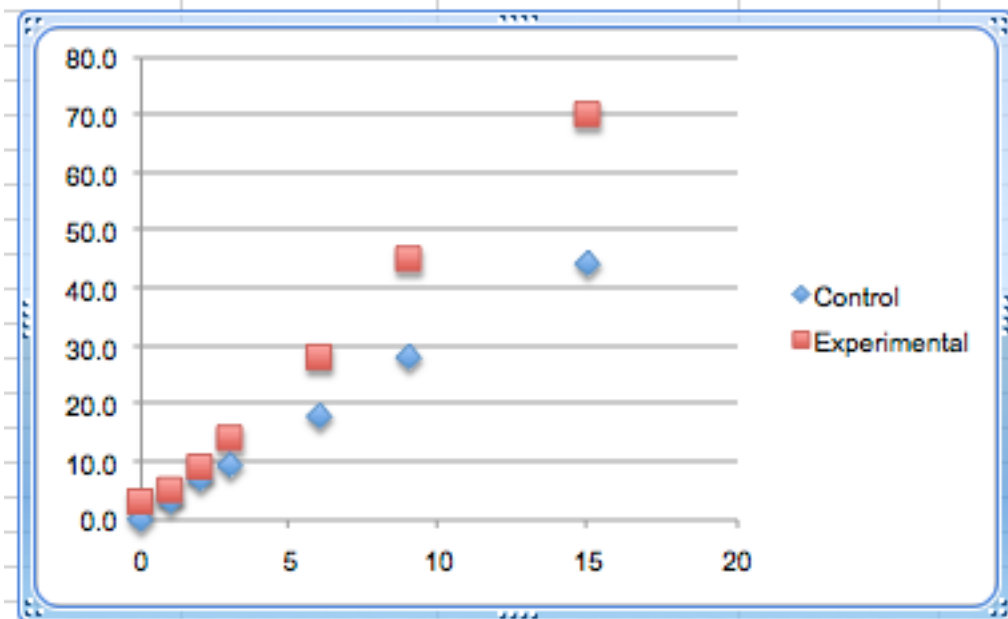


Creating graphs in Excel

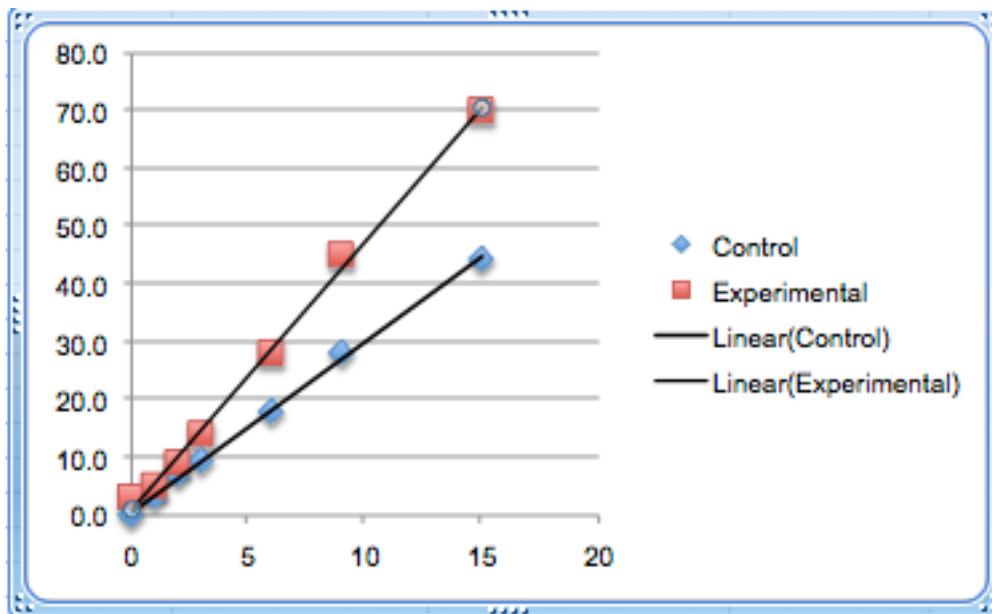
Excel is not well suited for scientific graphing, so it is necessary to use the right graph type. In cases where X values are not necessarily equally spaced, then you need to pick XY Scatter as the type of graph. In general this will be the normal choice for scientific graphs. In the following case:

