

AP Physics B Writing Lab Reports

Name: _____

The lab report will consist of six sections. You will be given approximately one week to complete these reports, depending on the length of the experiment. The text will be word-processed, and the graphs will be generated with Excel (or any equivalent program).

1. Heading: At the top, list your name, your partner's name, and the lab's title and date.

2. Purpose: one sentence that states what you hope to accomplish in the experiment.

3. Method: a one-paragraph summary of what you did, including descriptions of your equipment, the experiment you did, and how you used your data to achieve your purpose. In principle, it should be possible for an intelligent AP Physics B student at another school to re-create your experiment based only on reading your Method paragraph.

4. Data: a report of all the raw data you collected as well as charts of calculations from that data. All values must have units and the appropriate number of significant digits.

5. Analysis: all the graphs that you generated as well as the calculations you completed. All graphs must be created using Microsoft Excel or an equivalent program. Any regression equation should include an R^2 value. You should include a sample of each type of calculation that you do. All values should have units and the appropriate number of significant digits.

6. Conclusion: This section should include a discussion of your results and the conclusions that can be drawn. You should think about every number in your regression equation, as well as the shape of your graph, and talk about how each relates to physical things that happened in the experiment. You will need to use concepts discussed in class to make your conclusions.

You may be asked some discussion questions at the end of an experiment; use them as a starting point, and try to go beyond them to explore the implications of your experiment. We leave the conclusion somewhat open-ended to allow you an opportunity to excel. Be sure to include a discussion of potential errors in your conclusion, including both random and systematic errors, and try to suggest a way the experiment could be improved.

Grading

Most lab reports will be given a letter grade, although a few are graded out of a certain number of points. In general, a B report will complete the required questions, without doing much beyond the minimum. An A report will have reliable data and complete analysis, and it will expand on the discussion questions and analyze each portion of the report. See the examples on Moodle for clarification.

In general, letter grades correspond to the following numerical values. Your teacher reserves the right to modify this as he or she sees fit.

A	95	B-	81
A-	91	C+	78
B+	88	C	75
B	85	Etc.	

Plagiarism

A lab write-up is expected to be your own work. However, since experiments are collaborative, some work will be similar to that of your lab partner. These guidelines state our expectations.

1. Sections 1-5 may be fairly similar, though section 3 (the method) should be clearly in your own words. You and your lab partner followed the same procedure and have the same data. Also, if you did the same analysis, you may end up with the same results.
2. Section 6 must be unique. Although you may discuss the experiment with each other, it is expected that the conclusion will be your own work and your own ideas. The conclusion is your opportunity to show me what you understand. Although we do encourage discussing the experiment, please write your conclusion alone to ensure that it is truly your work.

Plagiarism includes, but is not limited to, **copying data**, massaging data, copying conclusions, and copying lab reports. If you start your report early, you will have time to rectify any problems with your data; you are always welcome to come back into lab and retake any data that seems suspect.

Checklist

This list gives you a sense of the sorts of things your teacher is looking for. It will be helpful to go through the list yourself before turning in a lab, to make sure you haven't forgotten anything.

- You show your name, partner's name, the title & date.
- Everything is easy to read and find.
- Your data is the same as your partner's
- Your method is similar in content to your partner's
- Your method is written in your own words (not your partner's!)
- Your analysis and conclusion are entirely your own work
- Your **purpose** is correct and clear
- Your **method** describes what you did in the lab
- Your method describes how you analyzed your data
- An intelligent physics student could follow your method
- You used a method that makes sense
- Your method describes how you achieved your purpose
- Your **data** seems to have been carefully collected
- Your data makes sense
- You have included appropriate units
- The significant figures look OK
- Any calculated values are in neat tables
- Your **graph** is correctly presented, including units
- You used the right data on the right axes
- You used the right kind of regression equation
- You showed a sample of any calculation that you did
- Your **analysis** section explains your logic in an understandable way
- The logic makes sense
- All numbers in the regression equation are interpreted sensibly
- Your analysis uses the relevant concepts learned in class
- You have clearly shown that you understand what is going on
- Your **conclusion** states what you discovered or demonstrated in the lab, relating to the purpose.
- You indicate how dependable your results are
- Imperfections in your data are explained
- Random errors are separated from systematic errors
- If a number is bigger or smaller than it should be, you can explain what probably caused it to go in that direction.
- You suggest improvements or ways to investigate further