

# Organizing a Lab and Lab Report ("OLLR")

## Title of Experiment

\_\_\_ The title of the experiment must connect the independent variable and the dependent variable.

## Section 1: Purpose/Introduction

**This section includes the problem, objectives, background, assumptions and hypothesis.**

### *Part A: Problem / Objectives*

\_\_\_ The problem may be stated in the form of a question. This is the focus question/problem of the lab that describes what you are investigating.

\_\_\_ The objectives should explain what is being investigated. This part also could explain what effects would be determined by completing this investigation.

### *Part B: Background*

*Some lab reports may require the discussion of background.*

\_\_\_ The background is a paragraph that discusses important information related to the lab. The purpose of the background is to provide the reader with the necessary information to understand your report. Background information may include definition of terms and discussion of related scientific relationships. Information for this section comes from class, textbook, research and prior knowledge. The background information will first be used to support your hypothesis and later to support the interpretation (explanation) of your results. The information you use to write this paragraph should be cited at the end of the lab.

### *Part C: Hypothesis*

\_\_\_ State your hypothesis. The hypothesis is your answer to the problem. The hypothesis predicts the relationship between the independent and the dependent variable. It also includes discussion of controlled variables. A reason for making your hypothesis, which comes from background information (see above) and may also come from personal experience must be stated. Cite your information used within your support.

\_\_\_ Identify the independent variable, dependent variable, controlled variables, and the control group (where applicable.)

\_\_\_ Certain assumptions need to be made in the lab. List ways in which the lab model may not be realistic. List things that are general assumptions that may affect the lab.

## **Section 2: Planning**

**This section includes the materials list and procedure.**

### ***Part A: Materials/Equipment list***

\_\_\_ List materials and equipment to be used in the lab experiment. This list may be altered as the procedure is written.

### ***Part B: Procedure***

*A design that is appropriate for answering the problem being investigated.*

\_\_\_ Written as a logical, numbered sequence of steps.

\_\_\_ An experimental control is used and stated.

\_\_\_ Controlled variables are discussed, so the relationship between the independent and dependent variables is the only one investigated.

\_\_\_ Multiple trials are mentioned.

\_\_\_ Appropriate safety precautions are mentioned.

## **Section 3: Data Collection/Observations**

**This section has an appropriate data table which includes the following:**

\_\_\_ A complete title that gives the purpose of the investigated.

\_\_\_ Labels that identify what measurements were taken.

\_\_\_ Units of measure that describe how measurements were made.

\_\_\_ Clear organization that follows what was done during the investigation and includes multiple trials when necessary.

\_\_\_ Do you need more than one data table?

## **Section 4: Analysis of Data**

**This section includes the graph and sample calculations.**

### **Part A: Graph**

*When applicable, a graph is made properly demonstrating the relationship between the independent and the dependent variables. The graph needs to include the following:*

\_\_\_ Appropriate type of graph.

\_\_\_ Appropriate size.

\_\_\_ Complete Title. (T)

\_\_\_ Correct Variable on each Axis (A)

\_\_\_ Labeled x and y Axis (L)

\_\_\_ Units on x and y axis (U)

\_\_\_ Correct number scales on the graph (N)

\_\_\_ Key when necessary (K)

### **Part B: Sample Calculation**

*When applicable, one complete sample calculation is shown including proper units in an easily readable format.*

## Section 5: Conclusion

**This section is the conclusion, which a final discussion of the investigation that answers the problem being investigated. The conclusion should include the following parts:**

\_\_\_ An **introductory sentence** is made that restates the problem (focus question) of the lab.

\_\_\_ what was done in the lab/purpose of the lab

\_\_\_ specifics such as identification of chemicals (materials) used or examined

\_\_\_ type of information graphed

\_\_\_ type of measurements made

\_\_\_ **A listing of the following variables and groups**

\_\_\_ Independent Variable

\_\_\_ Dependent Variable

\_\_\_ Controlled Variables

\_\_\_ Control Group

\_\_\_ Experimental Group

\_\_\_ How was the **independent variable manipulated**?

\_\_\_ State the significant relationships between the independent variable and the dependent variable by making generalizations. These generalizations are about the response of the dependent variable based on how the independent variable is manipulated, using words like increase/decrease/constant/indirect/cannot be determined.

\_\_\_ The original **hypothesis** is restated with support.

\_\_\_ A statement is made that accepts or rejects the hypothesis.

\_\_\_ Acceptance or rejection of hypothesis should be consistent with the data/observations collected.

\_\_\_ This is supported by restating actual data, data/observations and connections from the data summary.

\_\_\_ This is supported with scientific concepts from the background information.

\_\_\_ Comparing how the dependent variable responded in trials of the same independent variable. You will explain the consistency of your data based on precision and will include the following:

\_\_\_ discussion of patterns such as identifying repeated data

\_\_\_ property shown in the data (what data or groups of data share in common)

\_\_\_ trend shown in the data (how the data changes)

Relevant suggestions are made and explained on ways to improve the lab which would allow for a more accurate interpretation to be made by

- identifying necessary revisions in the procedure.
- identifying a new experiment to test the same scientific concept in a more accurate way.
- changing the controlled variables.
- changing the independent variable and dependent variables
- discussing new questions brought up by reflecting on the lab and discussing a new experiment that investigates those questions.
- Other relevant topics stated by instructor that are considered important to the lab discussion.

### **Section 6: Error & Connections Analysis**

**This section is the error analysis, which is a discussion and identification of the errors, along with how the errors affected the data collected.**

Significant errors are mentioned with a discussion of how these errors impact the data. These should be based on the following.

- Discuss the errors found within this experiment.
- If applicable, identify each error as systematic or random, based on definition.
- Discuss how each error affected your data.
- Provide possible solutions for the errors.

### **Overall Review: Communication/Resources**

- The lab report is clearly communicated using appropriate vocabulary recently acquired in the lab and from the researched background information.
- The lab report is neat, appropriately organized, and when applicable prepared using a word processor.
- The lab report is free of grammatical and spelling errors. ("Spell check" is not infallible! You need to proofread.)
- Works cited.**