**Year 10 Open Investigation Rubric**

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  | **Not achieved** | **Limited** | **Satisfactory** | **Good** | **Excellent** |
| --- | --- | --- | --- | --- | --- |
| **Variables** | No variables identified correctly | One variable has been identified correctly | Can identify both independent and dependent variables | Can identify the independent and dependent variables and one controlled variable | Can identify the independent and dependent variables and at least two controlled variables |
| **Hypothesis** | No hypothesis written | Identifies a question or statement relevant to the aim of the experiment but does not mention the appropriate variables | The hypothesis uses the independent and dependent variable but does not write a testable statement. | The hypothesis relates the independent and dependent variable in a testable statement with no specific relationship identified. | The hypothesis relates the independent and dependent variable in a testable statement with specific relationship identified. |
| **Safety and Ethics** | Not considered | Not considered | Describes how ethics and safety were considered | Describes how ethics and safety were considered, providing examples | Describes how ethics and safety were considered, providing examples of how safety issues were mitigated. |
| **Materials and Method** | No method written and no materials listed. | A brief method of the experiment written with some materials listed | A suitable, logical experimental method written to enable collection of results. Students will identify how some variables are controlled and most materials are listed. | A suitable, logical experimental method written to enable collection of reliable results. Students will identify how they control most variables and all relevant materials listed. | The method is written clearly, logically and in sufficient detail that it can be replicated without issue. Students will describe how they will control, change and measure all appropriate variables and list all relevant materials. |
| **Data collection** | No data collected or presented in table format | Presents data in a table that is unclear or insufficient | Presents data using simple representations that may be missing appropriate headings and/or key details. | Results are presented in a clear and organised manner, with a correctly formatted table that includes appropriate headings but may be missing units | Results are presented in a clear and organised manner, with a correctly formatted table that includes appropriate headings and units. |
| **Processing of Data** | No results have been provided | The results graph is drawn, however is the wrong type, missing title, axis labels, plotted incorrectly.  **OR**  Observations are unclearly presented | The results graph is drawn using the correct type of graph. Plotted correctly, missing multiple of title, axis labels and units.  **OR**  Observations are clearly presented but not explained | The results graph is drawn using the correct type of graph. Plotted accurately, missing only one of the following – title, axis label, units  **OR**  Observations are clearly presented and briefly explained | The results graph is drawn using the correct type of graph. Plotted accurately with an appropriate title, axis labels and units.  **OR**  All observations are clearly presented and explained in detail |
| **Discussion** | Questions and discussion of results have not been attempted | General statements lacking detail with no mention of data collected. | General statements identifying simple relationships between variables using data collected. Identifies errors or inconsistent data. | Detailed statements identifying relationships between independent and dependent variables using data collected. Explains why there are errors or inconsistent data. | Detailed statements identifying complex relationships between independent and dependent variables using specific quantitative data collected. Explains why specific errors or inconsistent data occurred. |
| **Improvements** | No issues have been identified or recorded | Identifies limited problems in conducting the investigation. Provides irrelevant suggestions. | Identifies issues in conducting the investigation and suggests general improvements to the method, including selection of equipment. | Identifies issues in conducting the investigation and suggests general improvements to the method, including selection of equipment and better control of variables. | Identifies issues in conducting the investigation and suggests specific improvements to the method in detail of how to conduct the experiment multiple times, including selection of equipment and better control of variables. |
| **Conclusion** | No conclusion has been provided | A general statement/argument, using limited or no evidence. | A general statement/argument providing simple evidence | A well-developed statement/argument providing scientific evidence and language | A well-developed statement/argument providing detailed scientific evidence and language |