

College Mathematics
brief guide to scientific calculators

order of operations / rational expressions / parentheses

Most scientific calculators (TI-30, etc.) do basic arithmetic in the following order: grouping symbols have highest priority, then exponents, then multiplication and division, then addition and subtraction (sometimes known as “Please excuse my dear aunt Sally”). Graphing calculators (TI-83, etc.) generally follow the same logic, but there are some differences. Generally, you should press the [enter] key where the TI-30 uses [=]. If you have questions about your calculator, please ask me.

<i>to calculate</i>	<i>on a TI-30, type</i>	<i>result</i>
$2 + 3 * 5$	2 [+] 3 [×] 5 [=]	17
$(2 + 3) * 5$	[(] 2 [+] 3 [)] [×] 5 [=]	25
$60 / 6 / 2$	60 [÷] 6 [÷] 2 [=]	5
$60 / (6 * 2)$	60 [÷] [(] 6 [×] 2 [)] [=]	5
$60 / 6 * 2$	60 [÷] 6 [×] 2 [=]	20

Realize that a fraction bar is actually a grouping symbol. Your calculator cannot tell what is grouped above or below the fraction bar unless you use parentheses:

$9 - 6/3 + 1$	9 [-] 6 [÷] 3 [+] 1 [=]	8
$\frac{9 - 6}{3 + 1}$	[(] 9 [-] 6 [)] [÷] [(] 3 [+] 1 [)] [=]	0.75

negative numbers / square / square root

<i>to calculate</i>	<i>on a TI-30, type</i>	<i>on a TI-83, type</i>	<i>result</i>
-17	17 [+/-]	[(-)] 17 [enter]	-17
3^2	3 [x ²]	3 [x ²] [enter]	9
$\sqrt{8^2 + 6^2}$	[(] 8 [x ²] [+] 6 [x ²] [)] [√x]	[√] [(] 8 [x ²] [+] 6 [x ²] [)]	10

exponents

<i>to calculate</i>	<i>on a TI-30, type</i>	<i>result</i>
2^3	2 [y ^x] 3 [=]	8
$200(1.007)^{48}$	200 [×] 1.007 [y ^x] 48 [=]	279.54
$200\left(1 + \frac{.084}{365}\right)^{4(365)}$	200 [×] [(] 1 [+] .084 [÷] 365 [)] [y ^x] [(] 4 [×] 365 [)] [=]	279.86
$50\left[\frac{1.007^{240} - 1}{1.007 - 1}\right]$	50 [×] [(] [(] 1.007 [y ^x] 240 [-] 1 [)] [÷] [(] 1.007 [-] 1 [)] [)] [=] 30,958.89	

You can also do this calculation, avoiding parentheses entirely, if you keep track of the order of operations and simplify the denominator yourself:

1.007 [y^x] 240 [-] 1 [=]
 [÷] .007 [=]
 [×] 50 [=]
 30,958.89

scientific notation

Sometimes you will get an answer that is so large or so small that your calculator displays it in scientific notation. For example, try this

<i>to calculate</i>	<i>on a TI-30, type</i>	<i>result</i>
2^{99}	2 [y ^x] 99 [=]	6.338^{29}

This is an abbreviation for 6.338×10^{29} , or 633,800,000,000,000,000,000,000,000.

memory

If you have need to using the result of a calculation more than once, you may want to store it in memory and recall it whenever you wish. Try this example:

	<i>on a TI-30, type</i>	<i>on a TI-83, type</i>	<i>result</i>
<i>to store</i>	17 [STO] 3	17 [STO >] [ALPHA] N	
<i>to recall</i>	[RCL] 3	[ALPHA] N	17