

# Mathematics Functions

The HP-12C calculator provides several basic mathematical and number alteration functions that are useful for specialized financial calculations as well as for general mathematics calculations:

Keys	Description
[1/X]	Calculates the reciprocal of the number in the display (stack-X).
[y <sup>x</sup> ]	Calculates the number in the stack-Y raised to the power of number in the display (stack-X).
[g] [x <sup>2</sup> ]	Calculates the square of the number in the display (stack-X). Available in the Platinum Model only.
[g] [√x]	Calculates the square root of the number in the display (stack-X).
[g] [LN]	Calculates the natural logarithm (base “e”) of the number in the display (stack-X).
[g] [e <sup>x</sup> ]	Calculates the exponential of the number in the display (stack-X).
[g] [n!]	Calculates the factorial of the number in the display (stack-X).
[f] [RND]	Rounds the number in the display (stack-X) to the current number of decimals.
[g] [INTG]	Calculates the integer part of the number in the display (stack-X).
[g] [FRAC]	Calculates the fractional part of the number in the display (stack-X).

**As a special feature, the RLM’s 12C calculators includes a tool with additional trigonometric, hyperbolic and logarithmic functions. To show it, press the **OPT** key and touch the “Scientific” menu button and select “**Math Functions**” option.**

## One Number Operations in RPN mode

All the functions that require one number only, are performed directly with the value in the stack-X register (displayed number). In **RPN** mode, the original value is saved in the Last-X register and the content of the stack-X is replaced with the function result.

### Example: One Number Function

To perform an operation, follow the “keystrokes” sequence, the result will be in the stack-X and the original number in the Last-X register:

Operation	Keystrokes	Display (stack-X)	Last-X
$1 / 0.23$	“0.23” [1/X]	<b>4.35</b>	0.23
$1.41^2$	“1.41” [g] [x <sup>2</sup> ]	<b>1.99</b>	1.41
$\sqrt{2}$	“2” [√x]	<b>1.41</b>	2
LN(27)	“27” [LN]	<b>3.3</b>	27
$e^{3.3}$	“3.3” [g] [e <sup>x</sup> ]	<b>27.11</b>	3.3
$5!$	“5” [g] [n!]	<b>120</b>	5

### Example: Function [g] [INTG] and [g] [FRAC]

Type the number “4.347826087” and get the integer and fractional parts:

Keystrokes	Display	Comment
Type “4.347826087”	4.347826087	Type the number.
[g] [INTG]	4	Calculate the integer part.
[f] [PREFIX]	“4000000000”	Display the 10-Digits mantissa.
[g] [LSTX]	4.35	Recovers the original number.
[g] [FRAC]	0.35	Calculate the fractional part
[f] [PREFIX]	“3478260870”	Display the 10-Digits mantissa.

## Example: Function [ f ] [RND]

Type the number 4.347826087” and round it to 2 and 6 decimals:

Keystrokes	Display	Comment
Type “4.347826087”	4.347826087	Type the number.
[f] [2]	4.35	Set to show 2 decimals in the display.
[f] [PREFIX]	“4347826087”	Display the 10-Digits mantissa.
[f] [RND]	4.35	Rounds the number to 2 decimals.
[f] [PREFIX]	“4350000000”	Display the 10-Digits mantissa.
[g] [LSTX]	4.35	Recovers the original number.
[f] [6]	4.347826	Set to show 6 decimals in the display.
[f] [RND]	4.347826	Rounds the number to 6 decimals.
[f] [PREFIX]	“4347826000”	Display the 10-Digits mantissa.

## One Number Operations in ALG mode

The functions that require one number only, are performed in the same way described above except that the Last-X value remains unchanged. So, in the examples, you can't use [g] [LSTx] to recall the original value of stack-X, instead you should enter the original number again.

## Two Number Operations [ + ], [ - ], [ x ], [ ÷ ] and [ y<sup>x</sup> ]

All the operations that requires two numbers, are performed considering the number in the stack-Y as the first number, and the number in stack-X as the second number, the stack drops, and the content of the stack-X is replaced with the operation result (in RPN mode, the original value in the stack-X is saved in Last-X register).

## Example: Power Operation [ y<sup>x</sup> ]

Calculate the value  $2^{1.4}$ ,  $2^{-1.4}$ ,  $-2^3$  and  $2^{1/3}$ :

In **RPN mode** follow the next sequence:

Operation	Keystrokes	Result
$2^{1.4}$	"2" [ENTER] "1.4" [ $y^x$ ]	2.64
$2^{-1.4}$	"2" [ENTER] "1.4" [CHS] [ $y^x$ ]	0.38
$-2^3$	"2" [CHS] [ENTER] "3" [ $y^x$ ]	-8
$2^{1/3}$	"2" [ENTER] "3" [1/X] [ $y^x$ ]	1.26

In **ALG mode** follow the next sequence:

Operation	Keystrokes	Result
$2^{1.4}$	"2" [ $y^x$ ] "1.4" [=]	2.64
$2^{-1.4}$	"2" [ $y^x$ ] "1.4" [CHS] [=]	0.38
$-2^3$	"2" [CHS] [ $y^x$ ] "3" [=]	-8
$2^{1/3}$	"2" [ $y^x$ ] "3" [1/X] [=]	1.26