Uncertainty:

When require to calculate the uncertainty of a single entity

1. Find the range
2. Over the estimated value
3. For the sum of the uncertainty add them up
4. If it is shown as X^2 then uncertainty x2

Involvement of uncertainty between related objects

1. The first objects’ uncertainty is given.
2. Find the Range
3. Use the range to find the second objects’ uncertainty.

Identification of sources of error

Error is from the measurement like

Parallex error

Human error

And measuring tools’ accuracy

Accuracy of different common measurement tools

Meter Rule 0.5cm

Vernier caliper 0.05mm

Micrometer screw gauge 0.01mm

The slope of a graph

Large triangle – at least half the plotted length

Percentage Difference

% Diff correctly calculated

Comments on accuracy

e.g. %D is comparable with expected uncertainties

Most plots lie very close to the line of best fit

Common Measuring Tools

Flask

Beaker

Stand and Clamp

Weights

Wires

Resistors

Capacitors

Voltmeter and Ammeter

Meter Ruler

Ticket tape and ticket tape timer

Light Gates

Independent Variable and Dependent Variables

Independent Variables:

An independent variable is the variable that is changed or controlled in a scientific experiment to test the effects on the dependent variable.

Dependent Variables:

A dependent variable is the variable being tested and measured in a scientific experiment.