Analysis and Evaluation

Hypothesis and Variables

Derive an equation for the hypothesis

_____

_____

_____

_____

_____

State the independent variable

_____

State the dependent variable

_____

State all quantities in the equation above which must be deliberately held constant

_____

_____

Hence state the proportionality relationship (if any)

_____

State at least one factor that may be difficult to control, and give reasons why it could be difficult.

_____

_____

_____

Results and Calculations

If necessary, add additional column(s) to the table of results to present the two sides of the proportionality.

Plot a graph of this relationship. Include a line of best fit.

Calculate the slope of the line of best fit

_____

_____

_____

Calculate the expected slope

_____

_____

_____

Hence calculate the percentage error of the slope

_____

_____

_____

Precision and Random Error

State whether there is a large or small amount of scatter in the results.

_____

Hence state whether the measurements were of low or high reliability.

_____

Describe one possible source of random error.

_____

_____

_____

Explain whether the effects shown on the graph are consistent with this possible source.

_____

_____

Describe how the effect of random error can be reduced.

_____

_____

Accuracy and Systematic Error

Explain what the y-intercept of the line of best fit is expected to be.

_____

_____

_____

Hence state whether there is a large or small amount of shift in the results.

_____

Taking into account both shift and percentage error, state whether the measurements are of low or high accuracy.

_____

Describe one possible source of systematic error.

_____

_____

_____

Explain whether the effects shown on the graph are consistent with this possible source.

_____

_____

_____

Describe how systematic error can be detected.

_____

_____

State whether the hypothesis was supported or not supported by the results.

_____

Explain how valid this conclusion is for this experiment, and to what extent it would apply in other situations.

_____

_____

_____