CIE Biology International A-level

Evaluation of Methods and Data

Practical Flashcards

What is a systematic error?

What is a systematic error?

An error that is consistently repeated throughout the experiment.

State an example of a systematic error.

State an example of a systematic error.

Faulty equipment used

Flawed experiment design

What is a random error?

What is a random error?

An unpredictable error with no patterns.

Do systematic errors affect the trend of results and why?

Do systematic errors affect the trend of results and why?

No, the error affects each result in the same way.

Do random errors affect the trend of results and why?

Do random errors affect the trend of results and why?

Yes, because they do not affect all the results in the same way.

What is the uncertainty in a measurement?

What is the uncertainty in a measurement?

+ or - half of the smallest division in the measuring apparatus.

How can the reliability of results be increased?

How can the reliability of results be increased?

By repeating the practical and taking a mean.

Why is reliability increased by repeating the practical?

Why is reliability increased by repeating the practical?

Allows the identification of anomalies.

Minimise the effects of anomalies when taking a mean.

How can temperature be better standardised?

How can temperature be better standardised?

By using a thermostatically-controlled water bath.

How can the accuracy of measurements be improved?

By using apparatus with smaller divisions, eg. a vernier calliper instead of a ruler.

How can the accuracy of an estimate be improved?

How can the accuracy of an estimate be improved?

By making more repetitions at smaller intervals around the estimated value.

Why are percentage changes sometimes calculated rather than actual changes?

Why are percentage changes sometimes calculated rather than actual changes?

To allow comparison and show proportional change, when the starting point is not the same.

State the formula for percentage error.

State the formula for percentage error.

$$\left(\frac{\text{New value - Original value}}{\text{Original value}} \right) \times 100$$