Starting and Stopping

start/stop standard Calc  C-x * c
start/stop X keypad Calc  C-x * k
start/stop either: C-x * *
stop standard Calc      q
Calc tutorial            C-x * t
run Calc in other window C-x * o
quick calculation in minibuffer C-x * y

Getting Help

The h prefix key is Calc's analogue of C-h in Emacs.

quick summary of keys  ?
describe key briefly    h c
describe key fully      h k
describe function or command h f
read Info manual        h i or C-x * i
read full Calc summary  h s or C-x * s

Error Recovery

abort command in progress C-g
display recent error messages w
undo last operation      u
redo last operation      D
recall last arguments    M-RET
edit top of stack        
reset Calc to initial state C-x * 0 (zero)

Transferring Data

grab region from a buffer C-x * g
grab rectangle from a buffer C-x * r
grab rectangle, summing columns C-x * v
grab rectangle, summing rows C-x * l
yank data to a buffer     C-x * y

Also, try C-k/C-y or X cut and paste.

Examples

In RPN, enter numbers first, separated by RET if necessary, then type the operator. To enter a calculation in algebraic form, press the apostrophe first.

<table>
<thead>
<tr>
<th>RPNG style</th>
<th>algebraic style</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example</td>
<td></td>
</tr>
<tr>
<td>2 RET 3</td>
<td>' 2 + 3 RET</td>
</tr>
<tr>
<td>2 RET 3 + 4</td>
<td>' 2 + 4 RET</td>
</tr>
<tr>
<td>2 RET 3 4</td>
<td>' 2 + 4 RET</td>
</tr>
<tr>
<td>3 RET 6 + 3</td>
<td>' sqrt(3^6) RET</td>
</tr>
<tr>
<td>P 3 / n S</td>
<td>' sin(-pi/3) RET</td>
</tr>
</tbody>
</table>

Arithmetic

add, subtract, multiply, divide  +, -, *, /
raise to a power, nth root       **, I **
change sign                      n
reciprocal 1/x                   k
square root √x                    Q
set precision                    p
round off last two digits        c 2
convert to fraction, float       c F, c f
enter using algebraic notation   \[ 2+3*4 \]
refer to previous result         \[ 3+8^2 \]
refer to higher stack entries    \[ 2+1^2 \]
finish alg entry without evaluating LFD
set mode where alg entry used by default m a

Stack Commands

Here S_n is the n-th stack entry, and N is the size of the stack.

key    no prefix    prefix n   prefix —n
RET    copy S_1    copy S_1... copy S_n
LFD    copy S_2    copy S_1... copy S_1...n
DEL    delete S_1  delete S_1... delete S_n
M-DEL  delete S_2  delete S_1... delete S_1...n
TAB    swap S_1→S_2 roll S_1 to S_n roll S_n to S_1
M-TAB  roll S_1 to S_n roll S_n to S_1

With a 0 prefix, these copy, delete, or reverse the entire stack.

Display

scroll horizontally, vertically <, >, { }
home cursor o
table display on/off d l
scientific notation d t
display scientific notation d s
fixed-point notation d f
floating-point (normal) notation d n
Number groups with commas d g

For display mode commands, H prefix prevents screen redraw and I prefix temporarily redraws top of stack.

Notations

scientific notation 6.02e23
minus sign in numeric entry _23 or 23
fractions 3:4
complex numbers (x, y)
matrices 1, 2, 3
polare complex numbers 1, 2; 3, 4
vectors (or nested vectors) 100 +/-.05
intervals [2 . . 5]
modulo forms M key 6 mod 24
HMS forms 50 30' 0"
date forms <Jul 4, 1992>
infinity, indeterminate inf, nan

Scientific Functions

ln, log_{10}, \log_b L, H, L, B
exponential e^x, 10^x E, H E
sin, cos, tan S, C, T
arcsin, arccos, arctan arcsin, I S, I C, I T
inverse, hyperbolic prefix keys inverse, I H
two-argument arctan f T
degrees, radians modes m d, m r
pi (\pi) P
factorial, double factorial !, k d
combinations, permutations k c, k k c
prime factorization k f
next prime, previous prime k n, I k n
GCD, LCM kg, k L
random number, shuffle k r, k h
minimum, maximum n f, n f x
eerror functions erf, erfc f e, f f e
gamma, beta functions f g, f B
incomplete gamma, beta functions f G, f B
Bessel J_0, J_1, functions f j, f y
complex magnitude, arg, conjugate A, G, J
real, imaginary parts f r, f i
convert polar/rectangular c p

