

Using Desmos:

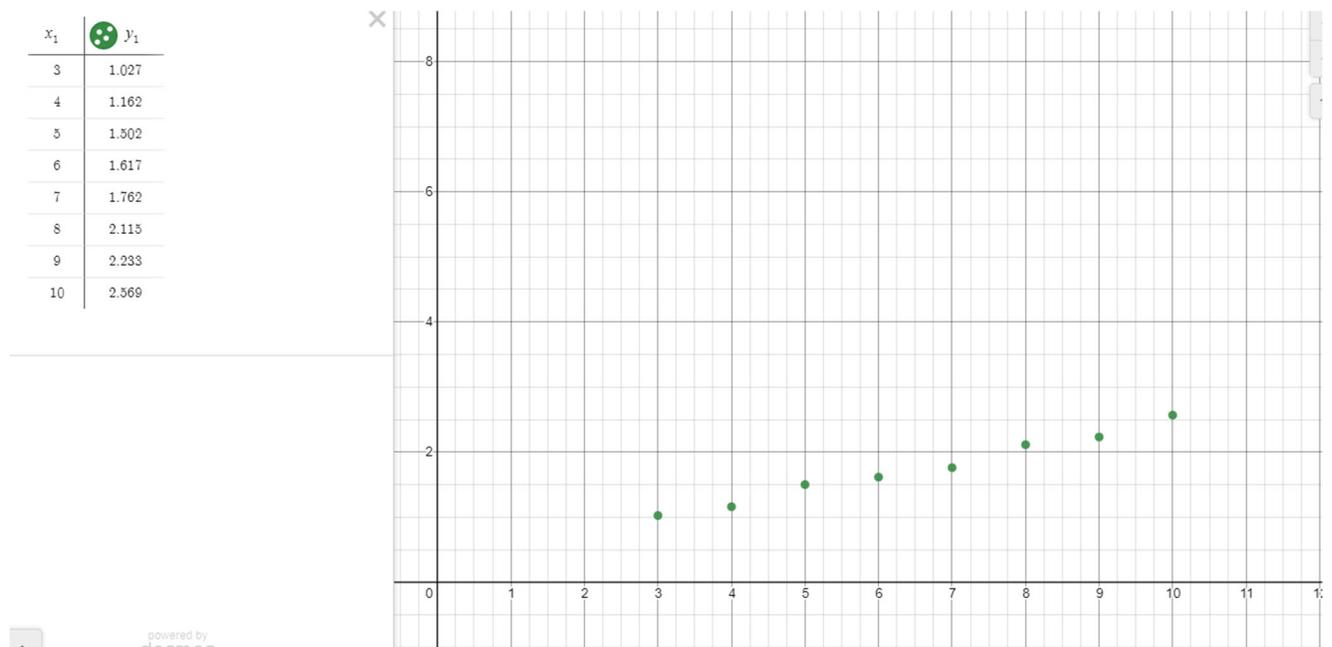
Suggestions for using Desmos to complete Illustrative Math lesson 6.2:

Creating a table, graphing a line, changing an equation for a line to a table of values, and graph of residuals:

