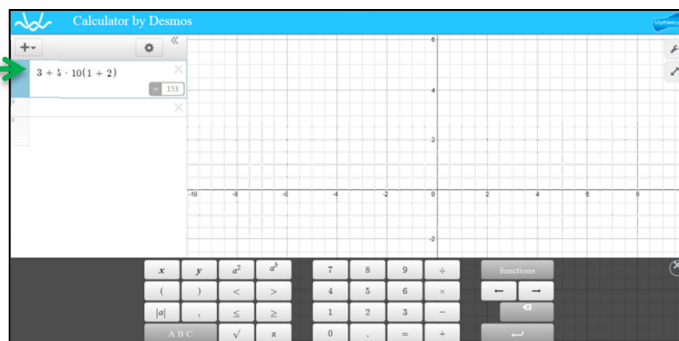
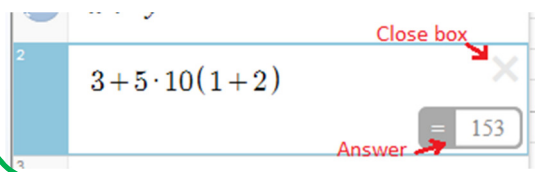


Desmos Basics

Teachers and students can use the Mathletics Desmos calculator instead of graphing calculators to graph equations, make many statistical calculations, and perform regression analysis, and more!

To Calculate with Numbers:

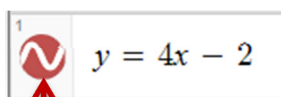
Enter any expression of numbers in a blank box. The value of the expression (the answer) will appear in the lower right corner of that box.





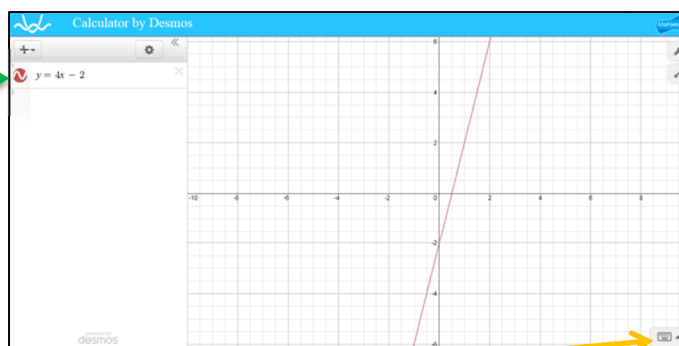
The Desmos calculator follows the order of operations.


To Graph an Equation:

Type the equation into a blank box.

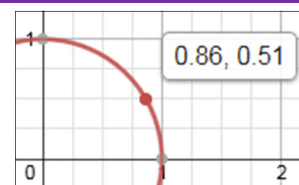


To hide a graph, select the circular graph symbol, . To reshown the graph, select  again.



Typing can be done on an actual keyboard or using the tablet keypad, , on the lower right of the screen.


To find the coordinates of a point on the graph, simply click on/touch that point for a pop-up box.



Note: Unlike most graphing calculators, Desmos can graph equations that are not functions, such as the horizontal parabola $x = y^2$ or the circle $x^2 + y^2 = 4$.

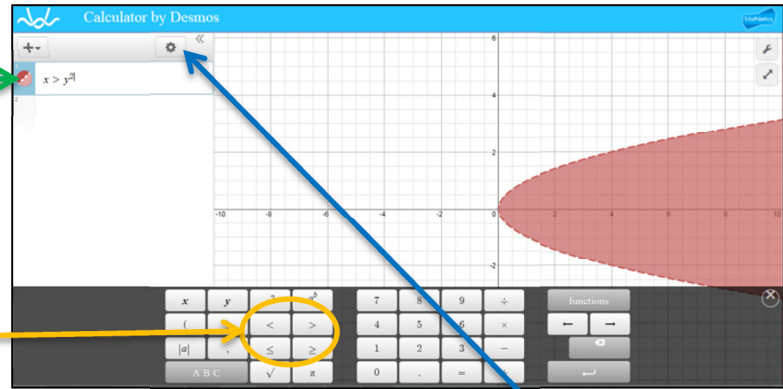
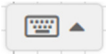
To Graph an Inequality:


Type the inequality into a blank box.




