## 3.2 Line Graph

Most of the graphs that have to be plotted will be line graphs. A pair of (x,y) values are used to plot points and then a line of best fit is drawn.

size	A4 paper (or bigger)
title	short meaningful title
x axis (across)	**independent** variable
y axis (up)	**dependent** variable
Scale	Choose a scale which is 1, 2, 4, 5, 10 squares per unit. Should use half the page or more. Label only 4 or 5 ticks.
axis labels	each axis labelled with **variable name** and **unit**
points	**accurate**, neat, easy to see normally take up at least half of the paper in both directions.
line of best fit	smoothly and neatly drawn
multiple lines	points and lines colour coded, with a key

Example line graph

Figure 1

Variation of average speed with distance
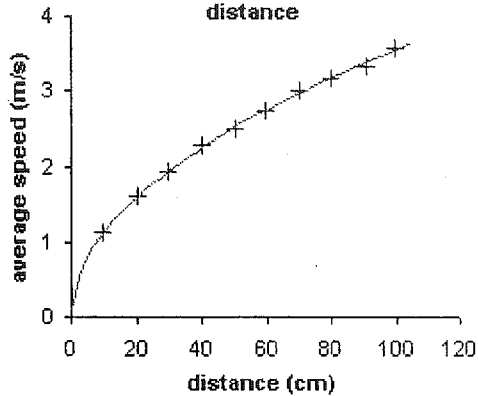
NEVER join points dot-to-dot.

3.4 Line of Best Fit

In general if you are investigating a simple relationship between two variables you will be able to draw a line of best fit. A line of best fit shows the pattern or trend you (think) you would get if you were to remove all the random measurement errors from your experiment.

A line of best fit may be straight or curved. It may pass through some of the points but won't pass through all of them. The quickest way to lose marks is to join the points dot-to-dot style; you will immediately drop down to 4 marks!

Another common mistake is to make the line of best fit pass through the origin when it shouldn't. Every experiment is different so you need to work out where the graph will go for small and large values of the independent variable if you are unable to measure them.

If you can't draw neat curves by hand then consider getting one of the special flexible rulers that are designed specifically for this. They make the job much easier to complete. It is always a good idea to mark the line in very faintly in pencil, then to go over it again when you are completely happy with it.