Units

enter with units c b
convert to new units, base units u c, u b
convert temperature units u t
simplify units expression u s
view units table u v

Common units:

distance: m, cm, mm, km; in, ft, mi, mfi; point, lyr
volume: l or L, ml; gal, qt, pt, cup, flos, tbsps, tsp
mass: g, mg, kg, t; lb, oz, ton

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**GNU Calc Reference Card**

**Programmer's Functions**

- binary, octal, hex display
- decimal, other radix display
- display leading zeros
- entering non-decimal numbers
- binary word size
- binary AND, OR, XOR
- binary DIFF, NOT
- left shift
- logical right shift
- arithmetic right shift
- integer quotient, remainder
- integer square root, logarithm
- floor, ceiling, round to integer

**Variables**

Variable names are single digits or whole words.
- store to variable
- store and keep on stack
- recall from variable
- shorthands for digit variables
- unstore, exchange variable
- edit variable

**Vector Operations**

- vector of 1, 2, ..., n
- vector of n counts from a by b
- vector of copies of a value
- concatenate into vector
- pack many stack items into vector
- unpack vector or object
- length of vector (list)
- reverse vector
- sort, grade vector
- histogram of vector data
- extract vector element
- matrix determinant, inverse
- matrix transpose, trace
- cross, dot products
- identity matrix
- extract matrix row, column
- intersection, union, diff of sets
- cardinality of set
- add vectors elementwise (i.e., map +)
- sum elements in vector (i.e., reduce +)
- sum rows in matrix
- sum columns in matrix
- sum elements, accumulate results

**Algebra**

- enter an algebraic formula
- enter an equation
- symbolic (vs. numeric) mode
- fractions (vs. float) mode
- suppress evaluation of formulas
- return to default evaluation rules
- “Big” display mode
- C, Pascal, FORTRAN modes
- TyX, LatexX, eqn modes
- Maxima
- Unformatted mode
- Normal language mode
- simplify formula
- put formula into rational form
- evaluate numerically
- let variable equal a value in formula
- declare properties of variable

- expand, collect terms
- factor, partial fractions
- polynomial quotient, remainder, GCD
- derivative, integral
- taylor series
- principal solution to equation(s)
- list of solutions
- generic solution
- apply function to both sides of eqn
- rewrite formula

**Numerical Computations**

- sum formula over a range
- product of formula over a range
- tabulate formula over a range
- integrate numerically over a range
- find zero of formula or equation
- find local min, max of formula
- fit data to line or curve
- mean of data in vector or variable
- median of data
- geometric mean of data
- sum, product of data
- minimum, maximum of data
- sample, pop. standard deviation

**Selections**

- select subformula under cursor
- select nth subformula
- select more
- unselect this, all formulas
- copy indicated subformula
- delete indicated subformula
- commute selected terms
- commute term leftward, rightward
- distribute, merge selection
- isolate selected term in equation
- negate, invert term in context
- rewrite selected term

**Graphics**

- graph function or data
- graph 3D function or data
- replot current graph
- print current graph
- add curve to graph
- set number of data points
- set line, point styles
- set log vs. linear x, y axis
- set range for x, y axis
- close graphics window

**Programming**

- begin, end recording a macro
- replay keyboard macro
- read region as written-out macro
- if, else, endif
- equal to, less than, member of
- repeat n times, break from loop
- “for” loop: start, end; body, step
- save, restore mode settings
- query user during macro
- put finished macro on a key
- define function with formula
- edit definition
- record user-defined command permanently
- record variable value permanently
- record mode settings permanently

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for GNU Emacs Calc.

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the Emacs distribution, or [https://www.gnu.org/software/emacs](https://www.gnu.org/software/emacs)