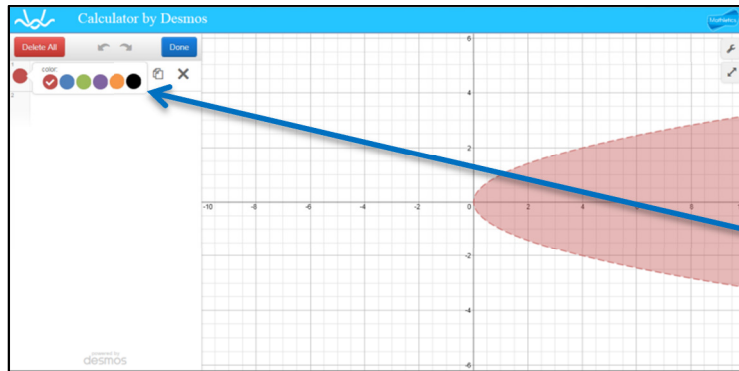
1 $x > y^2$

Inequality symbols can be found in the keypad,



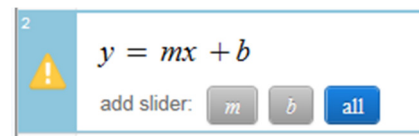
To change the color of the line and shading, select the Edit List button, , near the top of the screen below the word Desmos.

Click on the circle, , to the left of the inequality to choose a new color.



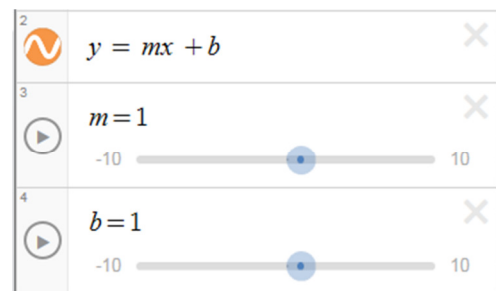
To Graph a General Equation with Sliders:

To investigate a general equation, type it into a blank box and select the **all** button to create sliders.

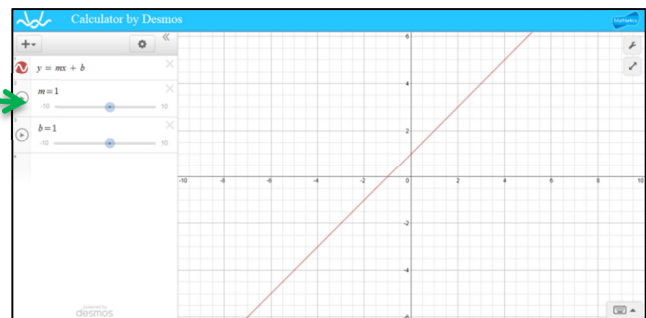
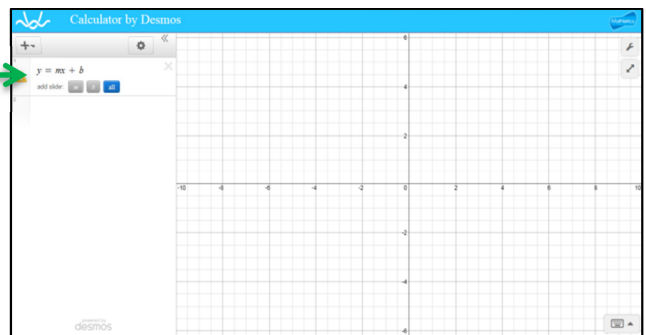


2 $y = mx + b$
add slider: **m** **b** **all**


Moving the sliders changes the values of the parameters (such as m or b).



Moving the sliders immediately changes the graph.



To Make a Table:

Select the Add Item button, , near the upper left corner of the screen.

