bar	2340	Scan First (monadic)	monadic
¨	Diaeresis	Diaeresis	00A8	Each (monadic)	monadic and dyadic
¨	Jot Diaeresis	*Jot Diaeresis	2364	Rank (dyadic)	monadic and dyadic
⊞	Quad Equal	*Quad Equal	2338	Key (monadic)	monadic and dyadic
˜	Tilde Diaeresis	*Tilde Diaeresis	2368	Commute (monadic)	monadic and dyadic
⋆	Star Diaeresis	*Star Diaeresis	2363	Power (dyadic)	monadic and dyadic
.	Dot	Full Stop	002E	Inner or Outer Product (dyadic)	dyadic
◦	Jot	Ring Operator	2218	Compose (dyadic)	monadic and dyadic
⊞	Quad Colon	*Quad Colon	2360	Variant (dyadic)	monadic and dyadic
&	Ampersand	Ampersand	0026	Spawn (monadic)	monadic and dyadic
⊞	I-Beam	*I-Beam	2336	I-Beam (monadic)	monadic and dyadic

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