

Vernier LoggerPro Graphing Tutorial

(a.k.a. life is too short to struggle with Excel)

Graphing Data

1. Specify options for independent variable
 1. double click on “X” column heading (Data » Column Options » X)
 2. specify the name of your independent variable: “Drop Height”
 3. specify the short name (i.e., variable name): “h”
 4. specify the units: “cm”
2. Specify options for the dependent variable
 1. double click on “Y” column heading (Data » Column Options » Y)
 2. specify the name of your independent variable: “Bounce Height”
 3. specify the short name (i.e., variable name): “bh”
 4. specify the units: “cm”
3. Specify options for the graph
 1. double click somewhere on the graph (Options » Graph Options)
 2. specify the graph title: “Drop Height vs. Bounce Height for a Superball”
 3. check: Point Symbols, X Error Bars, Y Error Bars
 4. uncheck: Connect Points, Bar Graph, Draw Visible Spectrum
4. Enter sample data:

Drop height in cm	Bounce height in cm
120	98
80	60
40	32
20	15

5. Scale as desired (keeping the origin visible or not)
 1. Analyze » Autoscale » Autoscale from zero
 2. Analyze » Autoscale » Autoscale (click the Autoscale Graph toolbar button)
6. Analyze the graph
 1. Analyze » Linear Fit (click the Linear Fit toolbar button)
7. Specify measurement uncertainty
 1. double click on “Drop Height” column heading (Data » Column Options » Drop Height)
 1. click on the “Options” tab
 2. check the “Error Bar Calculations” checkbox
 3. select the Fixed Value radio button
 4. enter the error constant: “0.25”
 2. double click on “Bounce Height” column heading (Data » Column Options » Bounce Height)
 1. click on the “Options” tab
 2. check the “Error Bar Calculations” checkbox
 3. select the Fixed Value radio button
 4. enter the error constant: “2”
 3. zoom in (Analyze » Zoom Graph In or click Zoom In toolbar button) to see the error bars

Linearizing a Graph

1. Create a new graph
 1. independent variable: diameter of bucket (in)
 2. dependent variable: weight of bucket filled with sand (lbs)
 3. sample data:

Diameter of Bucket (in)	Weight (lb)
6	6
9	13.5
12	24
15	37.5
18	54
21	73.5
24	96
27	121.5

2. Linearize the graph
 1. Data » New Calculated Column
 1. name: "Diameter Squared"
 2. short name: "d2"
 3. units: "in²"
 4. click on "Variables (Columns)" to insert "Bucket Diameter"
 5. type "²" after "Bucket Diameter" to square that value
 2. Change the data plotting on the horizontal axis by clicking on the label for the horizontal axis and choosing "Diameter Squared"
3. Use LoggerPro's curve fitting
 1. Switch the horizontal axis back to "Bucket Diameter"
 1. you may want to delete the linear fit box and autoscale the graph
 2. Analyze » Curve Fit (Curve Fit toolbar button)
 1. select the general equation that you expect best fits the data
 2. click the "Try Fit" button
 3. if you like the results, click "OK"

More Practice

Try another set of data:

Area of Hose Opening (cm ²)	Time to Fill (hours)
3	72
18	12
33	7
48	4.5
63	3.5
78	3
93	2.5
108	2

Additional LoggerPro Features

- multiple data sets on the same axis
- multiple y axis
- grouped graphs
- examine and tangent tools
- histograms

*Geoff Schmit
Naperville North High School
@gcschmit
gschmit@naperville203.org*