

## Writeup Description

“If you can’t explain it simply, you don’t understand it well enough.” – Albert Einstein

For your “lab writeup” this semester, you will practice informal discussions with people about the science that you are doing and the science that interests you. As you take more science classes, you will find that not everyone shares the same enthusiasm for science, and certainly not everyone has the same background that you do. It is a great thing to be able to interest these non-experts in the work you do or the ideas you find fascinating.

To gain practice in communicating to the non-expert audience, for this semester each lab will be graded based on how well you communicate the nature of the activity and what you’ve learned in the format of a **Letter Home**. One of your group members will select a recipient back home (a parent, grandparent, sibling, or friend) who is **not familiar** with physics concepts. This group member will be responsible for submitting the Letter Home. The Letter Home will be sent by email as a **.pdf** attachment to the recipient back home, your group members, and your instructor. The group member who selects a recipient and submits the Letter Home will change each week.

### Letter Home Guidelines

The Letter should be written in the tone of an email or letter. Remember that your audience is someone you are friendly with, but who is **not familiar** with physics concepts. Your main goal is to interest the reader in what you did, and to explain the physics of the lab in a way that the non-expert can understand.

The letter should contain the following attributes:

- An explanation of the purpose of the lab activity
- A figure of the experimental setup with an accompanying description
- A description of what you measured and how you measured it
- A summary of the results and your “money plot” with appropriate labels, units, and an interpretation of the significance

The “money plot” encapsulates the essence of your results. You might have many results in a given lab that are less important to the reader of your letter. However, each of the labs are limited in scope enough that you should be able to make your main point with a single plot. Determining the money plot is one of your main tasks as a group. Unlike a formal writeup, you do not want to number visuals (i.e. Figure 1), or have a caption, instead, describing them in the Letter body is the way to go. The money plot should have axes labels and numbers with a font size at least as large as the main body of the text once it is inserted into the letter.

The Letter should have a maximum of 2 pages (12 pt. font, single spaced), only two figures (experimental setup and money plot), and maximum of one equation. Brevity and clarity in your writing will be necessary.

### **Lab Steps - Start to Finish**

#### *Step 1: Pre-lab brainstorm*

Before you grab any materials for the lab, read the lab instructions separately and then grab a whiteboard for your group. Take 10-15 minutes to write down ideas about the purpose of the lab, what you need to measure, the process involved, and what you currently envision to be your money plot. Ask your instructor or your Writing TA to go over your brainstorm before gathering your materials.

#### *Step 2: Conduct your experiment*

Gather up all the materials needed for your experiment, follow the instructions, and turn your ideas into reality. Remember to ask questions for clarification and record any information you even think might be useful. Leaving the classroom only to later realize that you forgot a measurement can lead to frustration.

#### *Step 3: Composing the letter home*

It is recommended that you use a shared Google Doc for composing your letter home. **Even though only one person sends it home, the entire lab group is responsible for what goes in the letter.** Sample Letters Home have been posted on Moodle that your professors have written to someone in their family. After consulting these Letters and the “Letters Home Guidelines,” draft the letter with the rest of you group. For extra assistance, you can see one of our Writing TAs in the Writing Center [NAMES, DAYS, AND TIMES HERE] to get feedback on your draft and one-point extra credit for addressing their comments. Be sure to let them know your class, section, and professor.

#### *Step 4: Submitting the Letter Home*

Convert the final draft of your Letter Home to a **.pdf** file. The file name should be formatted like this: “Lab Title – Last names of all group members.pdf”. Email the **.pdf** file “TO” your recipient with the subject line “What we did in physics lab” and include your instructor and group members in the “CC” field.

## Grading

The following rubric will be used by your instructor to grade your Letter Home.

### Scientific Content and Communication

- Was the purpose of the experiment evident?
- Were the scientific concepts and conclusions presented of primary relevance to this lab?
- Was the science presented correct?
- Was the analysis appropriate and thorough?
- Were all necessary experimental details reported?
- Did the paper avoid details that were unnecessary to a basic understanding?

### Visuals

- Were figures and images explained clearly?
- Were the figures and images uncluttered and clear?
- Did the figures and images clearly connect to and enhance the main text?
- Did the "money plot" encapsulate and communicate the primary conclusion(s) of the letter?

### Writing Style

- Did the writing both express interest in the topic, and encourage the reader to be interested?
- Was the explanation concise enough to keep a non-expert's attention?
- Was the tone of the writing approachable, without unexplained jargon to confuse the reader?
- Was the writing well organized so that the reader can anticipate what is coming?
- Did the writing feature proper grammar, punctuation and spelling, and appropriate use of units?

Excellent	Satisfactory	Unsatisfactory
<b>45-40</b>	<b>39-25</b>	<b>24-0</b>
The science was correct, relevant, complete, concise, and thoroughly explained for a non-expert reader	The science was correct, but there were omissions or assumptions of knowledge that hindered understanding for a non-expert reader	The scientific content was incorrect, incomplete, or incoherent to the point of being unhelpful to the reader
<b>35-33</b>	<b>32-24</b>	<b>23-0</b>
All figures, images, and explanations are well-presented and convey scientific concepts of primary importance	Some poor visuals detract from the writing	Visual presentation requires significantly more thought to interest and inform the reader
<b>20-18</b>	<b>17-11</b>	<b>10-0</b>
Succinct, clear, interesting writing with virtually perfect grammar, spelling, punctuation, and use of units	Overall well done, with some errors that detract from comprehension and enjoyment	Several problems with writing style that impede the reader's comprehension or enjoyment

A 1 point bonus will be given if the recipient responds with discussion or questions.  
A further 1 point bonus will be given for a meaningful reply to the recipient's response.

The written descriptions in the matrix above represent characteristics typical of the associated point ranges and are intended to serve only as a guide. Letters will often share characteristics from multiple columns.

You will also be asked to evaluate the effort that you and your lab group mates put into the lab. Based on that information, I reserve the right to shift up to 5 points from one person to another in the group, resulting in not everyone in the group getting the same score.

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