Time (mins)	Control	Experimental
0	0.0	3.0
1	3.2	5.0
2	7.0	9.0
3	9.4	14.0
6	17.9	28.0
9	28.1	45.0
15	44.3	70.0

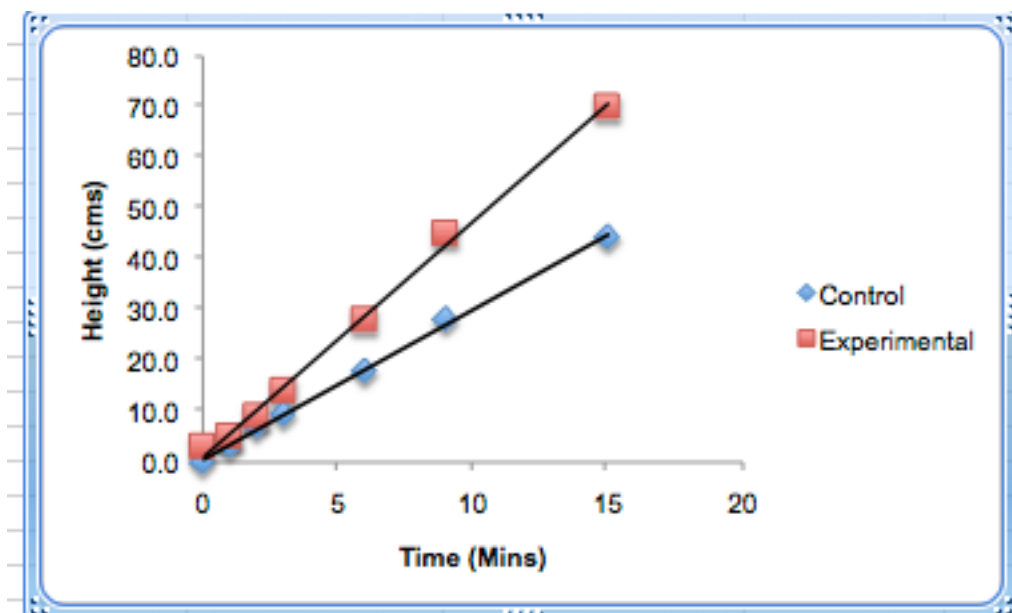
First: select the entire data set, including the headings. Click on XY Scatter and the graph should look like this



If you want the data points connected, then click on the Straight or Smooth line graph option. If you want the best-fitting straight line then click on one of the data points on the graph, then Chart/Add Trend Line. The best-fitting straight line will be drawn. (For those who have had statistics, this is the least squares regression line)



You can then use the Chart Options on the Formatting Palette to add Axis labels and modify the appearance to suit you.



