**6.3 Modeling Data with a Line of Best Fit**

**By the end of the lesson you will be able to:**

* Determine the linear function equation that best fits a set of data
* Use this function to solve a problem

**Independent Variable** - \_\_\_\_ or variable that can be manipulated

**Dependent Variable** - \_\_\_\_\_ or variable that results from the independent variable.

**Scatter Plot** – A set of points on a grid

**Line of Best Fit** – A straight line that best approximates the trend of the scatter plot

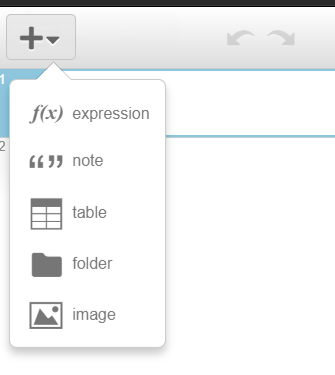
**Regression Function** – A line or curve of best fit, developed through statistical analysis of data.

Using **DESMOS** to solve for **Line of Best Fit**

Find the line of best fit for the following data

|  |  |
| --- | --- |
| **x** | **y** |
| 1 | 17 |
| 2 | 20 |
| 3 | 24 |
| 4 | 30 |
| 5 | 31 |
| 6 | 29 |
| 7 | 34 |

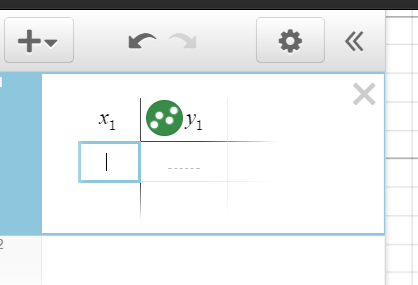
1. **Setting up a plot**



2

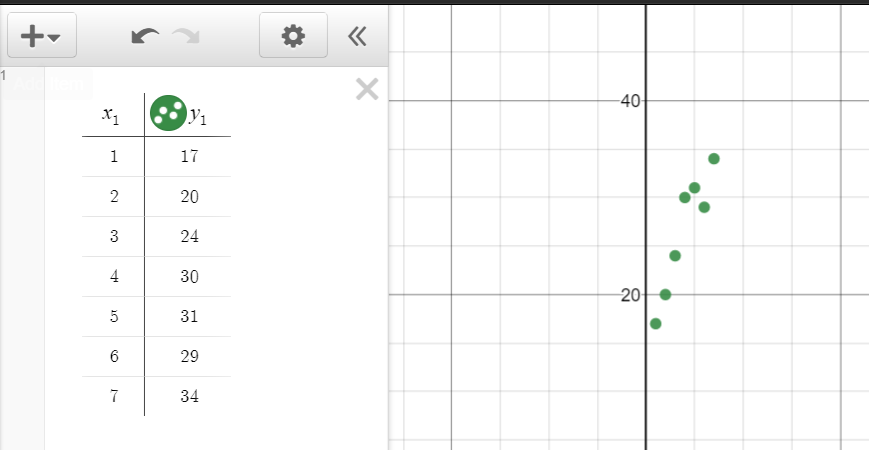
1

1. **Enter data**

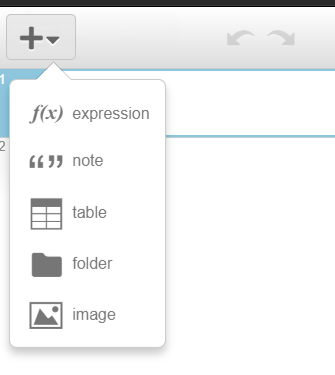


Enter the data line by line

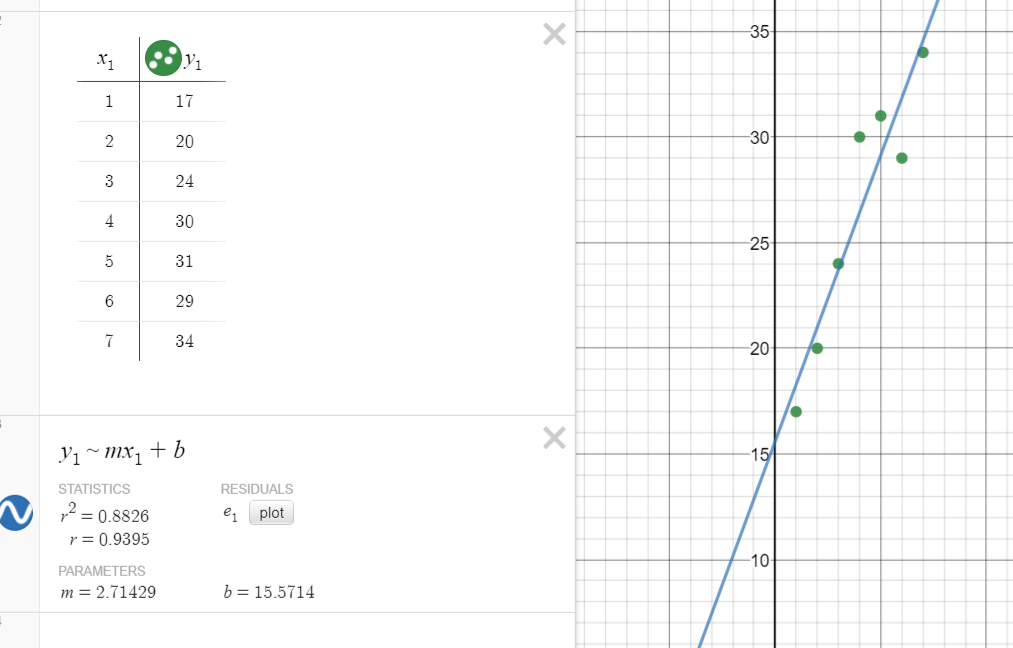
1. **Once the data is entered, zoom out to see the data points (scatter plot) on the graph**

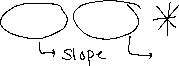


1. **Add 🡪 *f(x)* expression**

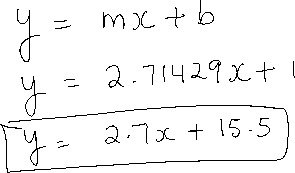


1. **Type and read off the m and b values:**





1. **Write the function:**



**Example**

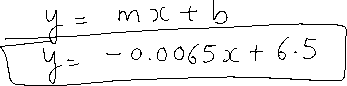
Matt buys T-shirts for a company that prints art on T-shirts and then resells them. When buying the T-shirts, the price Matt pays is related to the size of the order. Five of Matt’s past orders are listed in the table below.



|  |  |
| --- | --- |
| **Number of Shirts** | **Cost per Shirt ($)** |
| 500 | 3.25 |
| 700 | 1.95 |
| 200 | 5.20 |
| 460 | 3.51 |
| 740 | 1.69 |



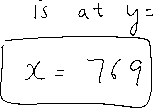
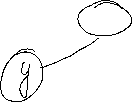
a) Create a scatter plot and determine an equation of the linear regression function that models the data. What equation models the data?



b) What do the slope and the y-intercept represent in context?



c) Use the linear regression function to extrapolate the size of order necessary to achieve a price of $1.50 per shirt.



**Practice**:

