CIE Physics IGCSE

General practical skills

Recording observations and measurements

Measurements and Observations

Two methods of recording data are **observations** and **measurements**. Both can be recorded using different methods e.g. tables, written statements, drawings, tally charts. When using tables ensure you use a ruler and a pencil, and include headings with units.

Observations

Observations are a more **qualitative** form of recording results. This involves writing down **exactly** what you **see** happening during the experiment. There is **always** something to observe; even if nothing happens you can write 'no change'. A good tip is to use four of your **senses** when recording observations;

1. What can you **see**? This is the most obvious one, and therefore easiest to spot. Does anything change colour? Is there fizzing?
2. What can you **smell**? Is there a nice smell, like fruit? Or a less pleasant smell, like rotten eggs?
3. What can you **feel**? Is something getting warmer, or colder?
4. What can you **hear**? This is the trickiest one as experiments rarely produce noise. Listen carefully, and you may hear popping or whistling if gas is being produced.

Measurements

Measurements are a more **quantitative** form of recording results. This involves exact numbers, either obtained from apparatus such as scales, or counted frequencies. Some examples of things you can measure include weight, length, volume (of liquid or gas), temperature, pH.

It is important to be as **accurate** as you can when taking measurements; ask someone else to check if you are not sure. Record results to the **same precision** as your equipment e.g. if using a measuring cylinder with $1cm^3$ increments, do not record $0.5cm^3$. Always use SI units, e.g. millimetres not inches.

Recording Measurements

When conducting an experiment, you must **record all measurements taken** (e.g. temperature, mass or time), and in most cases this should be **presented in a table**. This table should have the independent variable in the left-hand column and the dependent variable should go along the top, with the recorded data filling the main body of the table. The headings should be in the format **'quantity/unit'**.

An example table is shown below:

	Potential Difference / V (dependent variable)			
Length / m (independent variable)	**Trial 1**	**Trial 2**	**Trial 3**	**Mean**
0.00	0.00	0.00	0.00	0.00
0.10	0.09	0.15	0.12	0.12
0.20	0.22	0.22	0.25	0.23
0.30	0.30	0.35	0.40	0.35
0.40	0.51	0.43	0.47	0.47