

# Using Excel to Graph Results

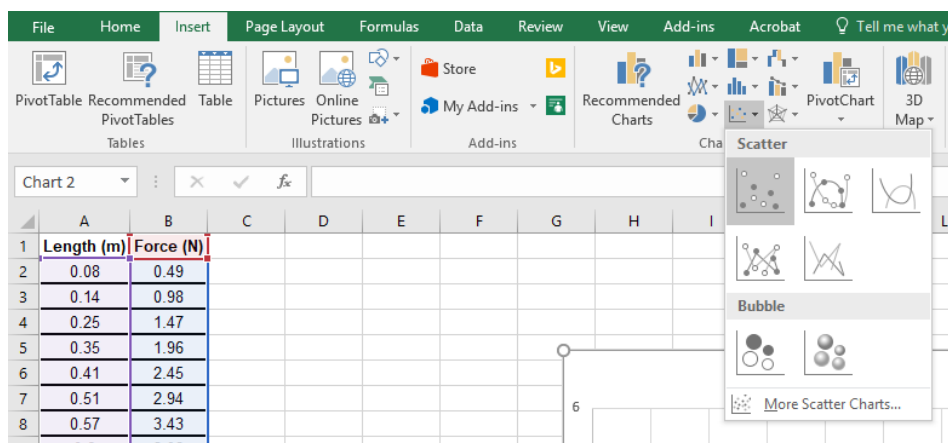
This task is a self-guided instruction in using an EXCEL spreadsheet to create graphs. Follow the instructions step by step using the data shown in step 1.

1. Enter the data, making sure that the measurements are in the proper units. It should look like the example below

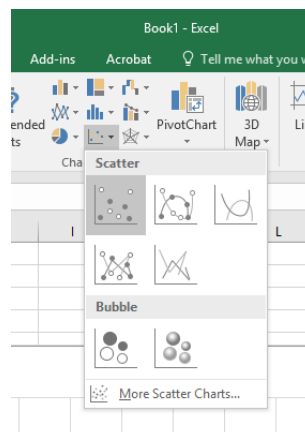
Length (m)	Force (N)
0.08	0.49
0.14	0.98
0.25	1.47
0.35	1.96
0.41	2.45
0.51	2.94
0.57	3.43
0.60	3.92
0.72	4.41
0.82	4.90

2. **Highlight** the **length** and **force** columns.

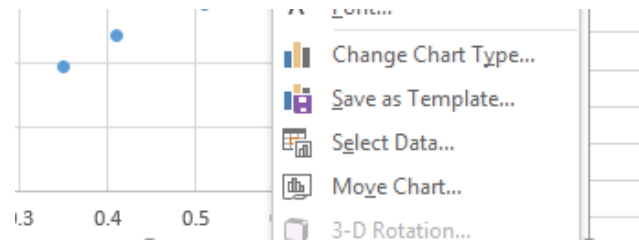
3. Click the **Insert** tab and click **Scatter Plot** of the Force Vs Length relationship. In Science we always use a **scatter plot** without any lines. We will fit a trend line later.



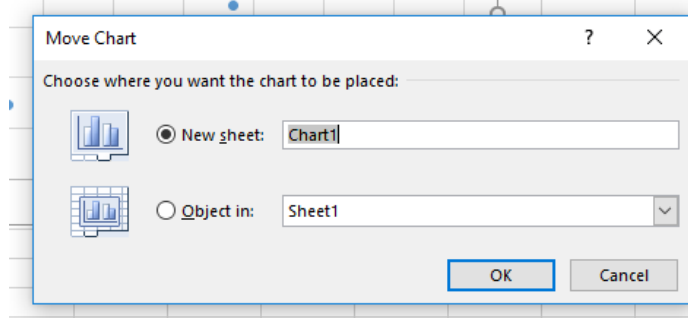
4. Choose the top left option **Scatter with markers** and a graph will appear.



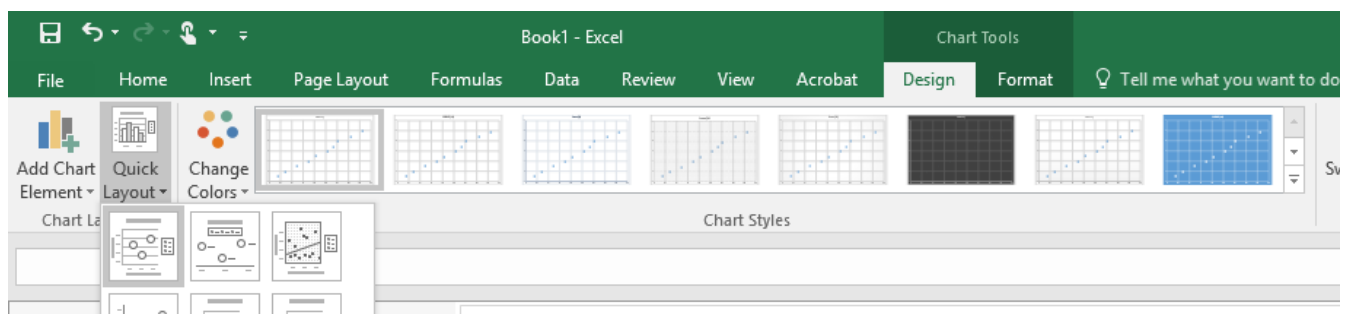
5. **Right** click on the graph and click **Move chart**.



