EXPLORATION

Scientific Inquiry Format

Purpose/Aim
- **Describe** a focused problem or research question to be tested by a scientific investigation.

To determine the effect of the (independent variable) on the (dependent variable) in (subject).

Background
- The background information is relevant and provides information to enhance the understanding of the context of the investigation.

Hypothesis
- **Outline** a testable hypothesis (prediction) that answers the purpose with an **explanation** using correct scientific reasoning.

When the (independent variable) increases/decreases the (dependent variable) increases/decreases because (scientific reason).

Variables
- **Independent Variable** - the variable that is changed or tested during the inquiry.
- **Dependent Variable** - the responding variable; the variable that may change as a result of a change in the independent variable, the factor that is measured during the inquiry.
- **Controlled Variables** - variables that could change, but are kept constant (the same) during the inquiry.

Materials
- A detailed list of **materials** required during the inquiry, including measurements and quantities.

Method
- A description of the **step-by-step instructions** for carrying out the inquiry. The method should be **logical, complete and safe**.
- Include a scientific diagram of the set-up, with dimensions in 2D with labels.
- **Describe** how to manipulate the variables, and **describe** how **sufficient, relevant** data will be collected. This should include repetition, to allow sufficient data to be collected and analysed.
- Remember to give due consideration to safety, e.g. lab coats, hair and safety glasses...
ANALYSIS

Data Collection

• The data and information collected during the inquiry (data tables, diagrams) including detailed headings with relevant units etc. All tables/graphs should be numbered with descriptive titles.

Analysis

• **Collect, organize, transform** and **present** the collected data using narratives, charts, graphs or tables.
• **Interpret** the data and **describe** the results using **correct scientific reasoning** by identifying trends, patterns or relationships in the data.

EVALUATION

• **A detailed conclusion** is described and justified relevant to the research question and supported by the data presented and relevant scientific explanation.

• **Discuss** the validity of the hypothesis and the method based on the outcome of the investigation. Discuss whether your findings support or do not support the stated hypothesis.

• **Discuss** the strengths and weaknesses of the investigation.

• **Describe and discuss realistic** improvements or extensions to the method that would benefit the investigation.