CAIE Physics A-Level

Paper 5: Planning

Flashcards

What is the independent variable?

What is the independent variable?

The independent variable in an experiment is the variable that is being deliberately changed.

What is the dependent variable?

What is the dependent variable?

The dependent variable in an experiment is the variable that is measured and changes as a result of the independent variable changing.

What are control variables?

What are control variables?

Control variables in an experiment are the variables that need to be kept constant.

What are the basics you should you include when describing your method?

What are the basics you should you include when describing your method?

- How the independent variable is varied.
- How to measure both variables.
- How to keep control variables constant.
- Arrangement of apparatus in a clear labelled diagram.
- A description of the procedure.

What level of detail should you include in your procedure?

What level of detail should you include in your procedure?

A method should include as much detail as possible, including repeats and a second control variables that have to be kept constant.

What is an oscilloscope?

What is an oscilloscope?

An instrument that displays waveforms of a signal on a graphical display. The y-axis typically shows voltage and the x-axis shows time.

If the time-base is switched off, what will the oscilloscope trace look like for an AC supply?

If the time-base is switched off, what will the oscilloscope trace look like for an AC supply?

If the time-base is switched off, an AC supply will produce a straight vertical line on the oscilloscope screen.

How can you increase the number of complete wavelengths that are visible on the oscilloscope screen?

How can you increase the number of complete wavelengths that are visible on the oscilloscope screen?

The time-base can be adjusted so that the increments are larger. This will result in more wavelengths being shown.

What should you adjust if the maximum voltage isn't visible on the oscilloscope screen?

What should you adjust if the maximum voltage isn't visible on the oscilloscope screen?

The volts per division can be increased so that each increment represents a larger voltage.

How can the time period of an AC supply be determined from an oscilloscope trace?

How can the time period of an AC supply be determined from an oscilloscope trace?

The time period can be obtained by measuring the peak to peak distance on two adjacent waves. This distance can then be compared with the time base to scale it to the correct time period.

How can the frequency of an AC supply be calculated from its time period?

How can the frequency of an AC supply be calculated from its time period?

The frequency of a wave is equal to the inverse of its time period.

How should the oscilloscope be scaled to measure a voltage with the greatest accuracy possible?

How should the oscilloscope be scaled to measure a voltage with the greatest accuracy possible?

The volts per division should be adjusted so that the waveform fills the screen, without the maximum voltage exceeding the scale.

How can the peak voltage be determined from an oscilloscope trace?

How can the peak voltage be determined from an oscilloscope trace?

The peak voltage can be obtained by measuring the number of divisions from the peak of a waveform down to the trough. This should then be multiplied by the ‘volts per division’ and halved

What is the amplitude of a waveform?

What is the amplitude of a waveform?

The amplitude of a waveform is the maximum displacement from the equilibrium position of a wave.

What is a light gate?

What is a light gate?

A light gate is a detector consisting of an infrared transmitter and receiver. The receiver gives information of whether or not the infrared beam is obstructed.

How do you use light gates to measure time?

How do you use light gates to measure time?

Set up a pair of light gates attached to a data logger to detect a moving object.

How do you use light gates to measure velocity?

How do you use light gates to measure velocity?

Use a pair of light gates set at a known distance. The average velocity of an object travelling between them can be determined as distance / time.

How do you use light gates to measure acceleration?

How do you use light gates to measure velocity?

Acceleration is change in velocity.

A pair of light gates with a known distance between them will give an average velocity between those points.

Multiple pairs of light gates at known intervals can be used to see how the velocity varies over time.

What do you have to use sensors with to collect data?

What do you have to use sensors with to collect data?

A data logger

When stating safety considerations, what should you include?

When stating safety considerations, what should you include?

1. A risk
2. A precaution for that risk

What is the meaning of risk?

What is the meaning of risk?

A risk is any dangerous situation

What is the meaning of precaution?

What is the meaning of precaution?

A precaution is a step taken beforehand to reduce the chance of a risk happening.

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