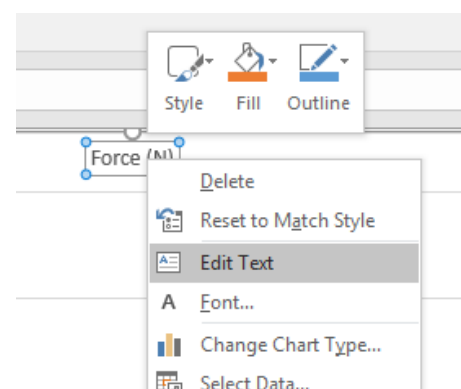
6. Select **New sheet** then **OK**



7. Next we need to format the chart. Under **Chart Tools – Design tab**. Click on **Quick Layout** and select the **top left** option

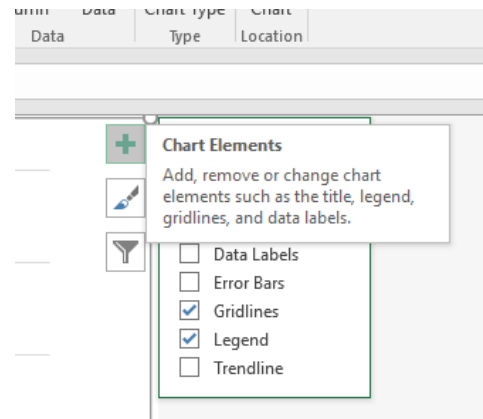


8. **Right** click on the title and choose **Edit Text** and give the chart a title. For example **The Effect of Length on Force**.

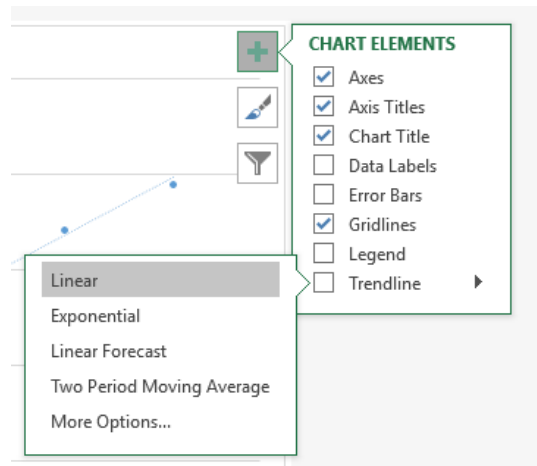


9. Repeat step 8 for each of the **Axis Titles** and give each of the axes a title.

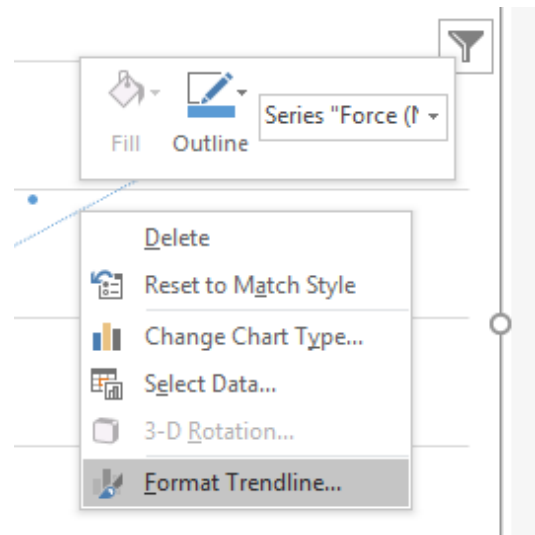
10. Click on the **Chart Elements icon** then **uncheck Legend** we don't need a legend as there is only one thing being graphed.



11. Click on the **Chart Elements icon**. Choose **Trend line** by clicking on the **Arrow** and choose **Linear**, since the graph looks sort of straight.



