

Writing a Formal Lab Report:

Senior Chemistry

All scientists use a similar format to write reports, although the headings and order may vary slightly. Your report should reflect the process of scientific inquiry that you used in the investigation.

Overall guidelines:

- Double-space your report, and use size 11pt or 12pt font.
- Always use your own words – even if you cite the source. Plagiarism can result in a mark of zero on the entire assignment. Direct quotes are NOT acceptable.
- Spelling, grammar, and formatting are extremely important! You are being marked on your ability to communicate the goal and conclusions of your lab experiment.
- Type your report, and double-space it. Use subscripts where necessary (i.e., chemical formulas).
- Attach your original data at the BACK of the report.
- Use formal language, and do NOT use personal pronouns.



Cover Information: At the top of the first page of your report, include the following:

- The title of your investigation
- Your name
- Your instructor's name
- The course code
- Name of your partner(s) (if applicable)
- The date the lab was performed, and the due date (clearly indicate which is which)

Abstract: summarizes four essential aspects of the report: the purpose of the experiment (sometimes expressed as the purpose of the report), key findings, significance and major conclusions. The abstract often also includes a brief reference to theory or methodology. The information should clearly enable readers to decide whether they need to read your whole report. The abstract should be one paragraph of 100-200 word

Introduction: A brief explanation of the pertinent theory underlying the experiment. This includes the information you discovered by researching your topic. It also includes the purpose of your investigation as well as what you expect to find (your hypothesis). *Note that not all experiments will require a hypothesis – your teacher will inform you.*

Materials: List all of the **materials** (chemicals and other disposables) used in the experiment. Be specific about sizes and quantities. For chemical substances, include formulas (e.g., calcium chloride, $\text{CaCl}_2 - 2.0 \text{ g.}$).

Equipment: Write out all the **apparatus** used in the experiment. Be specific about sizes and quantities.

Procedure: The most important part of an investigation, when others are trying to determine if it is “good” or “bad” science, is the procedure. Many researchers read only the procedure section in a report, to gain insight into a procedure they could use themselves. Always use **PAST TENSE** and **PASSIVE VOICE**.

CORRECT: 5.0 mL of acetic acid was measured out in a graduated cylinder

INCORRECT: I measured out 5.0 mL of acetic acid in a graduated cylinder

Summarize and condense steps, when appropriate. Your instructor will let you know whether to present your procedure as a numbered list, or in paragraph form.

Do not include steps that a scientist would know to perform (e.g., putting on safety goggles; chemical disposal; workstation clean-up).

Results: Neatly **re-copy** your original observations. This will usually take the form of a data table.

Analysis:

- Type up (or very neatly write out) all of the required steps and **calculations**. Make sure to include all appropriate formulas, units, and significant figures. Clearly label these, and present them in logical order.
- If your teacher has asked for summary tables or figures, include them here.
- Tables and figures should have appropriate numbers and titles (Tables – place ABOVE; Figures – place BELOW). Number your tables and figures sequentially.

Examples:

Two options for presenting the same data

Table 1. Candy preferences of a group of thirty Grade 10 students at Bishop Allen Academy.

Type of Candy	Frequency
Chocolate	12
Gummi bears	7
Lollipops	5
Jelly beans	3
Gum drops	3

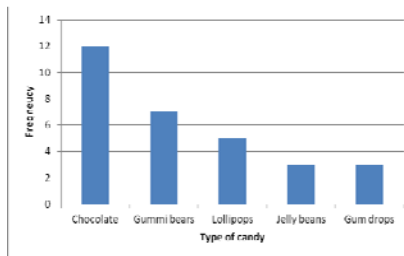


Figure 1. The candy preferences of a group of thirty grade 10 students at Bishop Allen Academy.

Internal citation MAY BE required

Discussion: This should be in PARAGRAPH form. Your instructor may provide you with guiding questions.

- Summarize the conclusions you were able to draw.
- Interpret your results:
 - *If you had one*, refer back to your hypothesis. Was it correct, partially correct, or incorrect?
 - If you did not achieve your purpose, or your hypothesis was not correct, suggest reasons why. You may have to refer to scientific theory.
 - Discuss any sources of experimental error, or flaws in experimental design, that may have affected your findings. You may have to refer to scientific theory.

Conclusion:

Simply state what you now know for sure, as a result of completing the lab experiment. Refer back to the goals of your experiment, and summarize the outcome (with numerical values, where appropriate). Did you achieve your goal? Was your hypothesis correct, partially correct, or incorrect? If you did not achieve your purpose, or your hypothesis was not correct, state why. If there were any MAJOR sources of error, be sure to include them.

References: Give credit for the resources you used in your research. Always cite your sources. Failing to do so is considered plagiarism. You must cite all information in TWO WAYS:

1. Internally, in the body of text

Immediately after the information is used, give the last name of the source, the date of the publication, and the page reference as follows:

- For two authors: ... (West & Kardashian, 2016, pg. 15).
- For three to five authors: ... (Styles, Malik, Horan, Payne, & Tomlinson, 2013, pg. 54). *(first time)*
... (Styles et al., 2013, pg. 92). *(subsequent citations)*



2. In a References list, at the end of the report

List all works **alphabetically**. Entries should have a **hanging indent**.

For a book:

Author, A. A., & Author, B. B. (Year of publication). *Title of work: Capital letter also for subtitle.*
Location: Publisher.

For a website:

Author, A. A., & Author, B. B. (Date of publication). Title of document. Retrieved from http://Web address



Additional Resources You May Find Helpful

- APA citation guide: <https://owl.english.purdue.edu/owl/resource/560/01/>
- University of Toronto lab report guide: <http://www.writing.utoronto.ca/advice/specific-types-of-writing/lab-report>