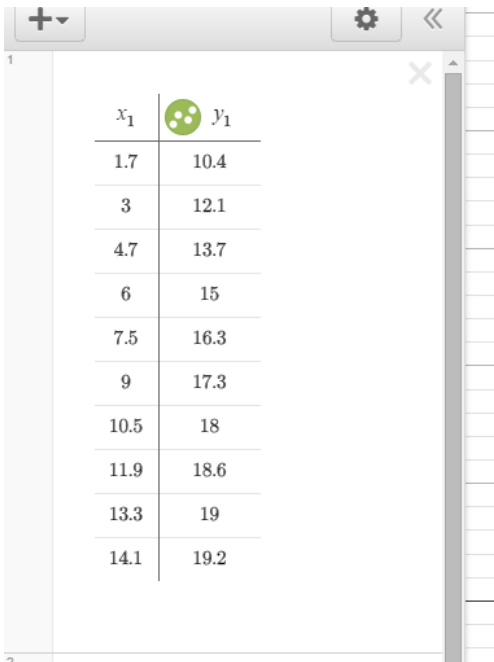# Linear Regression

Regression is the process of coming up with a suitable model (equation) to fit a data set. When there is a linear trend in the data, we can use regression to find the equation of the line of best fit.

We will use the Desmos app on the iPads to complete this regression. Desmos is a free app if you would like to download it to your own device. You can also visit the website at Desmos.com if you prefer.
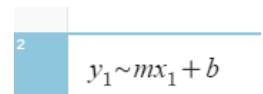
Step 1: Click on the + button in the upper left corner of the Desmos screen and choose the Table option.
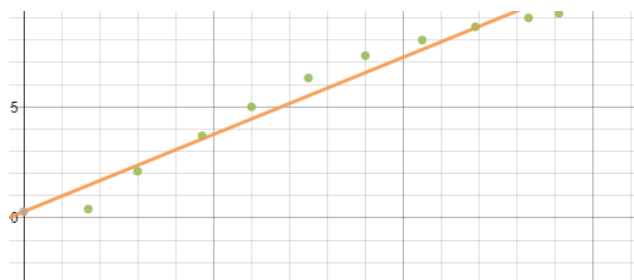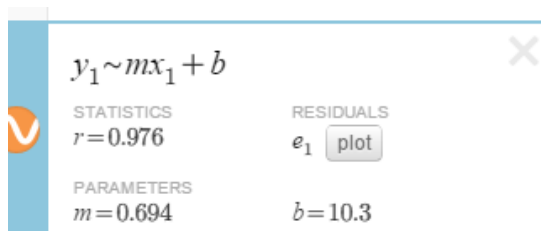
Enter the following data:

x_1	y_1
1.7	10.4
3	12.1
4.7	13.7
6	15
7.5	16.3
9	17.3
10.5	18
11.9	18.6
13.3	19
14.1	19.2

Step 2: Click on the next space (under the table) and type y1~mx1+b , which will display as: $y_1 \sim mx_1 + b$

The following should appear after you hit enter:

$$y_1 \sim mx_1 + b$$

STATISTICS
$r = 0.976$

RESIDUALS
e_1 [plot]

PARAMETERS
$m = 0.694$ $b = 10.3$

Replace m and b in the equation to get your line of best fit ($y = 0.694x + 10.3$). The correlation coefficient, r = 0.976, tells us that this is a strong linear correlation. You can now use this equation to make predictions. For example, if you are given an x value, you can substitute it into the equation to find y. Similarly, if you are given a y value, you can substitute it into the equation to find x.

There are several YouTube videos which demonstrate regression using Desmos if you have difficulty when you are at home. Alternatively, you can ask me for clarification in class.