GOOGLE GUIDE — Quick Reference: Google Calculator (Cheat Sheet)

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Solve mathematical problems with Google's built-in calculator function. Simply enter the expression you'd like evaluated in Google's web search box and hit the ENTER key or click the "Google Search" button.

BASIC ARITHMETIC

OPERATOR	MEANING	TYPE INTO SEARCH BOX
+ or **plus**	addition	12 + 34 or three plus four
– or **minus**	subtraction	3.4 - 5.6 or five minus two
***** or **times**	multiplication	56 * 7 or six times nine
/ or **divided by**	division	7 / 8 or ten divided by two
% of or **percent of**	percentage of	45% of 39
mod or **%**	modulo (the remainder after division)	15 mod 9 or 15 % 9
^ or ******	raise to a power	2^5 or 2**5
the *n*th root of	*n*th root	4th root of 16, sqrt(16), cube root of 109
reciprocal of	multiplicative inverse	reciprocal of 7

ADVANCED MATH

The following table lists some of the functions built into Google's calculator.

OPERATOR	FUNCTION	TYPE INTO SEARCH BOX
sin, cos, tan, sec, csc, cot	trig functions (arguments are assumed to be in radians)	cos(pi/3) cosine(pi/3)
arcsin, arccos, arctan, arccsc, etc.	inverse trigonometric functions	arccos(.5)
sinh, cosh, tanh, csch, arsinh, arccsch, etc.	hyperbolic functions	cosh(6)
ln	logarithm base e	ln(16)
log	logarithm base 10	log(16)
lg	logarithm base 2	lg(16)
exp	exponential function	exp(16)
!	factorial	5!
choose	*x* choose *y* calculates the number of ways of choosing a set of *y* elements from a set of *x* distinct elements	5 choose 3

CONSTANT	MEANING	TYPE INTO SEARCH BOX
e	base of the natural system of logarithms	e
pi	the ratio of the circumference to the diameter of a circle	pi/6
i	imaginary number, which represents one of the two square roots of -1	i^2
gamma	Euler's constant	e^gamma

TIPS (adapted from Google's Online Calculator Help)

Parentheses can be used whenever they'll serve to make complicated expressions unambiguous, and also sets of parentheses can be used within parentheses; don't use brackets for grouping.

You can force the calculator to try to evaluate an expression by putting an equals sign (=) after it. This works only if the expression is arithmetically computable. For example, 1-800-555-1234= will return a result, but 1/0= will not (because dividing a non-zero number by zero is undefined and not computable).

Parentheses can be used to enclose the parts of your expression that you want evaluated first. For example, (1+2)*3 causes the addition to happen before the multiplication.

Google's calculator automatically balances unclosed parentheses.

A missing operator within an expression may default to an *, e.g., 6cos(2pi).

Feel free to experiment with the calculator as not all of its capabilities are listed here.

UNITS OF MEASURE AND CONVERSIONS

Compute expressions involving different units. By default, units are converted to and results expressed in meter-kilogram-second (mks) units. Many units have both long and short names. Use whichever name you prefer.

TYPE OF UNITS	UNIT CONVERSION	EXAMPLES OF UNITS
	old units **in** *new units*	
Currency (money)	23 USD in Euros	US Dollars (USD), Euros, Britain Pounds (GBP)
Mass	130 lbs in kg	kilogram or kg, grams or g, grains, pounds or lbs, carats, stones, tons, tonnes
Length	3 miles in km	meters or m, miles, feet, Angstroms, cubits, furlongs
Volume	three quarters of a cup in teaspoons	gallons, liters or l, bushels, teaspoons, pints
Area	2 acres in sq km	square kilometers, acres, hectares
Temperature	98.6 Fahrenheit in Celsius or 98.6 f in c	Celsius or c, Fahrenheit or f
Time	1 year in seconds	days, seconds or s, centuries, sidereal years, fortnights
Electricity	100 volts in picovolts	volts or v, picovolts, amps or a, ohms, henrys
Energy	160 lbs * 4000 ft in Calories	Calories, British thermal units (BTU), joules, ergs, foot-pounds (*Warning:* When your query includes "Calories" with a capital "C," Google returns kilocalories called "calories" by nutritionists.)
Power	1 hp in watts, 500 V * 3 A in KW	watt or W, kilowatts or KW, megawatts or MW, horsepower or HP
Angle	90 degrees in radians	degrees or radians
Information	2 bytes in bits	bits, bytes, kbytes
Quantity	1 great gross in dozens	dozen, baker's dozen, gross, great gross, score
Numbering Systems	1500 in hex 64 in binary LVII in decimal	decimal, hexadecimal or hex, octal, binary, roman numerals (Prefix hexadecimal numbers with 0x, octal numbers with 0o and binary numbers with 0b, e.g., 0x7f + 0b100101)

PHYSICAL CONSTANTS

The following table lists just a few of the many commonly used physical constants known to the calculator function.

SHORTHAND NOTATION	LONG NAME	CLICK LINK FOR AN APPROXIMATE VALUE
au	Astronomical Unit	au or astronomical unit
	Avogadro's number	Avogadro's number
k	Boltzmann constant	k or Boltzmann constant
	Faraday constant	Faraday constant
G	gravitational constant	G or gravitational constant
	magnetic flux quantum	magnetic flux quantum
	mass of a proton	mass of a proton
m_*planet*	mass of *planet*	m_Mars, m_Earth, m_Uranus, m_sun
	molar gas constant	molar gas constant
	permeability of free space	permeability of free space
h	Planck's constant	h or Planck's constant
r_*planet*	radius of *planet*	r_Earth, r_Pluto, r_sun
c	speed of light in a vacuum	c or speed of light
	speed of sound in air at sea level	speed of sound