

Physics

Formal Laboratory Report

Every science student will be required to submit a formal laboratory report for particular experiments.

The report will have the following format:

- | | |
|------------------|----------------------|
| I. Title | V. Procedure |
| II. Introduction | VI. Data and Results |
| III. Purpose | VII. Analysis |
| IV. Hypothesis | VIII. Conclusion |

I. Title

What is the name of your experiment?

Example: Baking a Cake Without Flour

II. Introduction

What do we know already?

This section should include a discussion of related information that you know from class. It should engage the reader's interest in your topic.

Example: Most people enjoy a good cake for dessert now and then. Anyone who's baked a cake knows that flour is one of its main ingredients. We've heard that cakes can be made without flour and are quite tasty. However, we don't have a recipe for such a cake, so we are going to attempt to make our own recipe.

III. Purpose

What is the problem we are trying to solve?

This section should clearly explain the objectives of the experiment.

Example: In our experiment, we will determine whether a standard cake recipe minus the flour will produce an acceptable dessert.

IV. Hypothesis

What do we expect to see?

A hypothesis should be a concise statement of your expected results based on information you already have.

Example: We think that when we remove the flour from the standard cake recipe, we'll end up with a flat but tasty cake.

V. Procedure

What will we do?

The procedure should describe the laboratory procedures that were carried out in enough detail so that anyone could repeat the experiment with no additional directions from the original investigator. This description should include all materials used and steps taken.

Example: We baked two cakes during our experiment. For our control, we baked a cake following a normal recipe. We used the Double Fudge Cake recipe on page 292 of the Betty Crocker Cookbook (see bibliography). For our experimental cake, we followed the same recipe but left out the flour. We first obtained a 2 quart mixing bowl. etc.

VI. Data and Results

VII.

What happened in our experiment?

The data and results section should contain all your observations and raw data as well as any calculations that you performed. The data should be presented in tables and graphs when appropriate, and each figure should be appropriately titled. Every number should have the correct units attached and be clearly labeled. No analysis of results should be presented in this section.

Example: Our control cake, which we cooked for 25 minutes measured 4 cm high. Eight out of ten “tasters” that we picked at random from the class found it to be an acceptable dessert. After 25 minutes of baking, our experimental cake was 1.5 cm high and all ten “tasters” refused to eat it because it was burnt to a crisp. Etc...

VIII. Analysis

IX.

What does our experiment tells us about our question?

This section should include a discussion of the results obtained. Start with a brief summary of the results and then explain what the results tell you about the original question. Use specific examples from your data to support your reasoning.

Example: Since 8 out of 10 tasters liked the control cake, we can infer that there was no problem with the original recipe. Therefore, the fact that the experimental cake burned is a result of the absence of flour. Etc...

VIII. Conclusion

What did we learn?

Use this section to “sum up” your experiment. Discuss whether or not your results support your hypothesis. Also, discuss any experimental errors which affected your results and suggest how the experiment could be improved. Mention any new questions the experiment raised for you.

Example: Since the experimental cake burned, our results did not support our hypothesis. We think that the cake burned because it had less mass, but cooked for the same amount of time. We propose that the baking time be shortened in subsequent trials.