

Formal Lab Write-Up Procedures

In this class you will do many laboratory experiments. Proper write-up of lab information is key to this process. You will follow this format for all your lab write-ups unless specifically instructed to do otherwise. At times, some information (purpose, materials, etc.) will be given to you, but at other times you will have to derive this information yourself. The lab report must be typed in a scholastic font (i.e. Times New Roman/Arial, 12 pt) and single spaced. Be sure to use the numbers and names for each section (example: 2. Purpose: The purpose of this experiment is...) except for the title which can just be written at the top of you paper.

Pre-Lab: Complete these sections prior to beginning the experiment.

1. Title: Develop an appropriate title based on the independent and dependent variables of your experiment.
2. Problem: A one sentence description of what are we testing for in this experiment? What we are trying to do, learn or accomplish?
3. Hypothesis: Your educated guess of what you think the result will be in an experiment. There is no penalty for an incorrect guess because it is just that... a guess! This statement must be in an "If... then...because" format. Example: "**If** we test enzyme activity at different levels of pH, **then** enzyme activity will work best at a pH of 5 **because** the enzyme becomes denatured at lower levels of pH."
4. Variables: Identify the experimental control, the independent and dependent variables in the experiment.
5. Methods: List all the materials used to conduct the experiment and summarize the procedures of the experiment, so that someone reading your lab write-up can easily understand essentially what was done in the experiment. This section does not need to be written in complete sentences and it must be in bulleted or numbered format.

Lab: These sections may be handwritten and attached to the back of the lab write-up.

6. Data: Record the raw data of your experiment. This may vary in form. You may be asked to make a table, chart, or just jot down your qualitative and/or quantitative observations. This data should be relevant to your research questions and be used to support your conclusion.
7. Results: Include any further interpretation of the data. For example: a graph, any calculations, etc.

Post-Lab: Complete this section after the laboratory has been performed. Each individual's conclusion must be unique (in other words NO COPYING!) to receive credit for the lab write-up.

8. Conclusion: In almost all cases you will use this format when writing your conclusion. **The conclusion must be in complete sentences. Do not skimp on the conclusion!** An easy way to be sure you include all the necessary information in a conclusion is to follow the three paragraph format:
Paragraph 1: Restate the purpose of the experiment in one sentence.
Restate and evaluate your hypothesis. *Was the hypothesis supported or not?*
Paragraph 2: Evaluate the methods used in your experiment. *Were your methods successful in addressing the problem?*
Describe what you learned from completing this experiment, supporting your knowledge with relevant vocabulary and information from the **lab data** and/or notes. *What can you conclude about the experiment, with supporting evidence?*
Paragraph 3: Discuss the types of errors that were made during the experiment. *How might have these errors affected the outcome of the experiment? How could we **improve** the results of the experiment in light of these mistakes?*
9. Post-Lab Questions: You will also be required to answer specific Post-Lab conclusion questions that will be attached to the lab write-up. If the questions are also attached to the lab write-up, the answers do not need to be written in complete sentences.

Formal Lab Write-Up Rubric

Section	Points Possible
1. Format (appropriate title, single spaced, numbered and labeled sections)	3
2. Problem	6
3. Hypothesis (as an if... then... because statement)	6
4. Variables	6
5. Methods (bulleted or numbered list)	6
6. Data (organized in a table with title and units)	6
7. Results (graphs with appropriate titles, labels and units)	6
8. Conclusion	
<ul style="list-style-type: none"> ● Paragraph 1: <ul style="list-style-type: none"> ○ Restate the purpose ○ Restate the hypothesis ○ Was hypothesis supported or not? 	6
<ul style="list-style-type: none"> ● Paragraph 2: <ul style="list-style-type: none"> ○ Were your methods successful in addressing the problem? ○ Identify what you learned with evidence from lab data or texts. 	6
<ul style="list-style-type: none"> ● Paragraph 3: <ul style="list-style-type: none"> ○ Discussion of possible errors and hidden variables ○ How the errors and hidden variable affect results ○ How could we improve the results of the experiment? 	6
9. Post-lab questions	3
Total Points	60*

- Extra credit can be earned in each of the major category for extraordinary effort in meeting the MYP rubric descriptors. These extra points will be very difficult to earn and shows that the student has an exemplary skills in communication and understanding of the scientific process.

MYP Formal Lab Report Rubric

Level	Criterion B: Inquiring and Designing Level Descriptor
0	The student does not reach a standard described by any of the descriptors below.
1-2	The student is able to: <ol style="list-style-type: none"> i. state a problem or question to be tested by a scientific investigation ii. outline a testable hypothesis iii. outline the variables iv. design a method, with limited success
3-4	The student is able to: <ol style="list-style-type: none"> i. outline a problem or question to be tested by a scientific investigation ii. formulate a testable hypothesis using scientific reasoning iii. outline how to manipulate the variables, outline how relevant data will be collected iv. design a safe method in which he or she selects materials and equipment
5-6	The student is able to: <ol style="list-style-type: none"> i. describe a problem or question to be tested by a scientific investigation ii. formulate and explain a testable hypothesis using scientific reasoning iii. describe how to manipulate the variables, describe how sufficient, relevant data will be collected iv. design a complete and safe method in which he or she selects appropriate materials and equipment
7-8	The student is able to: <ol style="list-style-type: none"> i. explain a problem or question to be tested by a scientific investigation ii. formulate and explain a testable hypothesis using correct scientific reasoning iii. explain how to manipulate the variables, explain how sufficient, relevant data will be collected iv. design a logical, complete and safe method in which he or she selects appropriate materials and equipment

Level	Criterion C: Processing and Evaluating Level Descriptor
0	The student does not reach a standard described by any of the descriptors below.
1-2	The student is able to: <ol style="list-style-type: none"> i. collect and present data in numerical and/or visual forms ii. accurately interpret data iii. state the validity of a hypothesis based on the outcome of a scientific investigation iv. state the validity of the method based on the outcome of a scientific investigation v. state improvements or extensions to the method
3-4	The student is able to: <ol style="list-style-type: none"> i. correctly collect and present data in numerical and/or visual forms ii. accurately interpret data and explain results iii. outline the validity of a hypothesis based on the outcome of a scientific investigation iv. outline the validity of the method based on the outcome of a scientific investigation v. outline improvements or extensions to the method that would benefit the scientific investigation
5-6	The student is able to: <ol style="list-style-type: none"> i. correctly collect, organize and present data in numerical and/or visual forms ii. accurately interpret data and explain results using scientific reasoning iii. discuss the validity of a hypothesis based on the outcome of a scientific investigation iv. discuss the validity of the method based on the outcome of a scientific investigation v. describe improvements or extensions to the method that would benefit the scientific investigation
7-8	The student is able to: <ol style="list-style-type: none"> i. correctly collect, organize, transform and present data in numerical and/or visual forms ii. accurately interpret data and explain results using correct scientific reasoning iii. evaluate the validity of a hypothesis based on the outcome of a scientific investigation iv. evaluate the validity of the method based on the outcome of a scientific investigation v. explain improvements or extensions to the method that would benefit the scientific investigation