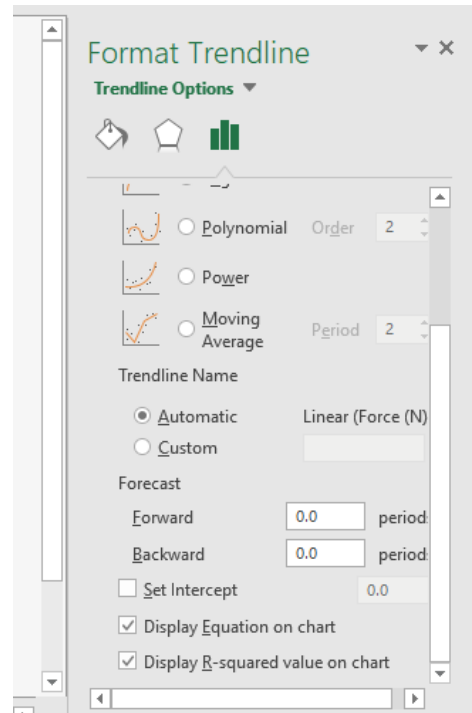
12. Move the **cursor** over the trend line and **right click**. Select **Format Trend line**.



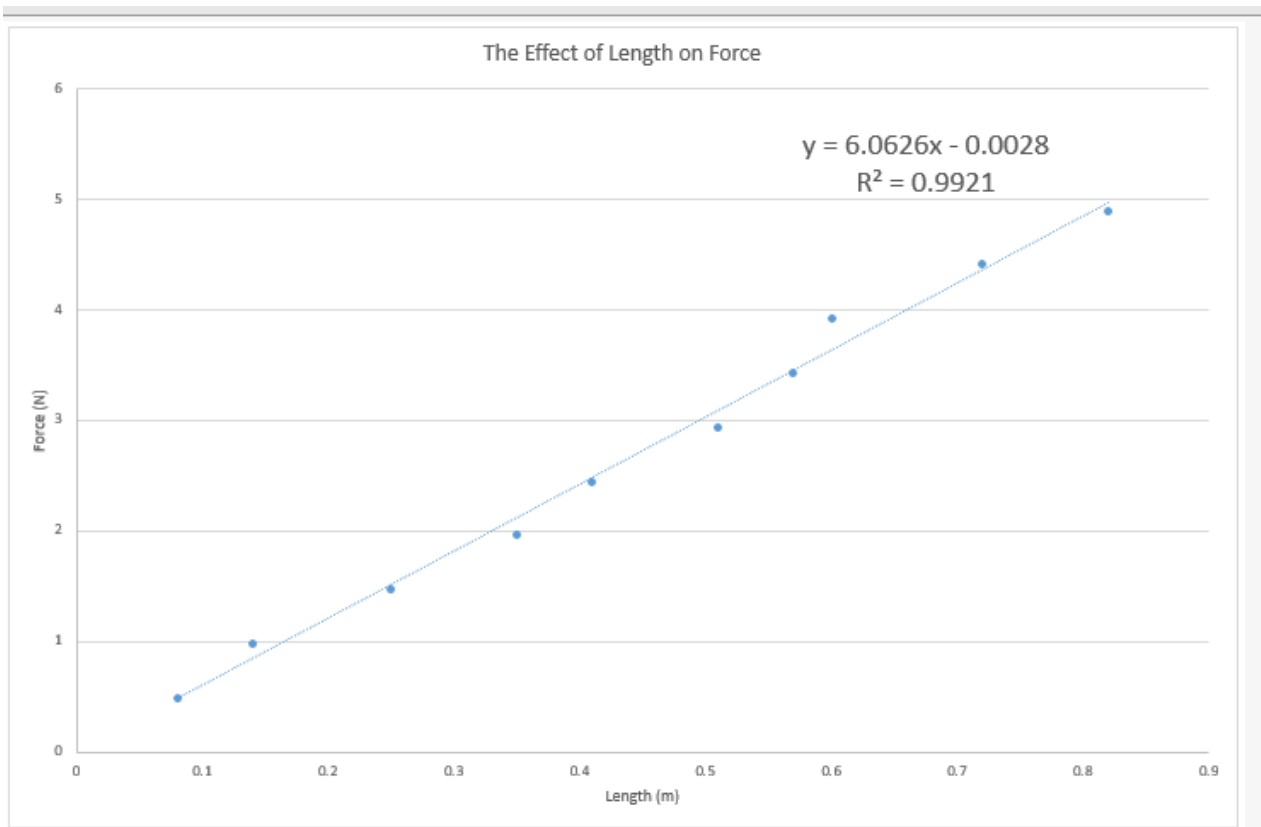
13. On the menu that appears to the right **scroll** to the bottom. **Check** the bottom two boxes and **Click Close**.

The  $R^2$  value tells us how well the trend line fits the data, the closer to 1 the better.

14. You now have a finished graph



15. Your graph should now look like the diagram below.



It is possible to show error bars on your graph. They are accessible from the **Chart Elements icon**. You should put error bars on your graph.