1. **Data Collection**

LoggerPro has three main ways of coming up with data. You can manually enter the data in yourself, collect the data using a probe or sensor, or calculate new data using previous data. This will calculate the entire column of the data for you.

Manual Entry

1. Under the data set (originally X & Y), you can manually enter the data.
2. To change your variable title, double click on the X or Y at the top of the data set. You can change the name, short name, and unit. The unit will automatically appear on the graph, along with the name of the variable (or short name, pending on the length)

Probeware

1. Connect the probe to the computer interface. Once it is recognized, the measurement values can be found on the bottom left.
2. Begin data collection by clicking  at the top of the window. You can click on  to end data collection or let the computer automatically end it after its given time interval. To change time interval for data collection, click the icon at the top. Change the desired **duration**, **unit**, and/or **samples/“time-unit”**.

Calculated Columns

1. Go up to the top and click on the tab ***Data***and select **New Calculated Column**
2. Rename this column with its respective name and give it a unit. Short name is optional.
3. Click on the empty Equation box
4. Start typing your equation. An equal sign or spaces are not necessary. The following signs coincide with each:

“+” add “\*” multiply “-“ subtract or negative “/” divide “^” to the power of

1. Click on the “**Variables (Columns) >**” tab and select your column
2. **Making a Graph**

LoggerPro already makes a graph as you collect or enter data. Click the “**Autoscale Graph**” button,, to change the range of values on the axes to fit your data. You can also set your axes range by clicking the lowest and high number on each axis. Type in the value (i.e. 0) and click enter.

Changing the Axes

1. On the graph, left click on the axis name and select the variable for the axis.
2. If you wish to have more than one (y only), click *More…*Select the boxes of the variables that you want, and click *OK.*

Entering Graph Titles and Formatting

* Go up to the top and click on Options
* Select *Graph Options…*
* Select the text box for Title
* Enter the graph title “y” vs. “x”
* Under Appearance, deselect “Connect Points”
* Have “Y Error Bars” and “X Error Bars” selected
1. **Data Analysis**

The following buttons found at the top of the screen are listed below with their meaning. You can either click the button to analyze all of the data, or highlight the desired data on the graph (click and drag) and then clicking the button above. You can always click and drag the **[** & **]** buttons to readjust the data you want analyzed.

**Examine**: This gives you the X & Y values on the graph(s).

**Tangent**: This gives the slope at a given point on a graph.

**Statistics**: This gives the highest and lowest values, mean, mode, and median.

**Integral**: This finds the area under the curve

**Linear Fit**: This provides a best fit line to the equation y = mx + b

**Curve Fit**: This provides a best fit curve that you choose, with a given equation.

**Correlation:**

Correlation is a measure for precision. It is out of 1.000. The closer the graph is to 1.000, the more correlation the graph has. The closer to zero, the less correlation the graph has.

**RMSE:**

Root Mean Square Error is a value for accuracy. The closer a value is to 0, the more accurate the values are.