Scientific Investigation Criteria

Background Information (1.1):
1. Summarize prior knowledge you already know or were taught about the concepts in this lab.
2. Define vocabulary and concepts concerning topic.

Problem or Question (1.1):
1. Test for whether a particular variable (independent variable/manipulated variable) does have an effect on the experimental factor (dependent variable/responding variable).
2. Clearly write a testable statement or question that relates to the topic of study.

Hypothesis (1.1):
1. Formulate a testable hypothesis that reflects and builds upon existing knowledge.
2. Example: "I predict or think_____will occur because_____, or "If____then_____ because_____".

Materials (1.1):
1. List all technology, materials, and supplies used to conduct the investigation
2. Use all materials safely; return to location when finished

Procedure (1.1):
1. Write a numbered, step by step set of instructions of exactly what you will do to test your hypothesis.
2. Only one direction should be included in any one step.
3. Include accuracy or validity practices in conducting this experiment (measurement, repeating trials, calibrate tools, etc.)
4. Record measurements on data chart.

Conduct Investigation (1.1):
1. Follow all procedures and safety guidelines
2. Clean up

Data Chart and Graphs (1.2):
1. Construct a data chart to organize all measurable variables; display headings, labels, and units.
2. Calculate numerical data such as averages and percentage; display with units.
3. Record observations, illustrations, models and journal entries in a table or daily log.
4. Graph numerical data; include titles, labeled axis clearly with units, scale axes correctly.

Analysis and Conclusion (1.3, 1.5):
1. **CLAIM**: Make a claim relating to your research question and hypothesis.
2. **EVIDENCE:** Explain results by using numbers with units**.**
   - Look for patterns, trends, similarities.
   - Use appropriate numbers (totals, percentages, averages, rates of change, medium, mean, mode, range and comparisons) to describe and support what happened during the experiment.
3. **ANALYSIS**: Tell the reader what you think your data means.
   - Discuss how you know your data is accurate and compare to typical values.
   - Explain sources of error, inaccuracies, and data that did not belong.
   - State how the errors affected your results.
   - Discuss how this experiment could be improved.
4. **LINK**: Answer your original question.
   - State whether or not your results supported your hypothesis.
   - Summarize what you learned from this investigation.

Share:
1. Professional, neat, and organized; all sections should be labeled and titles underlined.
2. Edit for CUPS (Capitalization, Usage, Punctuation, and Spelling).