

What is required in an investigation report.

A report on an investigation has two parts.

Part1 - INQUIRING AND DESIGNING

Title – A short title that clearly outlines the nature of the investigation.

Outline the problem or question that is to be investigated - This should take the form of a sentence or two explaining why this investigation is being conducted and the question or problem that is being investigated.

Variables

State the variable you will change and the variable you will measure:

- **independent** variable
- **dependent** variable
- **controlled** variables

Hypothesis: Write a possible prediction to the question or problem you have outlined above.

It is usually written as a complete sentence and is an “Ifthen, because” statement. The hypothesis must be able to be tested. It also includes the dependent and independent variables.

Hypothesis: IF the _____ THEN the _____
will _____ Because _____

Materials

Make a detailed list of materials and equipment as well as quantities that will be used during this investigation.

For example

- 3 X 500mL beakers
- 200 mL of distilled water
- 20.0 g of white crystalline sugar
- Stop watch

Procedure

A set of sequential and logical set of steps, in point form. This is pretty much like a detailed recipe, as shown on the right of a scone recipe, of how someone can follow to repeat the investigation exactly as it was conducted in the first place.

The procedure should have a section on the risk assessment and steps taken to minimise any risk.

Step 1 Preheat oven to 200 degrees C. and lightly grease a baking sheet.

Step 2 In a large bowl, combine flour, sugar, baking powder, and salt. Mix the egg and milk in a small bowl, and stir into flour mixture until moistened.

Step 3 Turn dough out onto a lightly floured surface, and knead briefly. Roll dough out into a 1/2 inch thick round. Cut into 8 wedges, and place on the prepared baking sheet

Step 4 Bake for 15 minutes in the preheated oven, or until golden brown.

Part 2 – PROCESSING AND EVALUATING

This part involves collecting data and processing it in visible formats such as graphs and tables. This often helps to find trends in the data that may or may not support the hypothesis. Part 2 of the report contains the following.

Observations and Raw Data: This section contains a summary of your observations, measurements and any other data collected during the investigation. This is usually in the form of tables, graphs, calculations, notes or diagrams. All of which should be labelled appropriately.

What should a good graph have?

A good graph should:

- be plotted on *graph paper*.
- have a clear **title** in the form of dependent variable vs. independent variable.
- all axes are ruled and highlighted so that they appear darker than the rest of the grid or plotted lines.
- axes are labelled with the **variable name** and its **units**. Independent variable is placed on the x-axis while the dependent variable is placed on the y-axis. Have properly scaled axes that fit in the space provided by the graph paper, in other words to do not make the graph too small. Each axis has units that increase in equal increments.
- all data points are accurately plotted and a **line of best fit** is plotted.

What should a good table of data have?

It is always good practice to think about what the data table will look like before data collection starts. Data can be measurements or observations (pictures, description, video)

A good table should:

- have a title.
- Independent variable goes on the left column while the dependent variable goes on the right columns.
- each column is clearly labelled with the name of the variable and its units
- units appear once only at the top of the column.

Temperature °C	Trial 1 Time(sec)	Trial 2 Time(sec)
4	55	57
10	49	50
25	30	28
65	15	17
80	5	6

Patterns in the data: This section interprets the data and explains any patterns visible in the relationship between the dependent and independent variables. Trends are described using words such as “increase” or “decrease”, and phrases such as “the data shows...” or “as the independent variable... changes”.

Conclusion – This section contains the following.

- Restate the overall purpose of the experiment referring to the dependent and independent variables.
 - A statement of the major findings (trends) and discuss how the data supported or did not support the hypothesis giving reasons with reference to the data.
 - Without restating the procedure identify possible sources of error with the procedure that may have taken place while collecting the data and offer suggestions for improvements to the procedure.
- Do not write the conclusion in point form but offer the answers to the points above in the conclusion.

Lab Report Rubric (MYP YR 3)

Criterion B: Inquiring & Designing

IB Score: _____ Grade: _____

- i. describe a problem or question to be tested by a scientific investigation
- ii. outline a testable hypothesis and explain it using scientific reasoning
- iii. describe how to manipulate the variables, and describe how data will be collected
- iv. design scientific investigations

Level	<i>Descriptor – The student is able to:</i>
1-2	i. state a problem or question to be tested by a scientific investigation, with limited success ii. state a testable hypothesis iii. state the variables iv. design a method, with limited success
3-4	i. state a problem or question to be tested by a scientific investigation ii. outline a testable hypothesis using scientific reasoning iii. outline how to manipulate the variables, and state how relevant data will be collected iv. design a safe method in which he or she selects materials and equipment
5-6	i. state a problem or question to be tested by a scientific investigation ii. outline and explain a testable hypothesis using scientific reasoning iii. outline how to manipulate the variables, and outline how sufficient, relevant data will be collected iv. design a complete and safe method in which he or she selects appropriate materials and equipment
7-8	i. describe a problem or question to be tested by a scientific investigation ii. outline and explain a testable hypothesis using correct scientific reasoning iii. describe how to manipulate the variables, and describe how sufficient, relevant data will be collected iv. design a logical, complete and safe method in which he or she selects appropriate materials and equipment .

Criterion C: Processing & Evaluating

- i. present collected and transformed data
- ii. interpret data and describe results using scientific reasoning
- iii. discuss the validity of a hypothesis based on the outcome of the scientific investigation
- iv. discuss the validity of the method
- v. describe improvements or extensions to the method

Level	<i>Descriptor - The student is able to:</i>
1-2	i. collect and present data in numerical and/or visual forms ii. accurately interpret data iii. state the validity of a hypothesis with limited reference to a scientific investigation iv. state the validity of the method with limited reference to a scientific investigation v. state limited improvements to the method
3-4	i. correctly collect and present data in numerical and/or visual forms ii. accurately interpret data and describe results iii. state the validity of a hypothesis based on the outcome of a scientific investigation iv. state the validity of the method based on the outcome of a scientific investigation v. state improvements to the method that would benefit the scientific investigation
5-6	i. correctly collect, organize and present data in numerical and/or visual forms ii. accurately interpret data and describe results using scientific reasoning iii. outline the validity of a hypothesis based on the outcome of a scientific investigation iv. outline the validity of the method based on the outcome of a scientific investigation v. outline improvements to the method that would benefit the scientific investigation
7-8	i. correctly collect, organize, transform and present data in numerical and/or visual forms ii. accurately interpret data and describe results using correct scientific reasoning iii. discuss the validity of a hypothesis based on the outcome of a scientific investigation iv. discuss the validity of the method based on the outcome of a scientific investigation v. describe improvements to the method that would benefit the scientific investigation.

Discuss - Offer a considered and balanced review that includes a range of arguments, factors or hypotheses. Opinions or conclusions should be presented clearly and supported by appropriate evidence

Describe - Give a detailed account or picture of a situation, event, pattern or process

Outline - Give a brief account

State - Give a specific name, value or other brief answer without explanation or calculation