**LABORATORY REPORTS**

All written laboratory reports must be written in pen or types. In writing your report, the following questions and guidelines will help you produce a thorough report.

A. Is the report written clearly enough so that an uninformed person could read it and know exactly what was being attempted? How was it done and what conclusions were reached?

B Can the student duplicate the experiment using the report alone as a guide?

1. All laboratory reports should include the following:
2. **Title** – describes the experiment
3. **Problem / Purpose** –

states a question or problem in sentence form;

describes the intent or goal of the experiment

# HYPOTHESIS –

# relates to the purpose; includes a testable (measurable) prediction or solution to the problem / purpose.

1. **Background Information** –

explains how the experiment ties into the topic of study;

explains the science concepts involved in the experiment; explains the information necessary for the experiment

# Procedures –

step-by-step set of instructions for the experiment;

includes materials and chemicals needed in the experiment;

includes labeled diagrams of equipment set-up

1. **Data** –

observations or measurements that are clearly organized into chards and / or tables;

all measurements should include proper units

1. **Data Analysis** –

graphs are neatly drawn with a title, labeled axes including units, evenly spaced numbers, clearly marked data points and appropriate line of best fit;

calculations include formulas or equations, work and answer are with proper units;

graphs and calculations show relationship so that conclusions can be reached

1. **CONCLUSION**

A conclusion is the most important part of your lab report. It is where you analyze your results, restate your hypothesis and discuss why your hypothesis is supported or not supported when you compare the experimental results to your control. Using the numbers (your data from the results) you explain why you got the results you did and if the numbers support your hypothesis. You also discuss any possible experimental error.

**Review the purpose of the experiment.** Write a descriptive sentence that includes the purpose question. Also, either answer the purpose if it is a question or explain what you found out (learned) as a result of doing the lab. You might begin with: In this lab we investigated how …. and we learned that….

## Make a concluding statement which answers the purpose. Use your results as evidence to support your statement.

**Make a broad summary of the procedures** in one or two sentences. Emphasize the big picture. Describe as you would to a person outside of class.

**Identify the control.** It is the factor in the experiment that did not change or was used to compare results to. “What variable has stayed the same?” is a good question to ask.

**Identify the variable.** It is the factor being changed and investigated. Ask yourself, “What is changed throughout the experiment?”

**Describe the change and look for a pattern.** Use sentences and numbers to briefly state what you discovered in the results.

**Hypothesis supported or not supported.** State whether your hypothesis is supported or not supported and why you think so. (Use numbers from results.)

## Experimental Error. Analyze your results and determine if any errors may have effected them. Discuss briefly any experimental error you did have. Example: “The temperature was suppose to stay constant, but did not because we ran out of ice.”

**LABORATORY REPORT CONCLUSIONS**

**Review the purpose of the experiment.** (*This sentence includes the purpose/question. It answers the purpose if it is a question or explains what you found out (learned) as a result of doing the lab)*

**#1. In this lab, we investigated how \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and we learned that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ .**

## Make a concluding statement. (*Answers the purpose, uses the results as evidence to support your statement)*

**#2. The purpose of this experiment was \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ as was shown in the results by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**Make a broad summary of the procedures** *(In one or two sentences emphasizing the big picture; describe as you would to a person outside of class.)*

**#3. Overall, the procedures were to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**Identify the control.** *(It is the factor in the experiment that did not change or was used to compare results.)*

**#4. The control was \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**Identify the variable.** *(It is the factor being changed and investigated.)*

**#5. The variable was \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ .**

**Describe the change and look for a pattern. *(****Uses sentences and numbers to briefly state what you discovered in the results.)*

**#6. The change that took place was \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**The results showed the pattern of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ .**

**Hypothesis supported or not supported.** *(States whether your hypothesis is supported or not supported and why you think so; uses numbers from results.)*

**#7. The hypothesis was supported / not supported because \_\_\_\_\_\_\_\_\_\_\_\_\_**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ .**

## Experimental Error. *(Analyzes your results and determine if any errors may have effected them. Discusses briefly any experimental error you might incur.)*

**#8. Experimental error in this investigation could include \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ .**

GRADING RUBRIC

LABORATORY WRITE UPS

**Title** (5 points)

5 points > clearly describes the experiment

 3 points > inappropriate title

 0 points > no title

**Problem / Purpose** (5 points)

5 points > accurate description of the intent or goal of the experiment in sentence form

3 points > incomplete / incorrect description or intent of experiment

0 points > no purpose

**Hypothesis** (5 points)

5 points > relates to the purpose, clearly stated and testable prediction or solution to the problem/purpose

3 points > unrelated to purpose, not clearly stated, not testable

0 points > no hypothesis

**Background Information** (10 points)

10 points > accurate explanation of how the experiment ties into the current topic, the science concepts involved in the experiment, and the specific information necessary for the experiment.

 7 points > incomplete / incorrect explanations

 0 points > no background information

**Procedures** ( 10 points)

10 points > procedure is completely outlines with correct sequence, all materials listed, diagrams of equipment set-ups included

 7 points > incomplete / incorrect outlines without materials and / or diagrams

 0 points > no procedures

**Data** ( 10 points)

10 points > observations or measurements are clearly organized into charts and/or tables; all measurements have proper units; data shows multiple trials and averages when applicable

 7 points >incomplete / incorrect observations or measurements; improper units

 0 points > no data

**Data Analysis** (10 points)

10 points > graphs are neatly drawn with a title, labeled axes including units, evenly spaced numbers, clearly marked data points, and appropriate line of best fit, calculations include formulas or equations, work and answers with proper units, and response to any analysis questions

 7 points > incomplete / incorrect data analysis

 0 points > no data analysis

**Conclusion** ( 40 points)

40 points > reviewed the purpose of the experiment in a complete statement, made a concluding statement using results to support statement, include a broad summary of the procedure, identification of the control and variable, describe the change using sentences, identified a pattern, and used numbers to state discoveries in the results, accepted or rejected hypothesis with explanation, and discussion of any experimental errors

20 points > incomplete / incorrect conclusions

 0 points > no conclusion

**Quality of Report** (5 points)

 5 points > lab report is written neatly in pen or typed

 3 points > lab report is unorganized, lacks neatness, written in pencil