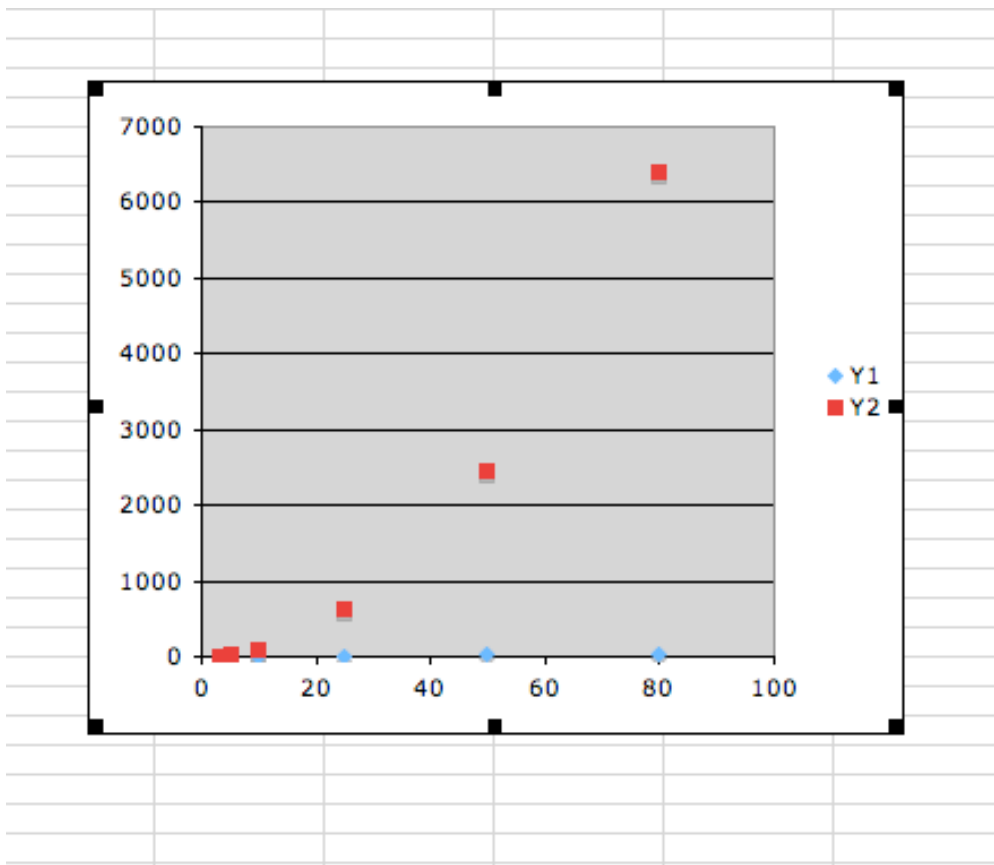
Creating Double-Y plots on Excel

These are useful when you have two different variables being measured against a single X axis and the two variables have very different numeric values or are measured in different units. Examples might be measuring tree height and total number of leaves over the years, transmission and absorbance at different dye concentrations, or the pitch and number of cricket chirps as a function of temperature.

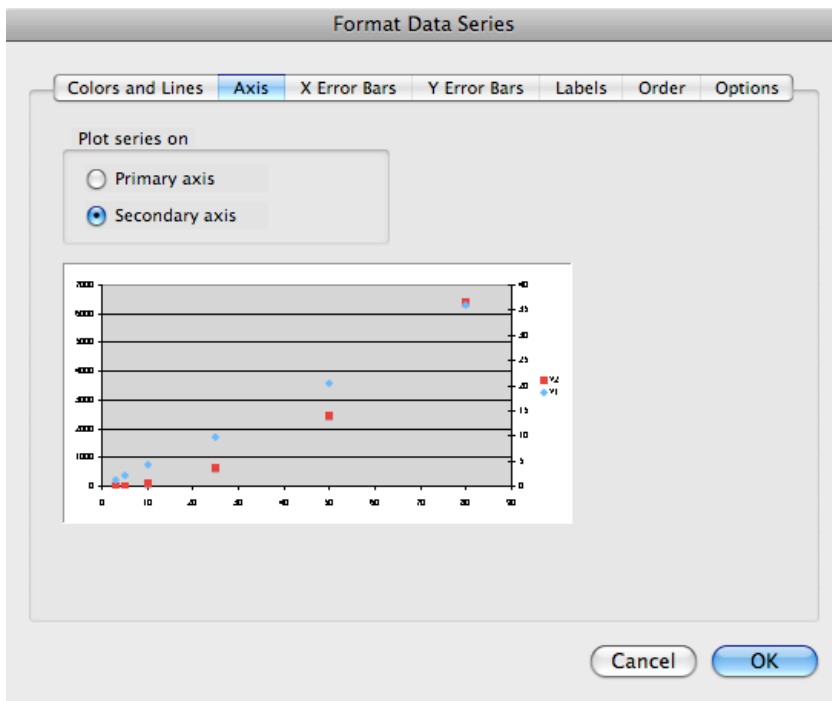
In all cases the two different Y series can be compared to the X on a single graph. Enter the data into the Excel sheet as follows:

X	3	5	10	25	50	80
Y1	1.1	2.1	4.3	9.9	20.5	35.9
Y2	7	16	98	630	2459	6410

Select the entire data set then click on the chart Wizard and pick XY Scatter as the chart type. Complete the chart and it will look like this:



Clearly the Y1 axis shows no detail since it is being plotted on the same scale as Y2. In order to give it a separate scale, right-click on any of the Y1 points on the graph and pick "Format Data Series". In the window that appears, click on the "Axis" tab then click on the "Plot series on Secondary axis" button. Click OK. The graph will now show separate axes and scales for each Y series.



After cleaning up the graph will look like this. You can add labels and units as needed to each axis, as described earlier

