

# Mathematica Cheat Sheet

Table 1: Syntax & commands

notation	name	use	example
<i>Assignements</i>			
=	assignment	executed once	
:=	delayed assignment	executed at each call	
=. .	unset	remove rules	
++x/--x	add/subtract 1 before	in loops	++x
x++/x--	add/subtract 1 after	in loops	x++
x+=/x-=/x*=/x/=	modify x with number		x+=3
<i>Brackets</i>			
[ ]	independent variable	function argument	f[x]
[[ ]]	index	index holder	array[[3]]
{ }	List		{x,1,4}
( )	group		(a+1)(a+3)
<i>Rules</i>			
->	rule	temp. assignment	a->3
/.	replace		(x+2)/.x->1
:>	delayed rule		x:>n++
//.	replace repeat	at recurrence	f[f[x]]//.f[x]->x
/;	condition		f[x_] := Sin[x] /; x>0
<i>Variables</i>			
\$Assumptions	assumptions	limit domain	\$Assumptions = a>0
<i>Miscellaneous</i>			
-	independent variable	in function definition	f[x_] =
;;	span	in index list	[[2;;j]]
==	test equal		f[x]==0
	alternative	in variable list	a b->1
:	optional	in variable list	f[x_,y_:4]
//	PostFix (pipe)	sequence of calculations	Sin[1]//N
@	PreFix	sequence of calculations	Sin @ $\pi/4$
@@	Apply	apply an operation	Plus @@ {1,2,3}

Table 2: Commands &amp; Syntax

notation	name	use	example
<i>Visualising functions</i>			
Plot[ ] Plot3D[ ] ListPlot[ ] ListLinePlot[ ] Show[ ] Grid[ ] Manipulate[ ] Animate[ ]	plot a (list) of functions  plot a list of data plot a list of data combines plots displays elements in a grid displays interactive elements animates elements		
<i>Wolfram Alpha Interface</i>			
= == <ctl>=	WA short form WA full form WA linguistic input		
<i>Help &amp; Information commands</i>			
? ?? <F1>	info info + attributes + options help on selected function		?Sin ?Plot3D
<i>Clear &amp; Reset</i>			
Menu → Evaluation → Quit Kernel Remove["Global'"] ClearAll["Global'"] Clear[ ]	Quit Kernel Remove all Global definitions Clear all Global variables Clear values and definitions		Clear[var]

Table 3: Syntax &amp; templates

notation	Math notation	example
<i>Math template short-cuts</i>		
<esc>pd<esc><ctl>_ <esc>dintt<esc>	$\partial_{\square\square}$ $\int_{\square\square} d_{\square}$	differential definite integral
<esc>pw<esc><ctl>,<ctl><enter>  (<ctl>,<ctl><enter>)	$= \begin{Bmatrix} \square & \square \\ \square & \square \end{Bmatrix}$ $= \begin{pmatrix} \square & \square \\ \square & \square \end{pmatrix}$	array

Table 4: Keyboard short-cuts

Keys	function	works for:
<alt>n	format text cell	n=1...7
<alt>8	make cell initialisation cell	
<alt>9	make cell input cell	
<alt>0	chose cell type	
<alt>]	place pair of brackets	} ] )
<alt>/	out-comment selected part of <i>expr</i>	(* <i>expr</i> *)
<ctl>}	closes cell group at level	
<ctl>{	opens cell group at level	