

GENERAL GUIDELINES FOR WRITTEN LAB REPORTS

Title

A good title should describe lab concisely, adequately, appropriately.

List the students who worked on the lab, your group number, and the roles each of you played (Manager, Recorder, Skeptic). If a group member did not contribute to the lab write-up, that student's name should not be included.

Abstract

The abstract should summarize the gist of each part in order and convey a sense of the full report concisely and effectively. Although it should be placed after the title, it is usually best to write the abstract after the rest of the report is complete.

Introduction

The introduction should contain two main points – why is this lab being done, and what are the major physics concepts that apply to this experiment.

Materials and Method

This section should identify all key materials and equipment used, as well as figures (with clear labels) of the setup. The method should clearly and concisely describe what was done (in your own words) and give enough detail so that a student from outside the class could repeat exactly what you did and obtain similar results. Clearly labeled diagrams that portray the physics should also be included in this section.

Predictions

When the lab explicitly requires predictions, you may include them in a separate section or in the materials and methods section. This should present the predictions performed during the lab in class and should include an explanation of those predictions. Do NOT “revise” them after the lab is complete; they do not need to be correct and in fact, predictions are often not correct. An explanation of why your predictions were or were not correct, and what learning occurred as a result of performing the lab should be included in the conclusion section.

Results

The results section should contain all data gathered and analysis of this data. Data should be presented in a table when appropriate and include title, column headings and units for the measurements. Graphs used for analysis must also include a title and labeled axes with units. Sample calculations should be included with explanations of how results were obtained with proper units. The overall findings should be physically sound and stated effectively.

Conclusion

The conclusion is a summary that should explain the findings presented in the results section. If the lab has multiple parts, these components should be tied together. Address any specific questions mentioned in the lab procedure both accurately and concisely. All approximations and assumptions should be stated and predictions need to be addressed, with clear explanations of what was learned. Identify possible sources of error in the experiment, as well as what could be done to improve the data collection (Be specific – do NOT say that the apparatus needs to be better, but explain HOW it should be improved and what effect this might have on the data). Discuss any applications or extensions of these results and possible further study.

SPECIFIC GUIDELINES FOR FIRST WRITTEN LAB REPORT

100 points total

TITLE (4 pts):

Describes lab concisely, adequately, appropriately
Author list complete, with roles and group number included.

ABSTRACT (6 pts):

Summarizes the gist of each part in proper order
Conveys a sense of the full report concisely and effectively

INTRODUCTION (6 pts):

Effectively presents the goals of the report
Successfully establishes the learning context

MATERIALS AND METHODS (15 pts):

Identifies all key materials/equipment used
Presents clearly labeled figures of setup
Clearly and concisely describes what was done
Gives enough details to allow for replication
Clearly labeled physics diagrams are presented

PREDICTIONS (6 pts):

Predictions of x vs. t and v vs. t graphs are included
An explanation of the predictions is given

VPython (12 pts):

Program runs, with an appropriate time step (may be different from given one in lab)
Program obeys momentum principle
Program produces appropriate graphs
Questions about two-dimensional motion are concisely and correctly answered

RESULTS (15 pts):

Effectively states overall findings
Findings (data) are organized and easy to read
Graphs and plots are clear and accurate
Sample calculations completed correctly and explained clearly
Results are physically sound

CONCLUSION (21 pts):

Major findings of the lab (eg Momentum Principle) are explained
All components of lab are tied together (VPython, Fan Cart, Incline)
Predictions are addressed, with clear explanations of what was learned
Questions from part (a) are answered accurately and concisely
Questions from part (b) are answered accurately and concisely
Conclusions are physically correct
Qualitative error analysis is provided (approximations, error sources, improvements, etc.)

PRESENTATION (9 pts):

No spelling errors
English is concise and grammatically correct
Lab report is written in past tense, consistent third **or** first person

EFFECTIVE IN-CLASS WORK (6 pts)

The group made good use of allotted time
The group performed functionally

GROUP EVALUATION (SEPARATELY GRADED, 10 points)