

## Toolbars

The ten green-on-charcoal buttons are used to show toolbars of related functionality. Press the black-on-gray toolbar buttons to actually perform operations.

Many of the toolbars have multiple pages of buttons. Tap the Pg button (Pg 1/2, Pg 2/2, etc.) to cycle through the pages.

## The Decimal Button

The decimal button switches between a decimal and EE (exponent) based on what is currently on the console. You can also long-press decimal for EE.

EE always creates floating point numbers.

## Math Engines

**Note:** The free version of Acron RPN Calculator only has the floating point engine.

Acron RPN has three distinct engines for doing calculations: the perfect number engine, floating point engine, and based-integer engine. Answers from perfect number engine will never contain a decimal. Answers from the floating point engine will always have a decimal. Answers from the based-integer engine use a thin font. When doing calculations that combine values from multiple engines, perfect numbers and based-integers will be converted to floating point.

**Hint:** Acron RPN always assumes that floating point answers are the least desired. To force Acron RPN to return a floating point answer, use a floating point number in your question. Or, you can always get the floating point equivalent of a perfect answer by selecting the alternate view and tapping ENTER (see The Alternate Results View for details).

To understand how Acron RPN combines perfect and floating point numbers, it may be helpful to think of anything that contains a decimal as “approximately” that value. For instance:

exactly 7 + approximately 8 = approximately 15  
approximately 0 × exactly 13 = approximately 0  
exactly 0 × approximately 13 = exactly 0  
round(approximately 79) = exactly 79  
factor(approximately 22) is invalid

7 + 8. = 15.  
0. × 13 = 0.  
0 × 13. = 0  
round(79.) = 79  
factor(22.) = NaN.

## Acron RPN Calculator: Tips and Tricks

Only the floating point engine has any concept of infinity, and as such, you will always see infinity followed by a decimal. The floating point engine considers infinity to be synonymous with an overflow.

The floating point engine returns NaN. (not a number) for invalid operations.

## The Alternate Results View

When Acron RPN believes it would be valuable, it shows an alternate view of an answer in a smaller font. These are provided to make it easier to get a quick “sense” of the answer. They only have a few significant digits, and when appropriate, a word descriptor for the order of magnitude.

You can select the alternate view by tapping it, then press ENTER to copy the floating point answer with full significant digits to the console.

## Duplicating Values

With nothing selected and the console blank, press ENTER to duplicate the top entry in your stack.

Select any item on the stack by tapping it and press ENTER to duplicate it. What is duplicated depends on whether you have the question, answer, or alternate view selected.

To duplicate multiple entries on the stack, select the oldest value you want to duplicate and press  $\text{dup}_n$  on the selection toolbar. The selected item and all items higher (newer) on the stack are duplicated.

Functions with a  $\rightarrow$  symbol are considered “display operators” because they only affect the way an answer is displayed, not the value of the answer. Display operators are never duplicated.

## Trigonometric Functions

Basic trig functions (sin, cos, tan) have separate toolbar buttons for degrees and radians. Advanced trig functions perform radians operation when tapped and degrees operation when long-pressed. See Appendix 1 for more details.

## Random Numbers

If there is nothing on your console, the random button (in the x! toolbar) will put a random floating point number between 0.0 and 1.0 on the console.

## Acron RPN Calculator: Tips and Tricks

If you have a value on your console, the random button will replace it with a random number between the original value and zero. Floating point values will be replaced with random floating point values; integers will be replaced with random integers.

## Operation Timeout

In some circumstances, the perfect number engine may take a long time to calculate a perfect answer. If that calculation takes more than 5 seconds, Acron RPN will abort the perfect calculation and return the floating point answer instead. This means faster devices may find a perfect answer to the same calculation that slower devices resort to floating point.

When the factor function takes more than 5 seconds, it will return a partial factorization, and marks potentially composite factors with an asterisk.

## Appendix 1: Long-Press Cheat Sheet

factor math	<b>ln</b> sin	<b>e<sup>x</sup></b> cos	<b>x%</b> tan	<b>x⇒y</b> stack
Toggle between base and scientific	<b>log</b> log	<b>10<sup>x</sup></b> y <sup>x</sup>	<b>x!</b> x!	<b>π</b> <<
LSTx	7	8	9	<b>x√y</b> =>
AC	4	5	<b>hex</b> 6	<b>y<sup>x</sup></b> and
ENTER	<b>i</b> 1	<b>bin</b> 2	3	<b>√x</b> xor
RCL	<b>y+xi</b> dec	EE .	<b>(1/x)</b> not	<b>x<sup>2</sup></b> or

Many of the static buttons can be long-pressed for faster access to the most frequently used toolbar buttons.

- Functions in top of box are only available in scientific mode. Functions in bottom of box are only available in based-integer mode.\* Functions centered are always available.
- Color-coded boxes group which toolbar the functions came from.
- bin and hex are still available in binary, even though the 2 and 6 buttons appear disabled.\*
- Toolbar buttons  $\csc$ ,  $\sec$ ,  $\cot$ ,  $\csc^{-1}$ ,  $\sec^{-1}$ ,  $\cot^{-1}$ ,  $y\angle x$ ,  $\rightarrow r\angle\theta$ , and phase perform radian operation if tapped and degrees operation if long-pressed.
- For statistical regressions\*, tapping  $\rightarrow$ macro creates a macro that returns y values for given x values. Long-pressing creates a macro that returns x values for given y values.

\* not available in free version