

## A. Primitive Functions and Operators

Symbol	Monadic	Dyadic	Symbol	Monadic	Dyadic
Scalar Functions					
+	Identity	Plus (Add)	~	Not	
-	Negative	Minus (Subtract)	?	Roll	
×	Direction (Signum)	Times (Multiply)	^		And
÷	Reciprocal	Divide	∨		Or
	Magnitude	Residue (Modulo)	~		Nand
⌊	Floor	Minimum	~		Nor
⌈	Ceiling	Maximum	<		Less
*	Exponential	Power	≤		Less Or Equal
⊗	Natural Logarithm	Logarithm	=		Equal
∘	Pi Times	Circular (Trigonometric)	≥		Greater Or Equal
!	Factorial	Binomial	>		Greater
≠		Not Equal			
Selection Mixed Functions			Structural Mixed Functions		
⊃	Disclose	Pick	ρ	Reshape	
↑		Take	,	Ravel	Catenate/Laminate
↓		Drop	⌈	Table	Catenate First/Laminate
/		Replicate	φ	Reverse	Rotate
/		Replicate First	⊖	Reverse First	Rotate First
\		Expand	⊞	Transpose	Transpose
\		Expand First	↑	Mix	
~		Without (Excluding)	↓	Split	
∩		Intersection	⊂	Enclose	Partitioned Enclose
∪	Unique	Union	ε	Enlist	
⊔	Same	Left			
⊔	Identity	Right			
Selector Mixed Functions			Miscellaneous Mixed Functions		
ι	Index Generator	Index Of	ρ	Shape	
ε		Membership	≡	Depth	Match
⧻	Grade Up	Grade Up	≠	Tally	Not Match
⧻	Grade Down	Grade Down	⌘	Execute	Execute
?		Deal	⌘	Format	Format
⌵		Find	⌵		Decode (Base)
			⌵		Encode (Representation)
			⌵	Matrix Divide	Matrix Inverse

Primitive Operators		
Symbol	Name	Description
$\ddot{\sim}$	Commute	Swaps arguments or distributes right argument to both sides
$\ddot{\cdot}$	Each	Applies its operand point-wise over the left/right arguments
$/$	Reduce	Reduce along the last axis
$\nearrow$	Reduce First	Reduce along the first axis
$\backslash$	Scan	Scan along the last axis
$\nwarrow$	Scan First	Scan along the first axis
$\boxtimes$	Key	Apply operand once for each sub-array grouped by key
$\circ$	Compose	Composes two operands as in traditional mathematics
$\cdot$	Inner Product	Inner product operation, e.g. $+$ , $\times$ for matrix multiplication
$\circ \cdot$	Outer Product	Cartesian product or “function table”
$\ast$	Power	Iteration, Limited use only
$\ddot{\circ}$	Rank	Apply a function along cells of an array
$@$	At	Replace selected elements of an array