Name _____   Date _____
AP Physics   Laboratory Procedures
Period _____   Mrs. Nadworny

Final Checklist for Lab Investigations

Use this handy checklist to make sure you did everything you needed to in writing up your investigation. See your Laboratory Procedures handout for more details on each.

Format

Did you staple all the pages of your lab write-up together in the proper order?	
Did you fill out the heading of the lab completely?	
Is your write-up complete? Does it include **all** the sections listed on the Rough Copy (including Title and Research Question)?	
Are your sections clearly labeled using the labels from the Rough Copy?	
Is your write-up in order, that is, the same order as listed on the Rough Copy?	
Are your graphs included in the Data Processing section, not stuck on at the end of the lab?	
Is your lab neatly written up (by hand or by computer)? Neatness counts!	

Design

Did you clearly state the research question as "What is the relationship between ____ and ___?"	
Did you identify the independent and the dependent variables? (only one of each)	
Did you identify all relevant control variables? (Remember, these are measurable quantities, not pieces of equipment.)	
Did you find an appropriate mathematical model (and rearrange it if needed)?	
Did you sketch an expected graph shape and label the axes?	
If the graph is not straight, did you figure out how to straighten it and then sketch and label a new graph?	
Did you state the significance of the slope of this graph by referring to your math model?	
What is the expected y-intercept (most likely 0)? Did you include units?	
Did you state a reasonable hypothesis in the form "The relationship between ____ and ____ is _____"? (Remember, a direct relationship must go through the origin, a linear one doesn't have to.)	
Did you list all the materials needed?	
Do you have a good, clearly labeled diagram?	
Did you explain clearly how to measure the independent and dependent variables?	

Data Collection

Are all the **raw** data (actual measurements) in a table, including the multiple trials you took before averaging them?	
Does each column have a heading with the name, units, and uncertainty?	
Do all data in a single column have the same number of decimal places?	
Does the uncertainty for each column have only one sig fig?	
Does the number of decimal places of the data match the decimal place of the uncertainty? (round, if needed)	
Did you measure all relevant control variables and place these after your data table, labeled with name, symbol, units, and uncertainty?	

Data Processing

Are the values of the processed data placed in the same table after the raw data, or in a separate table, clearly marked with name and units? (It can be the same table, if it is clearly marked.)	
Did you show one single sample calculation of each type and explain what you are doing in words?	
Did you follow the significant figure rules for calculations (add/subtract, multiply/divide)?	
Did you calculate the uncertainties for the processed average data using ½ (max value – min value)? (i.e. – When averaging three time trials to get average time)	
Did you graph your data with:	
- title	
- labeled axes (name, units and scale)	
- show the origin, if possible (no "breaks" in axis)	
- point protectors if the points are too small to be seen clearly	
- draw a best-fit line or curve by hand or by computer (don't connect dots!)	
Did you calculate the slope of the best-fit line, with units, and show a sample calculation? (Calculations don't need to be shown if you use a computer graphing program that does it automatically.)	
Did you write the experimental relationship for your data using appropriate symbols (not "x" and "y") and the slope of your straightened graph?	
Did you compare your experimental relationship to your math model in order to determine the significance of the slope (find some "hidden value")?	
Did you show work to determine the hidden value (if necessary)?	
If your experimental value isn't exactly the same as the literature value, did you calculate a percent error or percent difference? Did you show this calculation?	

Conclusion and Evaluation

Does your conclusion include:	
- a restatement of the purpose of the lab (what relationship were you looking for?)	
- a restatement of your hypothesis for this relationship	
- a statement of conclusion of the actual relationship you found based on your results	
- a justification of your conclusion	
- a restatement of the experimental relationship	
- a restatement of the meaning of the slope	
- report the value of the meaning (or hidden value)	
- a comparison of the meaning (the "hidden value") to a literature value (or a statement why there is none)	
Does your evaluation include:	
- an evaluation of whether or not there was a systematic error	
- all major sources of random uncertainty in the design and method of the investigation	
- an indication of how data was affected	
Did you make a suggestion for improving the experiment related to each of the uncertainties discussed above? Are the suggestions specific and realistic?	
If you were to take more data (a wider range or more repetitions) would that improve your results? Explain.	
Did you describe any modifications that you actually did make during the experiment?	

It may seem like a lot of work at first, and confusing, especially late at night the day before the lab is due, but you may be doing more work than you need to. After you get the hang of it, the reports will go more smoothly and quickly. You'll be amazed at how professional your efforts will become.

Take pride in your work and you will be proud of the results!