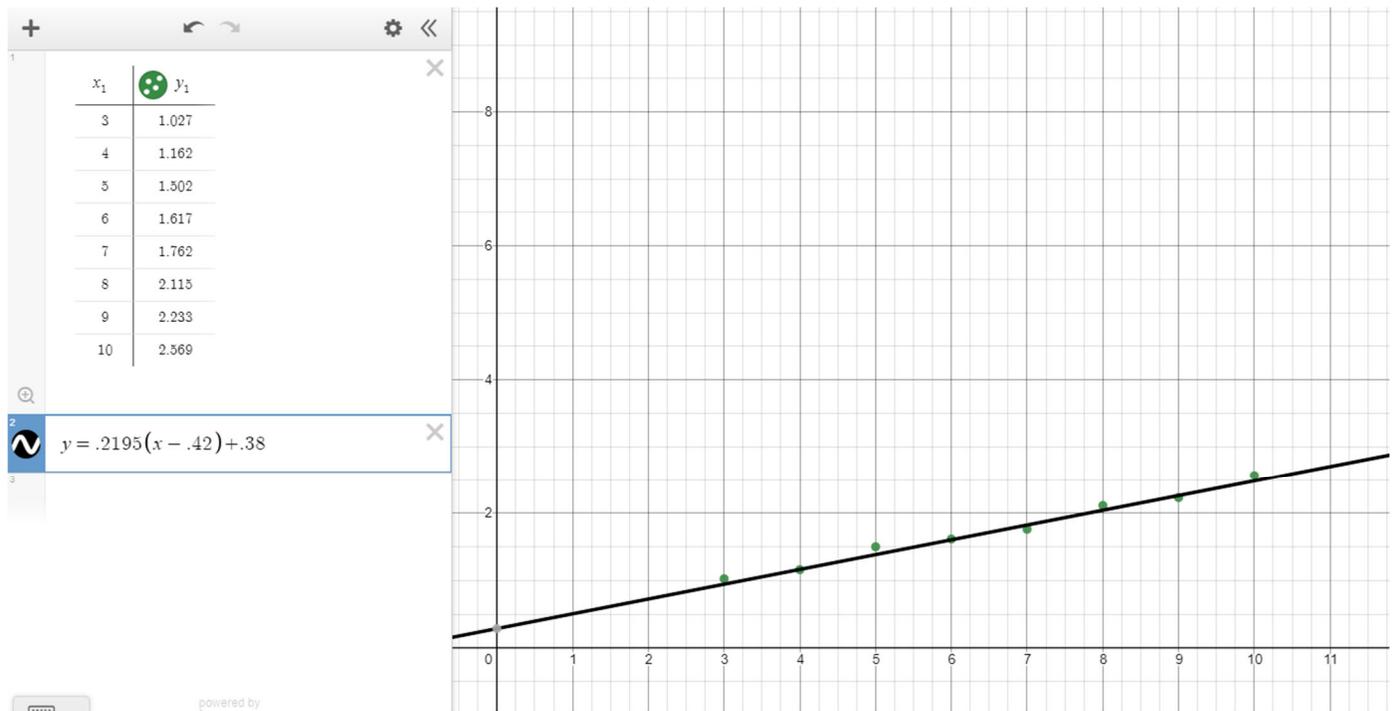
Complete a table for the number of oranges and the actual weight of oranges in Desmos

Open Desmos: [www.desmos.com/calculator](http://www.desmos.com/calculator).

You can create a free account or use app without an account.



Use a ruler or piece of string to make a “moveable line”. When students have chosen the best placement for their line, choose 2 data points and find the equation of the line. For this exercise, this may not be the statistical best fit. The idea is to find the residuals for each data point and discuss the fit of the line. If students completed lesson 4, the equation from this lesson can be used.



Create a table from the equation. Click on the wheel and choose the option to convert to table in the equation. The additional ordered pairs were found by placing the values in the x column of the table.



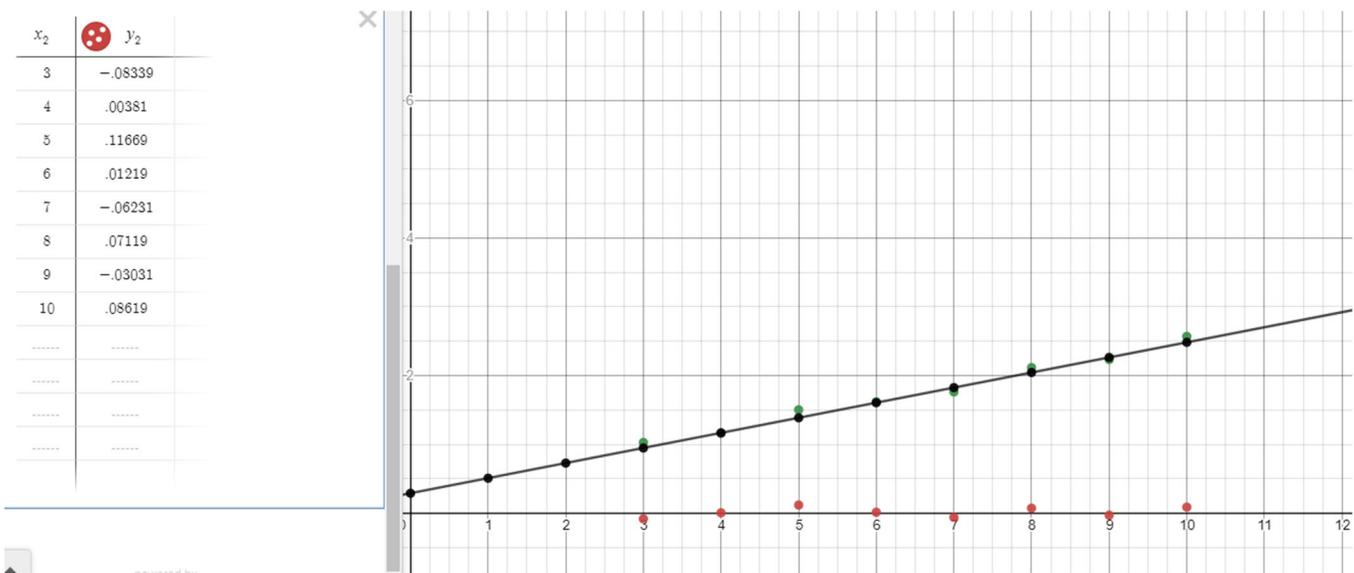
$x_1$	$y_1$
3	1.027
4	1.162
5	1.502
6	1.617
7	1.762
8	2.115
9	2.233
10	2.569

