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# What is Quick Calculator

Welcome to Quick Calculator! Quick Calculator is a fast and easy to use calculator program for Windows 95. Once installed on your system, Quick Calculator offers you a function-packed scientific calculator only a keystroke away.

Quick Calculator has a number of advantages over other calculators for Windows:

- Easier use of the keyboard; the most suitable device to enter calculations!
- Entry and (re)edit of complete mathematical expressions.
- Your calculations remain visible.
- Extensive error messages are provided.

The more you have used other calculators for Windows, the more you will like Quick Calculator!

## Starting Quick Calculator

In the installation procedure, it is recommended that an entry named Quick Calculator is added to the Windows 95 start menu. Then, to start Quick Calculator, press the Start Button and select Programs. In the list of programs you will see the Quick Calculator entry, next to the Quick Calculator icon. Select this entry and Quick Calculator will start.

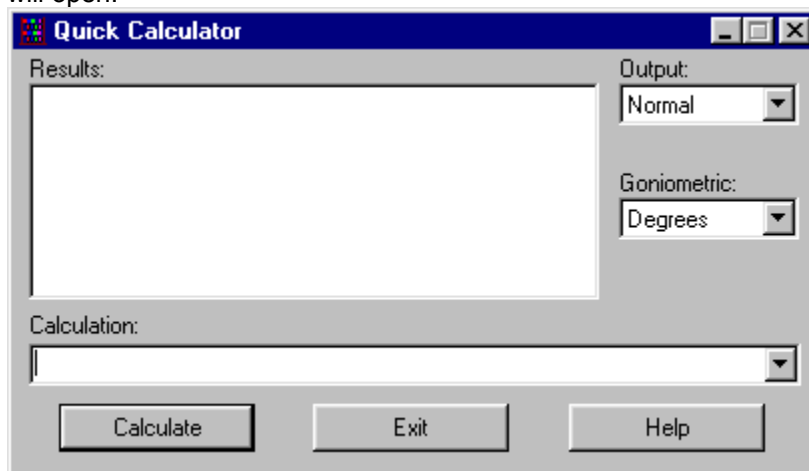
When a shortcut key has been defined during installation, e.g. Ctrl + Alt + Q, it is sufficient to press this key combination to start Quick Calculator.

After starting Quick Calculator, an introduction dialog window will be shown with information about Quick Calculator. In this window you can also enter your registration code, which you will obtain after registering.

Note: when you enter your name and registration number, be sure to use exactly the same spelling as on your license. Otherwise, the combination will not be accepted.

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To continue, press the OK button. Quick Calculator's main window, where you can enter your calculations, will open.



# Performing Calculations

To perform a calculation in Quick Calculator, enter your calculation in the Calculation combo box and click the Calculate button (or press Enter). For example, after entering

$$12*3$$

Quick Calculator will print

$$12*3 = 36$$

in the Results list box.

It is also possible to perform more elaborate calculations, that combine several operations:

$$-4+12^4/2$$

results in

$$-4+12^4/2 = 10364$$

Here the caret (^) means raise to the power.

Note: To determine the sequence of the operations, Quick Calculator uses an expression evaluation scheme common to most scientific calculators. In [Expression Evaluation](#) this scheme is presented.

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If your calculation requires that intermediate results are used as input for further calculations, you can use Quick Calculator's expression nesting possibilities. For example, if you want to subtract 363.583 from 12.47 and divide the result by 153.26, just enter

$$(12.47-363.583)/153.26$$

As you see, expressions are 'nested' by means of parenthesis. Without the parenthesis, the expression evaluation scheme tells the program first to perform the division and then the subtraction. However, when parenthesis are used, they cause the program to calculate what is in between them first. The maximum nesting level is 10.

Another important feature of Quick Calculator is its ability to calculate scientific functions. For example, it is very easy to calculate the sine of a number:

$$\sin(45)$$

results in

$$\sin(45) = 0.70710678$$

Note that Quick Calculator has its default angle measurement mode set to degrees, which means that goniometric functions, like sine or cosine, are normally calculated in degrees. [Quick Calculator Options](#) will explain how you can change this to radians or gradients. In [Scientific Functions](#) all scientific functions will be discussed.

