

Name: _____

Section: _____

Design an Experiment

Recently, we completed an experiment and discussed various aspects related to the scientific method. For this project you will apply your understanding of these concepts. You will need to:

✗ Identify a problem/question

○ Option #1

- Choose one of the listed problems/questions provided below:

1. *Do all objects fall at the same rate?*
2. *Does the color of a word impact one's ability to read it correctly?*
3. *Does air pressure impact a ball's ability to bounce?*
4. *Does salt impact the freezing point of water?*
5. *Do more expensive products perform their intended function better?*

○ Option #2

- Choose a problem/question that you find interesting and worthy of an investigation. It is important to understand that when choosing a problem/question, you must be able to obtain the necessary materials and execute an experiment on the topic in a short period of time.

✗ Collect Information

- Gather as much information about your problem/question as possible to assist you as you begin to develop a hypothesis and subsequently an appropriate experiment. Collection of information is extremely important because it will help you form a reasonable hypothesis.

✗ Form a Hypothesis

- After considering your research and how you would like to proceed with your topic, you should be able to propose a hypothesis identifying any relationship or solution to your problem. It is this hypothesis that will help guide your experimentation.

✗ Test your Hypothesis

- Design and conduct a controlled experiment, with repeated trials, that will provide you with the necessary data to support (or not) your hypothesis. It is important to have well written procedures as others in the scientific community will want to replicate your experiment. Additionally, you should be able to identify the following components of your experiment: independent variable, dependent variable, control, and constants.

✗ Accept or Reject your Hypothesis

- In the conclusion of your lab report, acknowledge whether the data gathered during experimentation has successfully supported your hypothesis or has not supported it.

✗ Report your Results

- Share with your teacher and classmates your problem, information, hypothesis, experimentation, and conclusion.

Please keep in mind that this is a traditional approach to being scientific and investigating a question or problem does not necessarily require all of these steps, or for them to be performed in a particular order.

COMPONENTS TO BE GRADED

1. Due date requirements (homework grades - 1 point each)
2. Lab report typed according to the Lab Report Format sheet (80 points)
3. Mini-presentation that provides an overview of your experiment, the results, and your conclusions. The presentation must have an appropriate visual aid (PPT., poster, video) and you should be able to answer any questions related to your experiment. (20 points)

DUE DATE SCHEDULE

- ✓ Identification of problem or topic of interest - _____
- ✓ Information on problem or topic of interest - _____
- ✓ Hypothesis - _____
- ✓ Materials & Procedures - _____
- ✓ Data collected from experiment - _____
- ✓ Lab Report - Rough Draft (all components) - _____
- ✓ Lab Report - Final Draft (all components) - _____
- ✓ PPT/poster/video - _____
- ✓ Presentation - _____