

**Experimental Report Booklet**



**Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Class \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Teacher \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Validity, Accuracy and Reliability.**

A summary guide.

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| **Reliability, Accuracy and Validity**  |
| **SECONDARY SOURCES**  | **FIRST-HAND INVESTIGATIONS**  |
| The data in a source are VALID if  they have been gathered using appropriate methods  they relate to the hypothesis or problem  | A method is VALID if  the measurements are actually measuring what you intend them to measure  it incorporates suitable equipment, controlled variables, appropriate measuring procedures etc  |
| **A secondary source is RELIABLE if**  the information is not biased  it has been written by a qualified person  it is on a reputable site, i.e. .gov .edu  it is current (check date)  it refers to data and statistics from valid first-hand investigations  | **Results are RELIABLE if**  the experiment is repeated the results are the same (within an acceptable margin of error). *Repetition will only* ***determine*** *reliability it will NOT improve it.* *Reliability can be improved by carefully controlling all variables (except the experimental variables!!)* *Another term often used for reliability is REPRODUCIBILITY.* **Repetition will only determine reliability (it will NOT improve it). Measurements can be reliable without being valid. However they cannot be valid unless they are reliable!**  |
| **The information in a source is ACCURATE if**  the information can be substantiated in more than one reliable source  | **Results are ACCURATE if**  the design of the experiment is valid and the sensitivity of the equipment used  they are close to the true value of the quantity being measured.  they can be substantiated in secondary sources *Accuracy depends on the design of the experiment (ie the validity of the method) and the sensitivity of the instruments used.*  |

**Prac. No. \_\_ Title: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Date\_\_\_\_\_\_\_**

**Aim (Write a brief description about what you are trying to find out.)**

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**Background Information ( state how does this experiment link to the concepts learn in class.)**

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**Hypothesis**

1. **(Write a statement to explain a fact or observation. It is this hypothesis you will test through this experiment.)**

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1. **(Write a brief statement of what you predict or expect to observe during this experiment.)**

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**Apparatus (list all the equipment used in this experiment. Include size of equipment eg 250ml beaker, and amount of material used eg 5g of copper sulphate powder.)**

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**Safety (In the table below write the risks of the experiment and how you can prevent the risks from occurring.)**

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| **Risk** | **Prevention** |
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**Method**

1. **(Describe the method or process you used to complete the experiment.) All steps should being with a verb (action or doing word).**

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1. **Identify the independent variable (changed), dependent variable (measured) and control variables (kept the same) used in your experiment and list them in the table.**

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| **Variable** |  |
| **Independent variable** |  |
| **Dependent variable** |  |
| **Control variable** |  |

1. **Draw a clearly labelled scientific diagram for this practical, if required. (Use only a pencil and ruler.)**

**Results**

***Observations* (Describe what you saw during your experiment here.)**

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***Tabulate* the results, if required. (Include titles and units.)**

**Table title: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Independent variable Dependent variable**

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**Draw a diagram of your observations, if required (eg a plant cell) (label all parts, use a pencil and ruler only.)**

**Title: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Magnification \_\_\_\_\_\_\_**

***Graph* the results, if required. (Select the most appropriate graph type, eg line or column graph. Include graph title, x and y axis label and units. An appropriate scale should be used to spread information evenly along the x axis and y axis. A pencil and ruler must be used.) *Remember*: The dependent variable is on the vertical (y) axis. The independent variable is on the horizontal (x) axis.**

******

y

x

**Discussion**

1. **What do the results tell you?**

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1. **Are there trends? If so explain them.**

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1. **What were the experimental errors?**

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1. **What could be done next time to improve the experiment?**

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1. **Are your results reliable? Justify your reasoning.**

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1. **Are your results accurate? Justify your reasoning.**

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**Conclusion**

**(The conclusion is a brief statement which explains if you achieved your Aim and if your results support or disprove your Hypothesis.)**

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