

Lab Report Format

An experiment is an investigation of a problem. We start with a question to which we want an answer. We then make an educated guess as to the answer. We use measuring devices and observations in a procedure that is planned to yield information (data) that hopefully will help us solve our problem. Then we analyze the data and express this as a result. Then we apply the results to the original question in the form of a conclusion.

This course requires a significant number of laboratory activities that will use the above scientific methods. These labs will be worth a significant percentage of your grade, so it is in your best interest to take your labs and their write-ups seriously. The requirements are as follows:

I. Prelab (title, purpose, predictions, procedure (with sketches) & data table)

The night before a lab is scheduled, your homework will involve "getting ready" for the lab. I will usually give you some written instructions, which you must read thoroughly and translate into numerical steps for yourself on paper. Draw pictures of equipment you will be using and procedures you will follow. Make a chart in which to collect data. Leave room to write your observations from the lab and any lab notes. I will stamp this paper at the beginning of the period on the day of the lab (usually 6 pts). **YOU WILL NOT BE ALLOWED TO BEGIN THE LAB WITHOUT COMPLETING THE PRELAB.** This includes the prediction! If you do not prelab completely before class, you will forfeit the 6 points. At that point the highest grade you can get is a "B".

1. **A Title:** Perhaps something poetic, witty, or charming. "Lab #3" is so dull.
2. **Purpose:** One or two brief sentences to identify the problem the experiment addresses.
3. **Predictions:** One or two possibilities of what might happen in the investigation. This should be regarding the science involved, not "I think this lab will be hard" or "I think the results will be accurate."
4. **Procedure:** This is a description of the steps you took. You should use sketches as well as words to indicate what equipment was used and how. This is the only reference you will have in the lab while performing your investigation, so make sure you include all the directions you need.
5. **Data Table:** The procedures describe the nature of data that you will collect. You need to design a table or a list in the prelab so that you know what data to collect during lab and where to write it down.

II. The Experiment

The day of the lab you will perform the experiment by following the procedures you have written. Collect all necessary numerical data and observations. Please consult with your lab partners and me if you have any questions. Always follow the safety guidelines as given, both written and verbal. Keep your prelab paper and your original data, as you will need to turn it in with the final draft of your lab write-up.

5. **Data** - Any measurements or observations go into your data section. When possible, data should be displayed in a table. Data is what you actually collect as you do the experiment. **NO CALCULATIONS!!!!**

III. The Write-up

Once you have completed the lab in class, you will begin working on the final draft of your write-up. I strongly recommend that you type this to increase the likelihood of securing maximum points for neatness (20% of the grade). On the other hand, if you have perfect printing, you may turn in a handwritten copy. The final draft should include all parts of the lab (1-7) in that order. When typing your lab, you may neatly hand draw (use a ruler!) any data charts or graphs if you are unsure how to word process these features. If you do not have a computer with word processing abilities you may use the Macs in the Library.

6. **Results** - This is the section where you analyze the data. This is where calculations, or a graph of the data, or a comparison to an accepted value, is given.
7. **Conclusions** - What conclusions can you draw from your experiment? This is the "meat" of the lab and is where you show me you understand what was going on, or at least have a reasonable idea. Please do not answer the questions posed "1, 2, 3" in a list format. Instead, incorporate your ideas into a paragraph or two. Conclusions are mandatory not optional! Make them detailed enough to show your thoughts, but do not write a book. Relate the lab to the topics we have been covering in class! I want you to use the **"RERUN"** format.

R=Recall what you did during the lab

E=Explain why you did it, what were you trying to find out

R=Reflect on meaning, do your results support your prediction? Why did the experiment proceed as it did?

U=Uncertainty, This is the place to mention how reliable you think your results are (e.g. were there any mishaps that may have affected your results and/or were there design errors or limitations in the lab itself).

N=New questions or ideas (at least 2) that have come up because of the lab

IV. Grading

Prelab with stamp = 6 Neatness in final report = 6 Data & Results = 9 Conclusion = 9 Total = 30 pts

A comprehensive treatise on the correlation between
the number of completed assignments and a student's science grade (**Title**)

Purpose:

The purpose of this experiment is to determine if completing assignments and homework correlate to the grade earned in science.

Hypothesis:

I predict that those students who complete most assignments will have better grades than those who complete few assignments.

Procedure:

1. Provide students with hideous amounts of homework
2. Observe students struggle, sweat, and stick sharp pencils in their eyes.
3. Check homework and assignments for completion on a daily basis
4. Test the students' brains out
5. Analyze data

Data:

Student Name	Q	X	Y	Z	W
Total Assignments	25	25	25	25	25
Complete Assn's	20	10	18	15	12
Test grades	90%	50%	80%	70%	60%

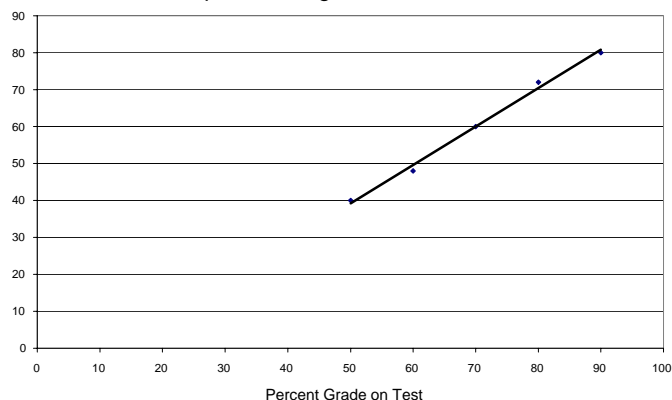
Observations:

1. The students who completed their assignments then asked questions and the answers helped them to overcome their difficulties.
2. Students who did not complete their assignments tended to sleep in class.
3. Students who completed their assignments reported liking science more than they expected!

Results:

- Q $20/25 \times 100 = 80\%$
- X $10/25 \times 100 = 40\%$
- Y $18/25 \times 100 = 72\%$
- Z $15/25 \times 100 = 60\%$
- W $12/25 \times 100 = 48\%$

Relationship of Grades
to Completed Assignments



Conclusion:

In this lab I recorded the homework scores of five random students out of a total of 25 assignments. I also recorded some brief physical observations of the students. This data was compared to the grade the students achieved on tests. This experiment was conducted to determine if there was a correlation between student test grades and the number of completed assignments. I conclude that a student's science grade is directly proportional to the number of assignments completed. My prediction was correct. This is possibly due to the time spent studying the topics while doing homework, or the fact that the homework assignments are very similar to tests so they serve as a practice medium. Possible sources of error in this experiment include: 1) My cat ate my grade book and I constructed most of the data from the leftover shredded bits. 2) There is the 1 in 2,657,899 chance that the entire sampling group was so weird that my data is meaningless. Two new things I learned are that even "smart" students have to do their homework to succeed in science, and therefore I have decided to give twice as much homework this year!