

Analysing – Graphs

What you do with the data collected. It will be Graphs, calculations, etc. There may be more tables.

Graphs are very useful, as they give a visual of the relationship between the variables.

Graphs **must** have a title, a scale, labels on the axes, start at zero, show the data points, show the line of best fit, be numbered and be neat

In this section we will focus on continuous data.

Your data will need to be graphed. A scatterplot is usually the type that is needed. Graphs can be plotted by hand or using computer software, such as Excel.

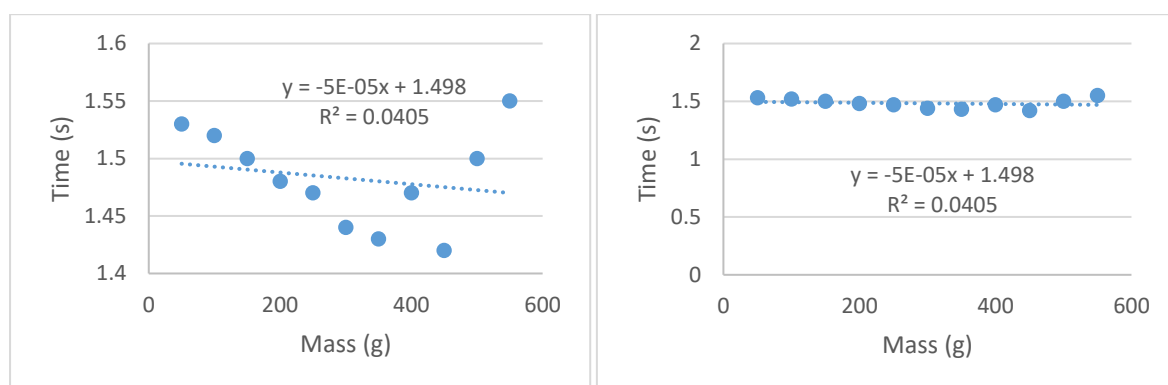
Excel is particularly useful as it has the following features which will assist us.

Excel can

- store your raw data table. (a copy should also be in your logbook)
- calculate any derived physical quantities, such speed and acceleration.
- graph the data. Because you are looking for a relationship between the variables, you must choose 'X Y (Scatter)' as your type of graph.
- generate a line of best fit, using the 'Add Trendline' option. This is the Excel command to create a line. You have options for the type of trend line and are also able to display the equation and the co-efficient of determination, very handy.
- create error bars.

Instructions on how to use Excel are found on the sheet - Using Excel to create graphs found at Physics with Synno.

Be careful, sometimes the default settings of Excel can lead you in the wrong direction.



The graphs above are of the same data. But since the time axis on the left-hand graph starts at 1.4 seconds it looks like there is some sort of variation.

The right-hand graph starts at 0 seconds and looks much more fitting for a trend line with a gradient of -0.00005.