

## Lab Reports

Lab report writing is essential skill in science. The purpose of a lab report is to convey experimental results to another person in a clear, concise manner. There are basic components that every lab report must have, as well as optional components that may be included depending on the lab content.

Lab Component	Basic	Optional	Description	Student
Cover Page		✓	<ul style="list-style-type: none"> <li>State the lab title, your name, your partner's name (if applicable), the date of submission, the course code, and your teacher's name.</li> </ul>	
Background information		✓	<ul style="list-style-type: none"> <li>Include a summary of the scientific terms that will be discussed or measured in this lab.</li> <li>Include a description of the variables (independent and dependent) to be used, the units they will be measured in, as well as the equations required for this investigation.</li> </ul>	
Purpose or Question	✓		<ul style="list-style-type: none"> <li>State the reason for doing the investigation.</li> </ul>	
Hypothesis		✓	<ul style="list-style-type: none"> <li>Statement of the expected outcome/results based on the question for the experiment</li> <li>Write in the form: If...(independent variable)....then...(dependent variable)....</li> </ul>	
Variables	✓		<ul style="list-style-type: none"> <li>List the dependent variable (only one!) and how it will be measured.</li> <li>List the independent variable (only one!)</li> <li>List any controlled variables</li> </ul>	
Materials	✓		<ul style="list-style-type: none"> <li>List all equipment, including sizes (i.e. 200 mL beaker not beaker) and approximate quantities of chemicals used in the investigation.</li> <li>You may reference to the textbook but be sure to note any changes.</li> </ul>	
Procedure	✓		<ul style="list-style-type: none"> <li><b><i>This section must be written using complete sentences and in the past, passive, impersonal tense.</i></b> [The acid was added to the beaker. The contents were stirred.]</li> <li>Describe the steps necessary to do the investigation. Each step should be numbered and should include only one main action.</li> <li>You may use a reference to the textbook when appropriate but include any changes. (i.e. refer to "Lab Title" and reference page)</li> <li>Draw a fully labeled diagram to illustrate the set-up only if a diagram would help clarify the procedure. Label and number the figure.</li> </ul>	
Observations	✓		<ul style="list-style-type: none"> <li>Record all qualitative and quantitative that you made.</li> <li>For any quantitative data you must use a labeled, numbered table that includes only raw data.</li> <li>Include units in the headings!</li> <li>The data for one variable should be collected to the same number of decimal places.</li> <li>Do not show any numbers that you have calculated - <b><i>do not analyse or explain the observations in this section.</i></b></li> </ul>	
Analysis	✓		<ul style="list-style-type: none"> <li>This section should contain any graphs or calculations that are relevant to the experiment.</li> <li>Graphs – a line of best fit will need to be drawn for experimental data (be sure to include a numbered title, labeled axes that include units)</li> <li>Show one fully worked calculation including a formula, substitution of data and solved problem.</li> </ul>	
Error Analysis		✓	<ul style="list-style-type: none"> <li>Discuss, in paragraph form, possible sources (3-5) of error within your procedure.</li> <li>Suggest improvements based on your sources of error.</li> </ul>	
Discussion	✓		<ul style="list-style-type: none"> <li>The discussion of the experiment can include assigned questions. These are to be answered in complete, self-explanatory sentences. Relate back to background information and observations.</li> </ul>	
Conclusion	✓		<ul style="list-style-type: none"> <li>Conclude your report with a statement or two that fully ties your report together. It should be based on your observations, analysis and discussion. Make reference to your hypothesis/purpose.</li> </ul>	

LAB SECTION	COMPONENT	COMPLETE
Cover Page	Lab Title/Student's Name/Partner's Name/Date of Submission/Course Code/Teacher's Name	
Background Information	Paragraph of key concepts. Paragraph should include scientific terms and description of independent and dependent variables.	
Purpose	State the reason for doing the investigation or question explored.	
Hypothesis	Statement of the expected outcome based on the variables explored. (If....then statement)	
Variables	Lists independent variable	
	States dependent variable which is being measured	
	States how the dependent variable will be measured (with units)	
	Recognises control variables	
Materials	Lists all relevant equipment, including sizes	
	Lists approximate quantities of chemicals used.	
	References appropriate sources	
Procedure	Procedure written using complete sentences.	
	Procedure written in the past, passive, impersonal formal	
	Each step numbered.	
	Draw a fully labeled diagram to illustrate the set-up. (if necessary)	
Observations	Quantitative observations are presented in a numbered, titled table.	
	Headings include the appropriate SI unit of measurement	
	Decimals correspond in raw data	
	Qualitative observations are presented in an appropriate format.	
Analysis	This section should contain any graphs or, calculations necessary to analyze the data. Be sure to include titles, labels and correct units.	
	Sample Calculation includes label (to indicate which raw data is being used)	
	Sample Calculation includes formula, substituted values and is solved with SI units	
	Graphs are numbered, titled, and display labeled axes with appropriate units	
	Graphs include either a line of best fit or a smooth curve. No joining the dots!	
Error Analysis	States a reasonable error and explains why it would have affected results.	
	An attempt to evaluate the error (if the filter paper had pores that were too large, some of the product would go through the filter paper and not be massed on the filter paper, therefore the overall yield would be lower than predicted.)	
Discussion	Assigned questions are answered in complete, self-explanatory sentences using impersonal language. (Do not use; we, they, I etc.)	
Conclusion	Written in complete sentences.	
	Makes reference to the hypothesis.	