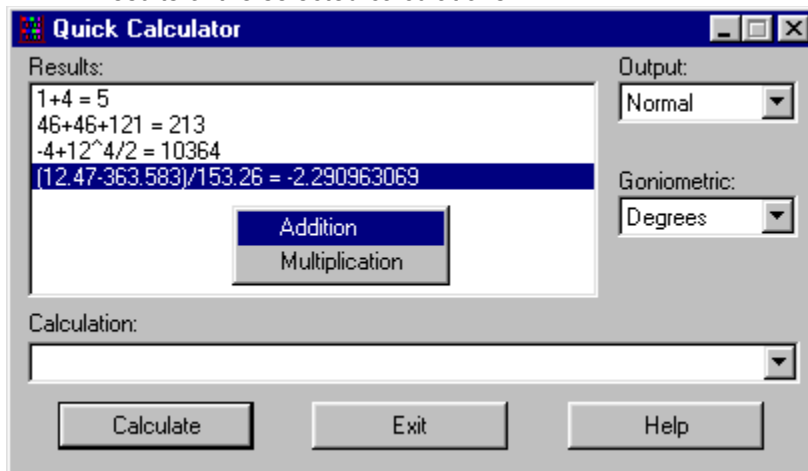
Note: You are free to use spaces or tabs in your calculation. Small and capital letters are interchangeable.

Quick Calculator offers a number of practical functions for using the results of calculations you have entered before.

- Very useful is the possibility to recall previous calculations. This can be done by pressing the

Down arrow on your keyboard when the cursor is in the Calculation combo box. After the calculation appears in the edit box of the combo box, you can change it to your likes and recalculate.

- If you want to use the result of a previous calculation for performing a new calculation, just double-click the calculation in the Results list box and it's result will appear in the Calculation combo box.
- After you have performed one or more calculations, you can select some of them in the Results list box. Then, when you press the right mouse button over the Results list box, a so-called pop-up menu will appear, in which you can select to either make an addition or an multiplication of the results of the selected calculations.



Note: Multiple selection is done using the standard Windows methods, holding the Shift or Ctrl key while pressing the left mouse button.

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## Quick Calculator Options

There are a number of options you can set in Quick Calculator. With these options you can change certain properties of Quick Calculator, like the angle measurement mode for goniometric functions.

Besides real numbers, it is also possible to use hexadecimal or binary numbers in a calculation. These numbers can be entered by putting a \$ character (for hexadecimal) or a # character (for binary) in front of the number. Furthermore, a large number of scientific functions are added.

Two main characteristics of Quick Calculator can be adjusted: the format in which output is generated and the angle measurement mode which is used for performing goniometric functions. These options have to be set prior to making calculations.

Quick Calculator can generate its output in four different ways, to be set by the Output combo box. First, there is the normal decimal notation (or Normal), which is the default for the program. For example, the number 84.25 will be printed as '84.25'.

Secondly, it is possible to let Quick Calculator write its results in scientific notation (Scientific), with a mantissa and an exponent of 10. In this notation, 84.25 will be printed as '8.425E+001'. This actually means  $8.425 * 10^1$ . So in this case the mantissa is 8.425 and the exponent is 1.

Thirdly, it is possible to generate output in hexadecimal format. For this purpose the Hexadecimal choice is reserved. Because the hexadecimal representation can only express integer values, the result of a calculation is first rounded to the nearest integer value before it is transferred to hexadecimal notation. Quick Calculator uses hexadecimal numbers that consist of maximally 8 digits. This corresponds to a binary number of 32 bits. As in the binary representation (see further), the so-called 2-complements representation is used for representing negative values.

Fourthly, Quick Calculator can generate output in binary format. The Binary choice is reserved for this purpose. As in hexadecimal format, the result of a calculation is rounded to the nearest integer value. Binary numbers are used of maximally 32 digits, in 2-complements representation. See [The 2-Complements Method](#) for an explanation of the 2-complements method.

The Goniometric combo box is used to control the angle measurement mode which is used for performing goniometric functions. It can be set to degrees (default), radians and gradients respectively. For example, when Goniometric is set to Radials

$\cos(\pi)$

will result in -1.

