CAIE Physics IGCSE

A03 - Experimental Skills

Practical Flashcards

What safety precautions should be taken when using a bunsen burner?

What safety precautions should be taken when using a bunsen burner?

- Place on a heat proof mat
- Clip back any loose hair or clothing
- Have the safety flame on when not in use
- If the flame it goes out, turn off the gas immediately
- Avoid touching during and immediately after use

What safety precautions should be taken when working with circuits?

What safety precautions should be taken when working with circuits?

- Turn off the power supply when setting up the circuit or making any component changes
- Avoid touching components during or immediately after use
- Ensure all wires are properly insulated

What safety precautions should be taken when using hanging masses?

What safety precautions should be taken when using hanging masses?

- Don’t stand directly below where the masses are hanging in case they fall
- Place a padded bucket below the masses
- Wear appropriate footwear

What safety precautions should be taken when using springs?

What safety precautions should be taken when using springs?

- Wear safety glasses in case the spring snaps or comes loose
- Don’t overload the spring - once it begins to deform plastically, stop increasing the load

What safety precautions should be taken when working with hot water?

What safety precautions should be taken when working with hot water?

- Take care when pouring in order to prevent splashes and scalds
- Ensure water doesn't end up near electrical equipment

What are the three main sections required in a risk assessment?

What are the three main sections required in a risk assessment?

1. Hazards
2. Risks
3. Precautions

Which side of a results table should the independent variable go in?

Which side of a results table should the independent variable go in?

The independent variable should go on the left-hand side of any results table.

What is an independent variable?

What is an independent variable?

The variable that is altered by the experimenter.

What is a dependent variable?

What is a dependent variable?

The variable that is measured for each change made to the independent variable.

What is a control variable?

What is a control variable?

A variable that may affect the dependent variables and so must be kept constant throughout the experiment.

How should units be labelled when using a table?

How should units be labelled when using a table?

They should follow the heading with a forward slash, e.g ‘Mass / kg.’

What is precision?

What is precision?

How close a value is to the mean value of the data.

What is accuracy?

What is accuracy?

How close a value is to the **true value.**

Give three types of experimental error

Give three types of experimental error

1. Systematic error
2. Random error
3. Zero error

What is systematic error?

What is systematic error?

A systematic error is where all the measurements are a fixed value away from their true value each time.

What is random error?

What is random error?

A random error is an error that is unpredictable and uncontrollable.

What is zero error?

What is zero error?

A zero error is an error in which the measured value does not read zero when it should. It is a type of systematic error, as it causes the same discrepancy every time.

How can you reduce the likelihood of a zero error?

How can you reduce the likelihood of a zero error?

Ensure all measuring equipment is calibrated and properly zeroed before use.

How can you deal with random errors?

How can you deal with random errors?

Random errors normally present themselves as anomalies (results which do not fit the trend) so should be discarded.

When graphing results, on which axis should the independent variable go?

When graphing results, on which axis should the independent variable go?

The x-axis.

What rule of thumb should be used when drawing a line of best fit?

What rule of thumb should be used when drawing a line of best fit?

There should be an equal number of data points above the line as there are below it.

How do you calculate the gradient of a line of best fit?

How do you calculate the gradient of a line of best fit?

Gradient = Change in Y / Change in X

What is an anomalous result?

What is an anomalous result?

A result that doesn't fit the pattern of the rest of the data and doesn't agree with repeat readings.

Why are repeat readings important?

Why are repeat readings important?

They help identify anomalous results and allow you to calculate average values.

How should you deal with anomalous results?

How should you deal with anomalous results?

If you discover an anomalous result, you should try to find a the cause of the result and then, if appropriate, discard it before carrying on with further analysis.

Why should instruments with the greatest resolution possible be used?

Why should instruments with the greatest resolution possible be used?

They help to maximise the precision of the obtained results.