

Conducting a Scientific Investigation

Investigating

Posing Questions

- Can be answered by gathering evidence

Developing a Hypothesis

- Statement about the outcome of the experiment
- Must be able to be tested

Designing an experiment

- Remember to control the variables
- Factor you change is called the manipulated variable or independent variable
- Factor that changes as a result of the manipulated variable is called the responding variable or dependent variable
- Include more than one trial in testing

Interpreting Data

- Observations and data taken during an experiment must be analyzed
- Most of the time you will use a data table and/or graph
- Does the data support your hypothesis?
- Does the data point out a flaw in your experiment?
- Do you need to collect more data?

Drawing Conclusions

- Sums up what you have learned from the experiment
- Was your hypothesis supported or not? Explain.

Writing a Lab Report

Title

Title of lab, name, class period, date (partner)

Purpose

What question or problem are you trying to answer?
Must be written in the form of a QUESTION.

Hypothesis

Describes possible outcomes of the experiment
Answers the question
May be written as an If...then statement or as a statement or multiple statements

Materials Needed

A list of everything you will need to complete the experiment
Include writing, coloring, and measuring instruments as well as graph paper

Methods

A detailed, step-by-step set of instructions needed to complete an experiment
Must be a numbered list which tells the steps you used to carry out the experiment

Data and/or Data Table

Include data you take during the experiment
Should not include graphs averages, or discussion of data

Analysis

Graphs, averages, and calculations made in order to explain data

Conclusion (2 paragraphs)

1. A summary of the data collected during the lab and how the data was collected. This paragraph should establish a relationship between the variables. Also, include if your hypothesis was supported. You should discuss any key concepts from the lab.
2. What were the problems with the experiment? If you were to do this lab again, what would you do differently to make improvements? What new questions do you have that could be tested in the future? How is this experiment important to life