

EXPERIMENT/ACTIVITY WRITE-UP PROCEDURE: The Pre-Scientific Letter Notes

Throughout the year, you will be asked to write a **scientific letter** based on the experiments/activities that we will complete. Therefore, you will need to keep track of the experimental details so you can reference it later. The following handout describes the content and format for each experiment write-up.

1. **Notes Section** - This section **must** contain (but is not limited to) all of the parts shown below – in the exact order. The section will **not** be graded for grammar and spelling, but will be checked for completeness, so show all of your work. It will serve as a rough draft for your scientific letter.
 - A. **Title**
 - B. **Hypothesis** – statement that describes the purpose and the proposed result. It is totally fine to have a result different from your hypothesis. “If I do this... then the following will happen...”
 - C. **Diagram** – shows the experimental set-up. Be sure to include the following:
 1. Title
 2. Labels
 - D. **Methods** –procedure! Describes the experimental design and provides enough detail to enable someone to reproduce the results. **DO NOT COPY THE PROCEDURE.**
 1. List of materials
 2. Description of methods and use of materials
 - a. Answers the questions: “How was the experiment performed?” “How much was the equipment changed each trial?”, “When did the trials occur?”, “Is the data repeatable?”
 - b. Shows evidence of control of variables – only change one thing at a time
 - E. **Data** – clearly and simply state the results of the experiment but does not explain.
 1. Take at least 5 data points watching for repeatable, reliable results.
 2. Data Table – include **all** data – even data that you are “throwing out”
 3. Average trials where appropriate
 4. Computer generated graph: SULTAN, if requested.
 - F. **Discussion Questions**– answers the questions “So what?” Answer each question in at least 2 sentences. Take time to do this well.
 1. Which mathematical model best describes the relationship between the variables? What does the graph(s) tell you *about the phenomena* observed? Use the relationship type to help you think about this part.
 2. Try to explain any data points that do not follow the general trend. What are some plausible sources of error? Do not use the words “human error”. Try to be specific about causes of error that were unavoidable. Of course, fix the causes of error that you can.
 3. Where can this effect be seen in the world outside of the laboratory, and/or

how could an engineer use your mathematical model to predict future values? Interpolate and Extrapolate!

4. How does your relationship compare to theory (if known)? In physics, theory can take the form of an equation. Be sure to include the equation and how the theoretical equation compares to your data.

EXPERIMENT/ACTIVITY WRITE UP PROCEDURE	<i>Points Possible</i>	<i>Points Earned</i>	<i>Teacher Comments</i>	<i>Your Score</i> /5
1. Hypothesis	0.5			
2. Diagrams	1			
3. Methods	1			
4. Data	1			
5. Discussion Questions	1.5			