# Scientific Functions

Quick Calculator can perform a large number of scientific functions. These functions are:

root(x)	square root of x
sqr(x)	square of x ( $x^2$ )
fac(x)	factorial of x ( $x!$ )
sin(x)	sine of x
cos(x)	cosine of x
tan(x)	tangent of x
asin(x)	arc sine of x
acos(x)	arc cosine of x
atan(x)	arc tangent of x
ln(x)	natural logarithm of x
log(x)	10 base logarithm of x

In which x can be any valid expression.

These scientific functions can be used in the same way as you would write them on paper. For instance, the square root of the natural logarithm of one hundred is calculated by entering

root(ln(100))

Note: Like mentioned before, all goniometric functions are calculated with angle measurement set to degrees by default.

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Two special symbols can be used in Quick Calculator:

pi	$\pi$ (3.14159265)
e	e (2.1828183)

When used in a calculation, the symbols 'pi' and 'e' are interpreted as their actual value;

sqr(pi)

equals

sqr(3.14159265)

and

ln(e)

equals

ln(2.71828183)

In [Ranges For Scientific Functions](#) the input ranges of the scientific functions are discussed.

# Expression Evaluation

Quick Calculator uses an hierarchic internal structure to represent each calculation. This structure provides a mathematically logical way for evaluating calculations. The structure is shown below:

Syntax rules for algebraic expressions.

<expression>	::= [{"+"   "-"}]<term>{"+"   "-"}<term>}
<term>	::= <power>{"*"   "/"}<power>}
<power>	::= <factor>["^"<factor>]
<factor>	::= <positive real>   "\$"<hex no.>   "#"<bin no.>   "("<expression>)"   <fn>("<expression>")
<fn>	::= "sin"   "ln"   etc.
<positive real>	::= "2.94E-39"   ..   "1.7E38"   "pi"   "e"
<hex no.>	::= "0"   ..   "FFFFFFFF"
<bin no.>	::= "0"   ..   "11111111111111 .. 1111"

In which:

<b>Symbol:</b>	<b>Meaning:</b>
::=	is defined as
	or
[x]	0 or 1 times x
{x}	0 or more times x
(x y)	grouping: or x or y
<xyz>	the non-terminal xyz
"xyz"	the terminal (string) xyz

The above structure may look somewhat awkward, but after some study you may see its hierarchic nature. The structure is also recursive, to enable expression nesting; a factor consists of either a number, a nested expression or a function which contains a nested expression. In various error messages a reference is made to elements of the above structure. For example:

12+

will result in

12+ = Term expected

## Capacity

Internally, Quick Calculator uses an 8 byte real data type, with a precision of 15-16 digits. The range in which values can be represented is approximately [1.7E-308, 1.7E+308].



## Ranges For Scientific Functions

The scientific functions of Quick Calculator are limited to certain ranges for their input.

root()	$0 \leq x \leq 1.7E+308$
sqr()	$ x  < 1.3E+154$
fac()	$0 \leq x \leq 170$ (x integer number)
sin(), cos(), tan()	$ x  \leq 1800^\circ$ (10p rad, 2000 grad)
asin(), acos()	$ x  \leq 1$
atan()	$ x  \leq 1.7E+308$
ln(), log()	$0 < x \leq 1.7E+308$

Specifying input outside these ranges will result in an error message.

## The 2-Complements Method

The 2-complements method is a method used to represent both positive and negative values with binary numbers. In 2-complements representation, the negative of a binary number can be obtained by reversing all its bits and adding 1;  $-x = \text{not}(x) + 1$ . For a better understanding of the 2-complements representation, an example is given here. The following table shows the two-complements of binary numbers of 4 bits.

<b>binary</b>	<b>decimal</b>	<b>binary</b>	<b>decimal</b>
0111	7	1111	-1
0110	6	1110	-2
0101	5	1101	-3
0100	4	1100	-4
0011	3	1011	-5
0010	2	1010	-6
0001	1	1001	-7
0000	0	1000	-8

Note that -8 (like 0) has itself as complement.

## The Shareware Principle

Quick Calculator is distributed through the shareware principle. This means that Quick Calculator may be used for a trial period in order to determine if it meets your needs before you pay for it. It also means that anyone can copy and spread out Quick Calculator, on the condition that no changes are made and that nothing is charged. It is also compulsory to include this help file while spreading out Quick Calculator. A nominal charge may be made for a disk containing this program.

