






In 5 steps to MAR Cal – Advanced Users

-  1 Generating pairs of values
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Generating pairs of values

Let's look at an exponential function, e. g. $\frac{e^x \cdot (x^2 - 4x + 6)}{x^4}$, to show how to solve a formula for different x values:

- 1 Enter the formula in the input field: **exp(x)*(x^2-4*x+6)/x^4**
- 2 To get pairs of values, instead of a single solution, just click on the button „**Pairs of values**“

- 3 A pop-up window comes up. Enter the input:

Variable	x
Start value	1
End value	5
Step width	1

- 4 Click on the button „**Run!**“

You obtain the resulting pairs of values in a separate window.

Nr.	Variable	Value of function
1	1	8.15484548537715
2	2	.923632012366331
3	3	.743908774932878
4	4	1.27964414140182
5	5	2.61207160020536

To close the result window click on the button „Close“. You can reopen it via the menu „**ShowList**“.

Hint

Using standard functions

As an example, here's a computation with the natural logarithm and the sine function, e.g.: $\log_e 25 + \sin 80^\circ$

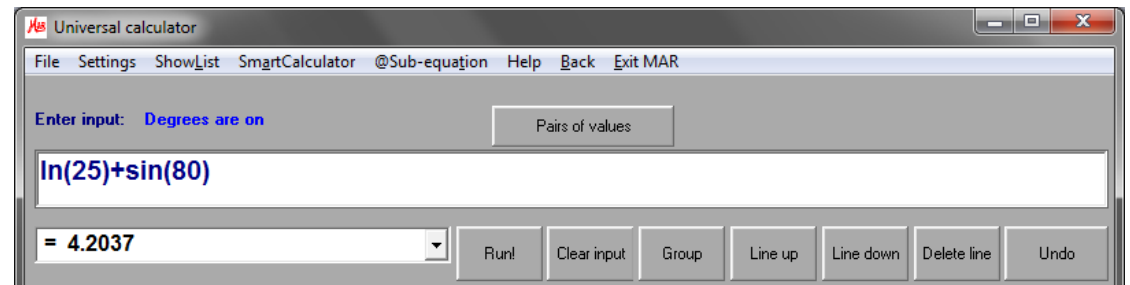
- 1 Enter the following term in the formula input field: **ln(25)+sin(80)**
- 2 Finalise your input with the return key or by clicking on the „Run!“ button

Hint

You need to put brackets around the antilogarithm (in our case the number 25), as well as the angle of the trigonometric function.

Examples of standard functions defined in MasterAllRound:

cot(x)	Cotangent of x
arccos(x)	Arcosine of x
tanh(x)	Hyperbolic tangent of x
arsinh(x)	Inverse hyperbolic sine of x
lg(x)	Logarithm of x to the base 10
abs(x)	Absolute value
exp(x)	Natural exponential function (e = 2.71828...)
sqr(x)	Square root of x



Hint

See menu "Help" for a compilation of all standard functions.

Hint

Use menu "Settings" to toggle between degrees and radians.

Declaring constants

Let's assume, you wish to calculate $c = 5 \cdot a - 2 \cdot b$ where $a=5$ and $b=10$

Proceed as follows:

- 1 In the formula input field, enter:
 „a = 5“
 „b = 10“
 „c = 5*a - 2*b“

Hint

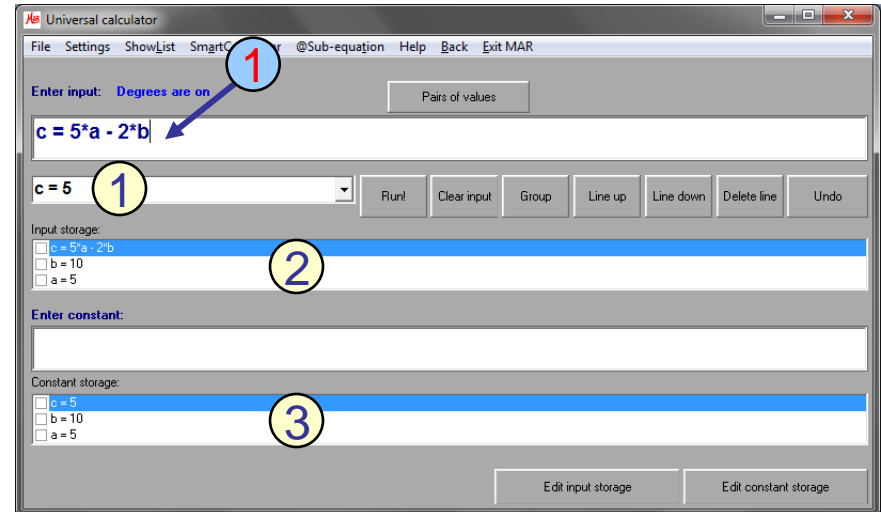
Do not forget to finalize your input with the return key.

The user interface of the universal calculator looks now as follows:

- 1 The result „c = 5“ is in the result field.
- 2 The formula „c = 5*a + 2*b“ is in the formula storage field.
- 3 The declared constants „a = 5“, and „b = 10“ are in both the constant storage and the input storage. The calculated number symbol „c = 5“ is also stored in the constant storage.

Hint

You can enter number symbols in the formula storage.
 If the constant derives from a formula, you need to use the formula input field.



