Laboratory Guidelines:

Here are the general sections of the lab report. The lab report is due in class on Monday, September 17. Your report should be typed and there is no minimum or maximum number of pages that the lab report should contain.

Introduction

Discuss motivation for the experiment. This section serves primarily to help the reader understand the significance of the experiment and all the issues that are later addressed. The main questions to be addressed in this section of the report are “Why are you doing this experiment?” and “What do you hope to find?” (Please note that “We’re doing this experiment to illustrate the concepts discussed in class,” while true, is not an adequate answer to the first question. When writing the report, pretend that you have chosen to do the experiment of your own free will, motivated by scientific curiosity, rather than having the experiment forced upon you by the inhuman taskmasters of the Physics Department.)

Experimental Procedure and Equipment

Describe your set-up (drawings are usually needed) and the method used. Do not just restructure the instructions in the lab hand-out, and do not assume that your reader has read the lab hand-out. Make sure you describe the apparatus before referring to parts of it. A Procedure section, for example, which starts out “We moved the cart back and forth on the track and recorded the position with the sensor” will be incomprehensible to a reader who was not in your class. You need to tell the reader that the apparatus consisted of a cart, a track, and a sensor, and also what kind of cart, track, and sensor you used. Including a sketch of the apparatus is not sufficient description; you must also describe the apparatus briefly in words.

Data/Data Analysis

Present your data and calculations. This is the meat of your report. First present the raw data. Numerical data should be listed in a table and the table referred to in the text; graphical data (for example, position vs. time plots from Science Workshop) should be presented as figures and referred to in the text.

After presenting the raw data, discuss any calculations that you made from that data. If there are results of calculations that would be best presented in a table, make sure they are clearly distinguishable from the raw data, either by putting the processed data in a separate table, or by clearly labeling the columns.

If there are results that would be best presented in a figure, label the figure clearly, and be sure to refer to it in the text. Be sure to label the tables and figures and to refer to them in the text by name (e.g. “Figure 1”, “Table 2”). Don't include a figure without discussing it in the text. Explain the relevance of the figure, and what it tells you about the experiment.
Results and Discussion/Conclusion
If there are further interpretations of the results or significant implications to be discussed, such a discussion should occur in this section. You must also summarize the main results of the experiment.

This is where you should discuss the implications of the comparison between experiment and theory (Does your measurement agree with the theoretical prediction? If so, what does that tell you? If not, why not?) or between two different methods of measurement (If you measured the same quantity in two different ways, which measurement was more accurate?). Address any additional ideas you have about the experiment, such as improvements that could be made, or how the experiment relates to the material discussed in class.