

## How Science Works

**Independent variable** - the one thing you change (you can't change time). This variable decides what graph you draw.

**Dependent variable** - what you measure to see if it has changed

**Control variables** - all the other things you keep the same (you can't keep time the same, if never stops, you can only control the time (stop)) so that you are sure only the IV is affecting the DV.

**Control** - something in which the IV is not changed, so you can see if the effect would have happened anyway.

### What type of Variables are the 3 above?

**Continuous** - these are numbers which continuously go up or down. For example: height can be 1.0m or 1.1m or 1.2m or 1.3m.

**Discontinuous = Discrete** - these are whole numbers and you cannot have numbers in between (including halves)...these ones are NOT discrete variables (it's categorical) as your shoe sizes are either 4, 4.5, 5, 5.5, 6 and so on...In discrete variables you cannot have decimal points.

**Discontinuous = Categorical** - these are things that can be put into groups e.g. colours, yes or no answers.

### How to work out an average/mean

Add your numbers together then **divide** by how many things you add together.

- Remember don't include anomalous results.
- If all your results are different you need to do it again. If they are still different then there is obviously no correlation (pattern).

**Anomalous result** - 1 result that is completely different from the rest. You do not include that in your average. An anomalous result is more than 30% away from the mean.

You draw **line of best fit** on graphs because they show patterns in the results clearly. They also show up anomalous results. So if you get an anomalous result, you don't necessarily have to repeat it, as the line of best fit already shows up the pattern (but it is good practice to repeat it)...Line of best fits also allow you to test unknown quantities so you can test the reliability of your results.

**Reliability** - a reliable experiment can be repeated by another scientist (or you) and they will make the same conclusion...So for reliability you should **REPEAT** your results