Lab Template

Mr. Rawson
Physics

On the following pages are a lab template designed for you to organize your lab reports. Here is a quick checklist you should follow for each lab:

- ☐ Erase all of the template instructions given, remove bullets and italics unless instructed otherwise
- ☐ Write in full sentences. Avoid colloquialisms.
- ☐ Include all data points, labeled with units
- ☐ Include graphs on a full, separate page
- ☐ Graphs must be labeled with axes, units, and title
- ☐ All sections of the lab are completed
- ☐ Save your labs digitally, and keep in an organized folder

Name –
Physics

Mr. Rawson
April 2, 2008

{ Lab Title}

Introduction	• Describe what the lab pertains to, and how it relates in everyday situations
	• Define the title of the lab
	• If there is a law or formulas which apply to this lab theory, include these and explain them
	  o Use superscripts/subscripts when writing formulas – these are the icons 
	  o Or go to Format – Font – Superscript/Subscript
	  o Use the correct Greek symbols when needed (Insert – Symbol)

Objective	• Include one or two sentences on what the main idea of this lab pertains to.

Hypothesis	• Make a prediction upon the data, and what trend you expect it to follow. A hypothesis is either right or wrong.
	• Do not make a faultless hypothesis, such as
	  o "After this lab we will understand more about friction."- OF COURSE.
	  o "I believe that the energy will transfer from Potential to Kinetic energy." – THIS DOES NOT GIVE AN IDEA OF THE EXPECTED DATA TREND
	  o "The more weight we add to pull down on the spring, the more it will stretch." – YES, BUT THAT'S OBVIOUS.
	• Better hypotheses would be:
	  o "I believe that the cardboard will have the highest coefficient of friction."
	  o "I believe that the higher the ball is released on the track, the faster the velocity will be at launch. Moreover, the height and velocity will have a direct relationship."
	  o "Each time we add 20 grams to the weight pulling on the spring, the distance stretched should be the same."

Materials	• Leave as bulleted list • If you do not know the name, describe the apparatus
Procedure	1. Leave as numbered form 2. Do not include information on whether you started the lab wrong, this is irrelevant 3. If diagrams are necessary, include here

Data Points

- Include all data points in a clear, labeled chart. Make sure all points of one trial are on the same page
- THIS IS NOT ANALYSIS
- Include other group data if required
- Scientific Ethics
    - Record EVERY data point to the best precision possible
    - Do not make up data points, nor change data points
        - If points seem to be wrong, try again
        - If the incorrect value remains, address in error analysis
- Insert your data into the sample table below **Or simply cut and paste from Excel**
-

Spark #	Time (s)	Distance (m)	
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			

    - Insert columns/rows as necessary
- Notes on Data charts
    - Make sure all points are in a discernable order (ascending/descending)
    - Make sure the points have the same decimal points
        - "Format → Format cells" in Excel
- IF A LAB PARTNER FAILS TO SEND YOU THE DATA, THAT IS YOUR FAULT. YOU ARE RESPONSIBLE FOR KEEPING YOUR LAB PARTNERS ACCOUNTABLE

Graphs

- GRAPHS ARE NOT ANALYSIS
- From Excel, place the chart as An Object, and then copy and paste the chart into this Word document. This serves to keep all data in one Word document.
- Make the chart as big as possible, while keeping appropriate shape
- Make sure the lab has a title, label axes WITH UNITS
- Use a trendline, include formula and R2 value

Analysis

- Show calculations and results here, and address how closely the calculations came out to the expected values.
    - Address the data points directly, and look at whether the graphs prove the theory tested
    - Show how closely your data aligns with other group data (if required)
- If your data points do not show alignment with the physical law tested, you cannot say that the law was proved!
    - For example, in the acceleration of gravity lab, one group calculated the acceleration value at 5.3, and then said that the hypothesis came out fine, and the acceleration was 9.81. This assessment is incorrect.
- Use subscripts and superscripts when necessary

Error Analysis

- Incorrectly following the procedure / executing the lab is NOT error analysis, that is simply time wasted on your part. It has nothing to do with error analysis.
- Look at the data points / graph, and look for anomalies. Try to explain certain circumstances to account for these data points which do not align with the theoretical trend we are looking for
- As the experimental values are often slightly off from theoretical values, explain what factors may play a part in leading the data astray (friction, human error, wind resistance, etc.).

Conclusion

- Explain what you have learned in the lab
- Summarize how the law being tested was proven
- Do not include whether you enjoyed the lab (unfortunately, this is irrelevant)
- Include your initial hypothesis, and whether the hypothesis was proven correct. If your hypothesis was disproved, say so. If you do not address your hypothesis in the conclusion, then a major portion of the scientific thought process is lacking.