$$y = .2195(x - .42) + .38$$

$x$	$.2195(x - .42)$
-2	-0.15119
-1	0.06831
0	0.28781
1	0.50731
2	0.72681
3	0.94631
4	1.16581
5	1.38531
6	1.60481
7	1.82431
8	2.04381
9	2.26331
10	2.48281

Students find the residual for each ordered pair by subtracting the predicted value (table on the right) from the data point (table on the left). The table below is the result.

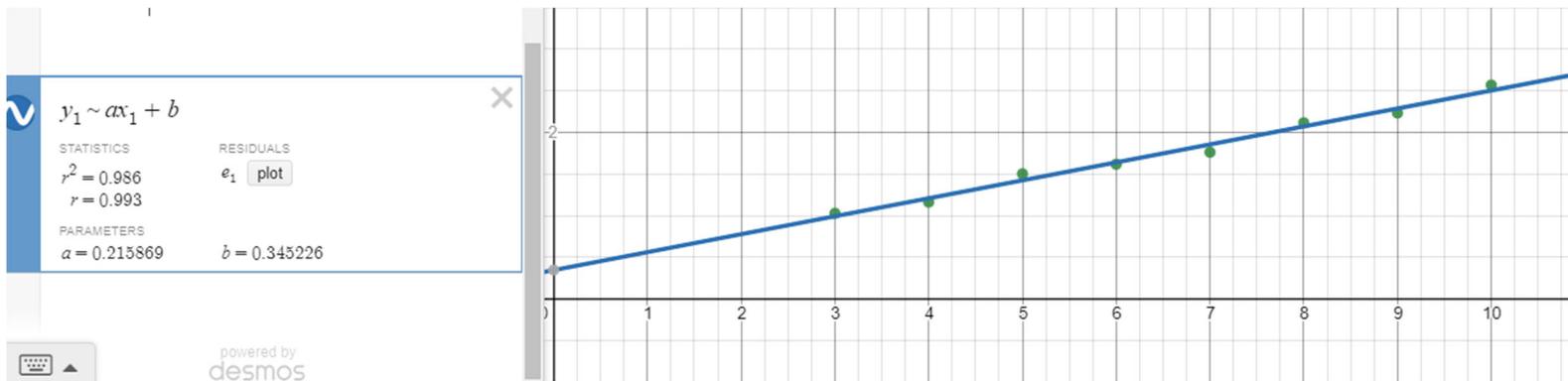


## Finding a regression line using Desmos:

Once students have gained understanding for finding and interpreting the line of best fit using residuals, introduce the regression line. When the regression equation is found using graphing software, the correlation coefficient is given with the regression equation.

Using the data for *Oranges in a Box*, the following shows the regression equation using Desmos. Addition instructions can be found using the following link.

<https://im.kendallhunt.com/HS/teachers/1/3/6/index.html>



The symbol  $\sim$  can be found by clicking on the keyboard and alphabet. It is important to include 1 with both y and x.

The correlation coefficient is  $r$  and the residuals can be plotted by clicking  $e_1$ .