Name: _____ Date: _____ Skill and Practice

# 2D Writing a Lab Report

*How do you share the results of an experiment?*

A lab report is like a story about an experiment. The details in the story help others learn from what you did. A good lab report makes it possible for someone else to repeat your experiment. If their results and conclusions are similar to yours, you have support for your ideas. Through this process we come to understand more about how the world works.

## The parts of a lab report

A lab report follows the steps of the scientific method. Use the checklist below to create your own lab reports:

- ☐ **Title:** The title makes it easy for readers to quickly identify the topic of your experiment.
- ☐ **Research question:** The research question tells the reader exactly what you want to find out through your experiment.
- ☐ **Introduction:** This paragraph describes what you already know about the topic, and shows how this information relates to your experiment.
- ☐ **Hypothesis:** The hypothesis states the prediction you plan to test in your experiment.
- ☐ **Materials:** List all the materials you need to do the experiment.
- ☐ **Procedure:** Describe the steps involved in your experiment. Make sure that you provide enough detail so readers can repeat what you did. You may want to provide sketches of the lab setup. Be sure to name the experimental variable and tell which variables you controlled.
- ☐ **Data/Observations:** This is where you record what happened, using descriptive words, data tables, and graphs.
- ☐ **Analysis:** In this section, describe your data in words. Here's a good way to start: *My data shows that...*
- ☐ **Conclusion:** This paragraph states whether your hypothesis was correct or incorrect. It may suggest a new research question or a new hypothesis.

## A sample lab report

Use the sample lab report on the next two pages as a guide for writing your own lab reports. Remember that you are telling a story about something you did so that others can repeat your experiment.

Skill and Practice

**Name:** Lucy O. **Date:** January 24, 2011

**Title:** Pressure and Speed

**Research question:** How does pressure affect the speed of the CPO air rocket?

**Introduction:**

Air pressure is a term used to describe how tightly air molecules are packed into a certain space. When air pressure increases, more air molecules are packed into the same amount of space. These molecules are moving around and colliding with each other and the walls of the container. As the number of molecules in the container increases, the number of molecular collisions in the container increases. A pressure gauge measures the force of these molecules as they strike a surface.

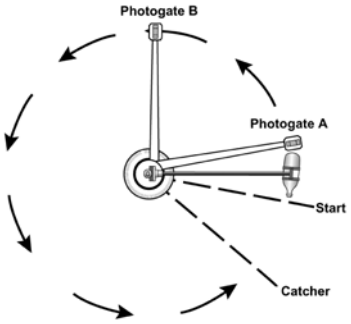
In this lab, I will measure the speed of the CPO air rocket when it is launched with different amounts of initial pressure inside the plastic bottle. I want to know if a greater amount of initial air pressure will cause the air rocket to travel at a greater speed.

**Hypothesis:** When I increase the pressure of the air rocket, the speed will increase.

**Materials:**

| | |
|---|---|
| CPO air rocket | CPO photogates |
| CPO timer | Goggles |

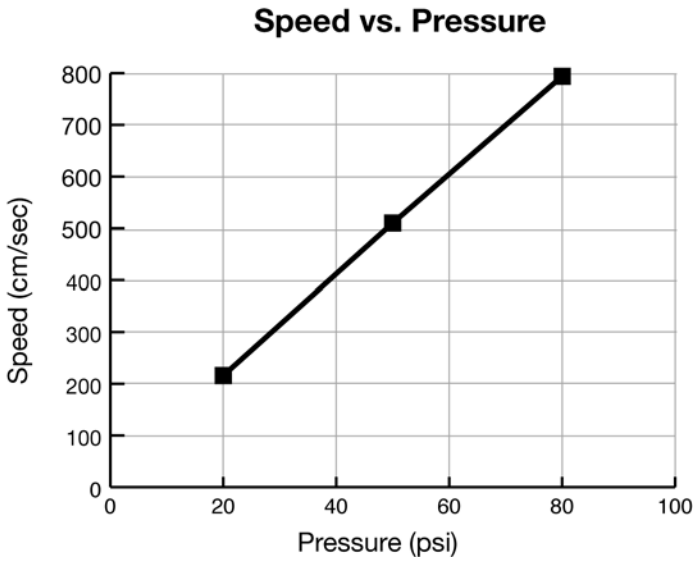
**Procedure:**




1. I put on goggles and made sure the area was clear.
2. The air rocket is attached to an arm so that it travels in a circular path. After it travels about 330°, the air rocket hits a stopper and its flight ends. I set up the photogate at 90°.
3. My control variables were the mass of the rocket and launch technique, so I kept these constant throughout the experiment.
4. My experimental variable was the initial pressure applied to the rocket. I tested the air rocket at three different initial pressures. The pressures that work effectively with this equipment range from 15 psi to 90 psi. I tested the air rocket at 20 psi, 50 psi, and 80 psi. I did three trials at each pressure.
5. The length of the rocket wing is 5 cm. The wing breaks the photogate's light beam. The photogate reports the amount of time that the wing took to pass through the beam. Therefore, I used wing length as distance and divide by time to calculate speed of the air rocket.
6. I found the average speed in centimeters per second for each pressure.

**Data/Observations:**

| Initial air pressure | Time (sec) at 90° | Speed (m/sec) at 90° | Average speed cm/sec |
|---|---|---|---|
| 20 psi | 0.0227 | 2.20 | 216 |
| | 0.0231 | 2.16 | |
| | 0.0237 | 2.11 | |
| 50 psi | 0.0097 | 5.15 | 510 |
| | 0.0099 | 5.05 | |
| | 0.0098 | 5.10 | |
| 80 psi | 0.0060 | 8.33 | 794 |
| | 0.0064 | 7.81 | |
| | 0.0065 | 7.69 | |




**Analysis:**

My graph shows that the plots of the data for photogates A and B are linear. As the values for pressure increased, the speed increased also.

**Conclusion:**

The data shows that pressure does have an effect on speed. The graph shows that my hypothesis is correct. As the initial pressure of the rocket increased, the speed of the rocket increased as well. There is a direct relationship between pressure and speed of the rocket.