

Sample Report

INTRODUCTION

You must share the results of your experiment. All reports require a *title*, *abstract*, *results*, *sample calculations*, and *discussion/conclusion*. Each part is discussed in detail below. Sample reports are given at end of this section (they are for fairly simple experiments and are pictures of the minimum report).

REPORT GUIDELINES

When you write your report, be thorough but concise — long isn't necessarily good. Summarize all results in a way that makes these results clear to the reader. Give the average value of each quantity that you found more than once. Use the right units and significant figures. Present your results in the clearest way possible. This often involves making plots to show how the value of one quantity depends on that of another or tables to highlight important results.

When scientists get experimental data, they immediately try to reconcile that data with related theories. *The theory adds meaning to the data*. You need to compare your results with theory and literature values. The way to do this is usually sketched out in the lab instructions and discussions.

If your result differs appreciably from the theoretical, speculate on what you think might have caused the kind of deviation you observe. Give a discussion or conclusion. What went wrong? Why was the experiment important? What would you have done differently?

Report Sections

Title

Well-formed titles usually include one or two (but not all) of these elements: (1) the name of the problem, hypothesis, or theory that you tested or discuss; (2) the name of the phenomenon or subject you investigated; (3) the name of the method you used or a method you have developed; (4) a brief summary of the results you obtained; and/or (5) vivid titles sometimes contain a verb. Do not just string a bunch of nouns together. Omit obvious phrases like, "A Study on . . .," "A Report on the Results of an Experiment on . . .," "An Investigation of. . ."

Abstract

- a What did you do?
- b How did you do it?
- c What did you determine?
- d What conclusions could you draw from the experiment?

The abstract is a brief expression of what you have done, why you have done it, how you arrived at your conclusions, and what those conclusions are. It should be written in complete sentences using correct grammar. It should be self-contained and should not refer to the paper itself. You

have to think hard about what you have done and why you did it. Many people will read *only* your abstract; they will not have time to read the whole report.

Every sentence should communicate a crucial piece of information. Write it in passive voice, avoid strings of nouns, and do not delete prepositions, adjectives, articles, and pronouns. Do not evaluate or hype your work, e.g., “this brilliant deduction,” “disappointingly low number of,” “incredible phenomena,” “striking results.” Devote one or two sentences to each major part of the report: your problem, hypothesis, method, results, and conclusions. You may start with a sentence describing the significance of the problem. Be sure to give important results, e.g., “ K was found to be $5.53 \pm .02$.”

Reporting Your Results

Most reports present results in these sections: (1) Results, (2) Sample Calculations, (3) Discussion, and (4) Conclusion. Report all the relevant data. When possible, present information in photographs, drawings, tables, charts and/or graphs. Your sample calculations should include an example of *each* different kind of calculation you used in getting your results.

In the Results section, a *results table*, a description of the data, and the calculated results are usually given. If you exclude certain data, give reasons. If you make assumptions or manipulate your data in special ways, explain in detail. Use the passive voice. Do not color the results in order to lead the reader to certain conclusions. Results can also include graphs.

The Discussion section is where you *interpret* your results. Your data are neutral, incomplete, or ambiguous until you interpret them. In this section you give clear reasons why certain interpretations are possible and which ones are better or best. Arrange the evidence in an order that illuminates your conclusion. Explain your methods of analysis. Raise opposing interpretations and show their shortcomings. Do not distort or suppress any aspects of the data. A logical approach usually starts with the data, moves to data analysis/results (or generalizations based on data), proceeds to conclusions regarding your hypothesis, and finally leads to inferences/application you can make from your conclusion to larger issues.

In the Conclusion section, state your conclusions based on evidence/experimental support. Restrict or expand your results by stating probable conclusions or possible implications. Add any necessary conditions and be careful not to claim too much. You may compare your conclusions with theory/literature, define unanswered questions, express uncertainties, recommend modifications, or suggest alternative methods.

REPORT EXAMPLES

A report requires the submission of a copy of your lab notebook from the experiment, which should clearly show your procedure and all the data you collected. Click below to see two pages for examples.

- Sample Lab Report ¹ - Determination of the Molar Mass of Ethanol
- Composite Sample Lab Report ² - Calibration of a 10-mL Volumetric Pipet Using the Relationship of Mass, Density and Volume

¹samplelab.pdf

²composite.pdf