Shareware and thus Quick Calculator are not for free. If you have used the program for one month and will keep on doing so, then you are expected to make a contribution. You can do this by remitting NLG 20.- (approximately US\$ 11.50 at time of writing) to my account number. You will then receive an individual license, making you a registered user of Quick Calculator.

Being a registered user, you may install Quick Calculator simultaneously on one computer at work, one computer at home, and one portable computer, if all these computers are used primarily by the same individual, and there is no possibility that the computers will be in use at the same time except while you are actively transferring files between them.

Whether you are a major corporation, a small business, or an individual with more than one computer, if you plan to use Quick Calculator on multiple systems you can save money by ordering a multi-system license rather than a number of individual licenses. Just add an extra NLG 8.- to an individual license for each extra computer the program can be used on simultaneously. The license will state the number of registered computers. Multi-system licenses may be used at a single site, multiple sites, or company-wide, on a network or stand-alone systems, as long as all support and distribution are handled through a single location.

If you are already a registered user and you want to add more computers to your license, just remit NLG 8.- for each computer you want to add, stating the registration number on your license. You will receive an addendum to your license stating the new number of registered computers.

If you have any questions or comments on registering Quick Calculator, please feel free to write me.

## **Upgrade Policy**

When you have purchased an individual license or a multi-system license, maintenance releases and your upgrade to the next major release of Quick Calculator are free (you pay only any telephone or other download costs). Maintenance releases of Quick Calculator are indicated by a change in the 'hundredths' digit of the version number (e.g. 1.01), major upgrades are indicated by a change in the 'units' or 'tenths' digit (e.g. 1.10, 2.00). Once you have obtained a free upgrade to the next major release, you can register future major upgrades for a reasonable fee, which will be announced in the documentation of those upgrades.

## **Warranty**

The program included herewith is provided AS IS without any warranty, expressed or implied, including but not limited to fitness for a particular purpose. There is one exception to this rule; if you are a registered user and you report a program error or bug to me, I will use my best efforts to correct it. If I can verify and correct the error you report, I will issue a maintenance release which includes the correction. This maintenance release will be available on the internet: <http://huizen.dds.nl/~bobv>.

## **Disclaimer**

In no event will R.L. Veldt and/or Veldt Inc. be liable to you for any damages, including any lost profits, lost savings, or other incidental or consequential damages arising out of the use of or inability to use this program, even if R.L. Veldt and/or Veldt Inc. have been advised of the possibility of such damages, or for any claim by any other party.

# Registration Form

You can use this form to register Quick Calculator when paying by credit card. Residents of countries other than the Netherlands can only pay by credit card. Residents of the Netherlands can register by remitting the appropriate amount to Postbank account number 5192933, stating the number of licenses and the address mentioned at the bottom of this form.

After receiving your payment, you will receive your license(s) by mail, making you a registered user of Quick Calculator.

Select File, Print topic from the menu to print this order form on 8.5x11 or A4 paper in portrait mode. If you do not have a printer, please write or type the information requested below.

\_\_\_\_\_  
Name \_\_\_\_\_ Title \_\_\_\_\_

Company \_\_\_\_\_ (\*)

Address \_\_\_\_\_

\_\_\_\_\_  
City/State \_\_\_\_\_ Zip/Postal Code \_\_\_\_\_

Email address \_\_\_\_\_ (\*\*)

(\*) Enter if the license(s) should be made out to your company.

(\*\*) Enter if you would like information about new releases to be sent to you by E-mail.

Wishes to order the number of Quick Calculator licenses as stated below:

Quantity	License	Price	Amount
_____	Single-user license(s)	NLG 20.-	_____
_____	Additional license(s)	NLG 8.-	_____
	Total:		_____

These will be paid by credit card:

(At the moment only **MasterCard / EuroCard** is accepted.)

Your Name on Card: \_\_\_\_\_

Card Number: \_\_\_\_\_

Expiration: \_\_\_\_\_ Signature: \_\_\_\_\_

Date: \_\_\_\_\_

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*Please mail to:*

Veldt Inc.  
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Petenbos 10  
3904 BN Veenendaal  
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*Or fax to:*

XX31-318 511411

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