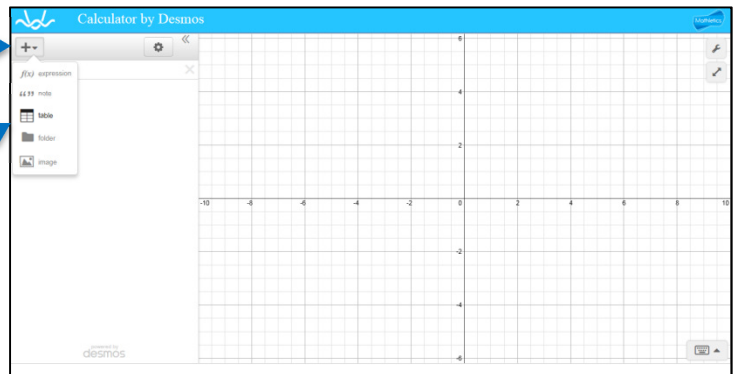
Select *table* from the drop-down menu.

Any value in any column can be changed.

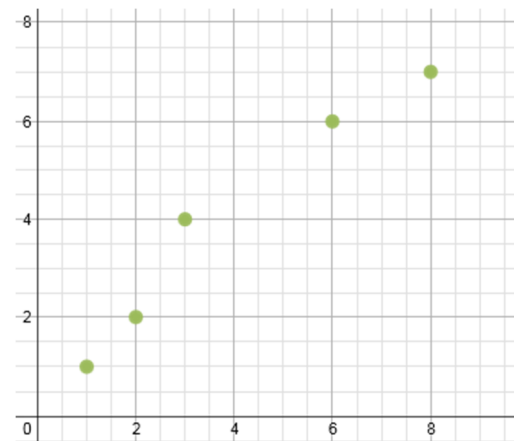


x_1	y_1
1	1
2	2
3	4
6	6
8	7

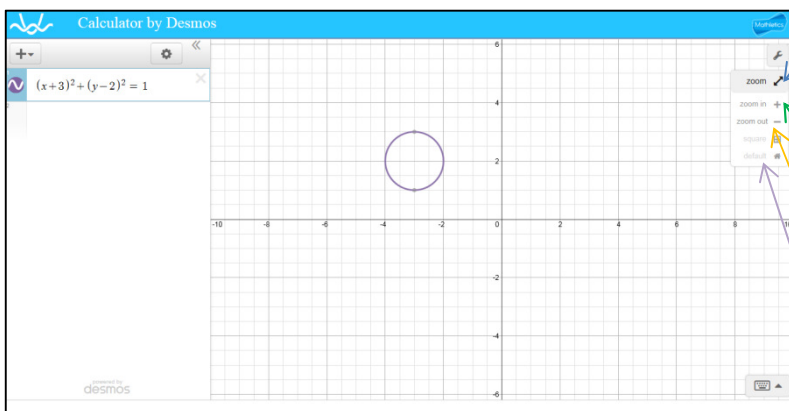
A new row can be added by selecting (clicking) below the last row.




Each pair of values (x_1, y_1) in a row is plotted as a point.



To Zoom In, Zoom Out, or Move a Graph:



Click on the zoom button, , near the upper left corner of the screen.

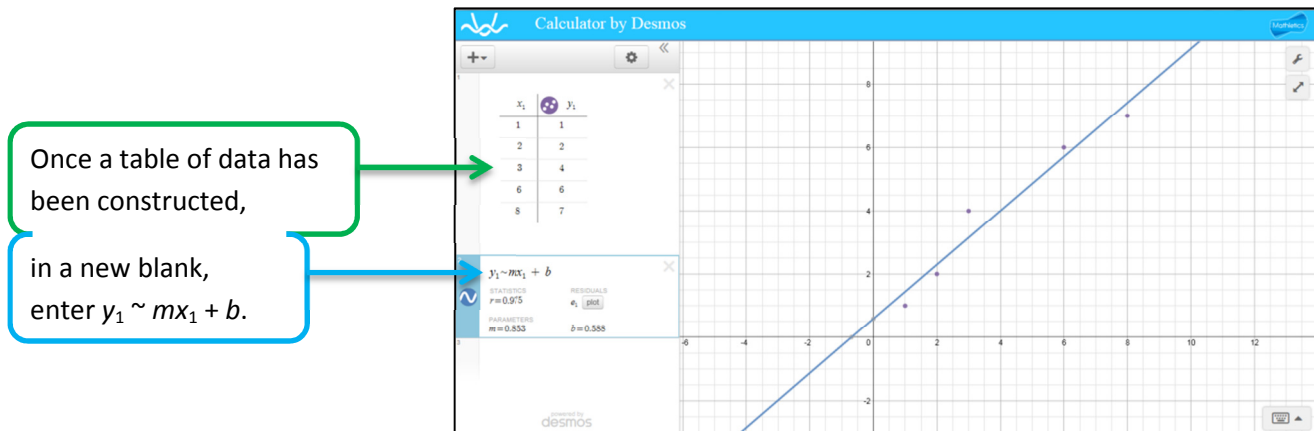
Select *zoom in* to enlarge the graph.