Applying the scientific format

You can use the **scientific format**. For example:

1.2E3 + 5.5 delivers as result **1205.5**

W1 = (2.5e-3)*2 delivers as result **W1=.005**

w2 = 3.0e5 / (1.5E6) delivers as result **w2=.2**

ABC = (3! + LG(100) + 2*sin(30))^2 + 1.5E-2 delivers as result **ABC=81.015**

Hint

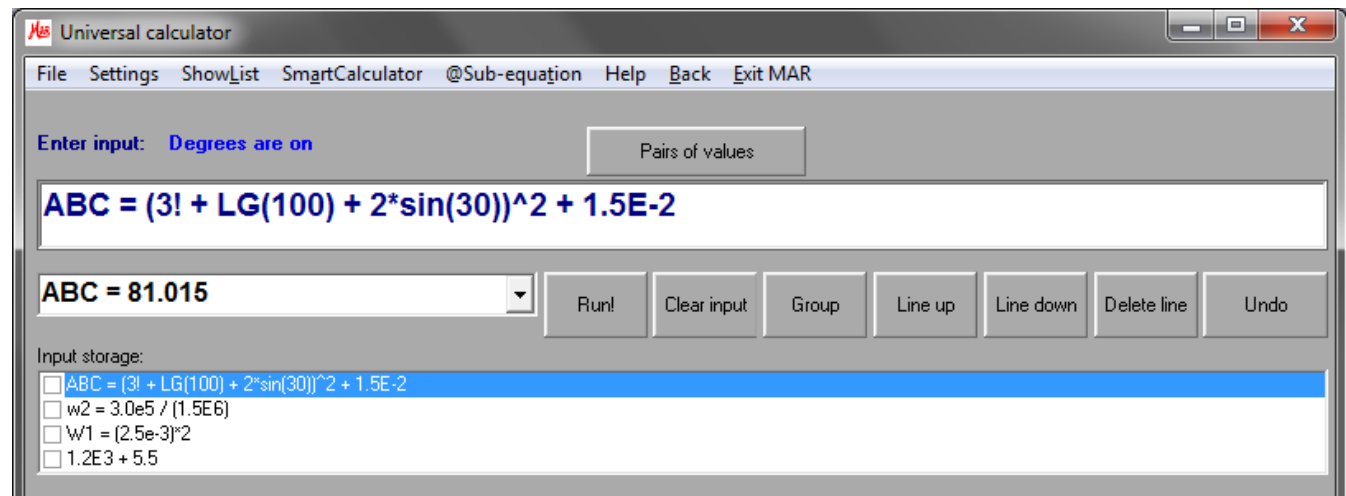
See menu "Settings" to change the font size of the input field.

Hint

Use menu "Settings" to toggle between degrees and radians.

Hint

The symbol "!" represents the factorial.



Inserting comments

You can add a **comment** to your input line. To initiate a comment, use the single **apostrophe (')**.

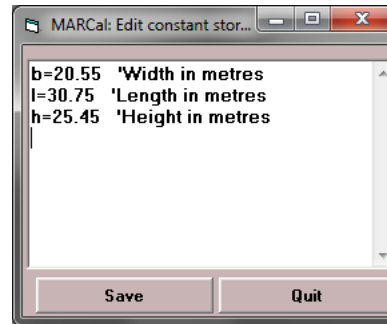
Example:

Comment in the constant input window:

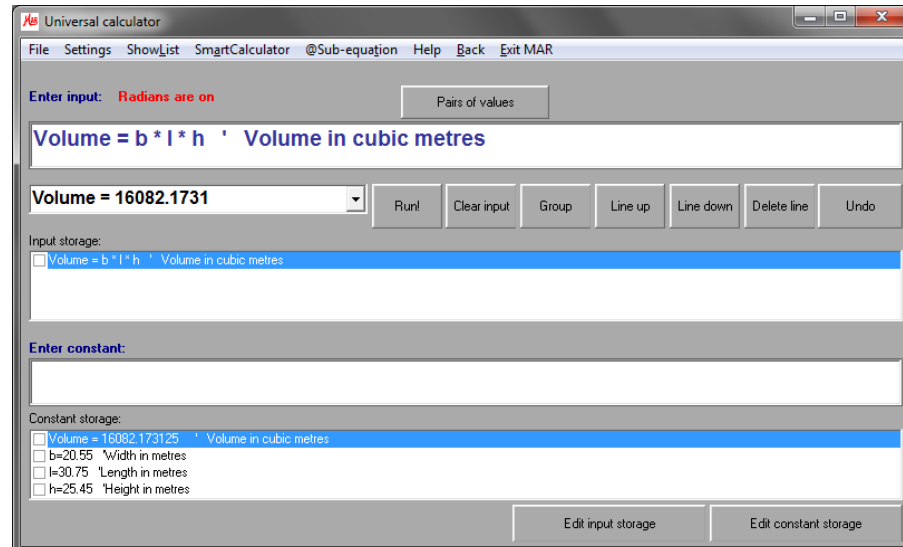
b=20.55 'Width in metres
l=30.75 'Length in metres
h=25.45 'Height in metres

Comment in the formula input field:

Volume = b * l * h ' Volume in cubic metres



Hint
 Click on the button „Edit constant storage“ to open the input window.



Hint
 You can place any number of blank characters before or after the apostrophe. After the apostrophe, you can enter text using any symbol.