Select *zoom out* to shrink the graph.

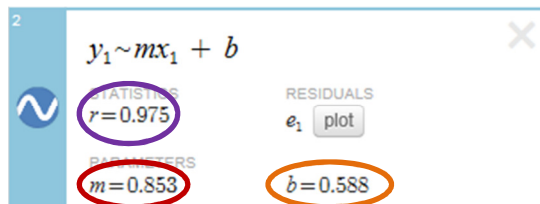
Select *default* to return to the original size.

To move the graph, “grab” it by clicking on any part of the graph and drag to reveal other areas.

To Perform a Linear Regression (Find a Line of Best Fit):



Desmos will plot the line of best fit for the data in the table.



The values of the slope, m , and the y -intercept, b , for the line of best fit will be displayed under the equation. The value of a correlation coefficient, such as r or R^2 , will also be shown. The line of best fit shown above is approximately $y = 0.853x + 0.588$.

To perform a different regression, enter a different equation, such as $y_1 \sim a(b^{x_1}) + c$ or $y_1 \sim ax_1^2 + bx_1 + c$.

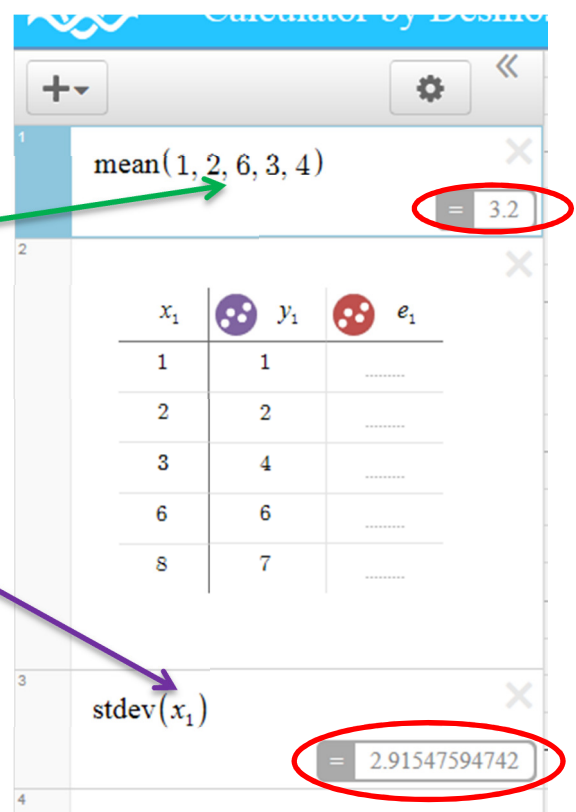
To Calculate Statistical Values:

Desmos has a list of commands to calculate statistics for sets of data.

Data can be entered as a list:

or using a variable from a table:

As with numerical calculations, the value (answer) is displayed in the lower right corner of the box.



Add Item – A drop-down menu that allows users to add a table or a pre-made image, among other choices.

Type equations to be graphed or expressions to be calculated onto these lines.

Edit List – Select to change the color or style of graphs and points, or to convert a single coordinate to a table.

Hide List – Select to hide the equations and show only the coordinate plane.

Zoom – Opens the menu for zooming in and out.

Graph Settings- Select to change the settings of the graph, including axes and Cartesian vs polar coordinates. Teachers may use *Projector Mode* to thicken lines when projecting onto a screen.

Show Keypad – Opens the virtual keypad, shown below.

Select to access various trigonometric, calculus, and other functions.

Select to switch to QWERTY-style keyboard with all letters and some other symbols.

