

Name _____

Date _____ Period ____

Scientific Inquiry Process Criteria

I. IDENTIFY THE PROBLEM (What do you want to find out?)

- A. Is it specific ?
- B. Is it testable ?
- C. Is it useful ?
- D. Is it safe ?
- E. Is it possible to experiment?

II. BACKGROUND INFORMATION (Minimum of three different sources)

- A. Internet
- B. Books or magazines
- C. Interviews
- D. Encyclopedia
- E. Multimedia (videos, tapes, CD, movies)
- F. Cited properly

III. HYPOTHESIS

- A. Rewrite the problem as a question
- B. The hypothesis is the predicted answer to the question ?
- C. Is it based on research ?
- D. Is it related to the problem ?
- E. Is it specific, testable, useful, and safe ?

IV. EXPERIMENTAL DESIGN

- A. Make a complete list of all materials/equipment you need
- B. Be specific and include :
 1. The quantity of each item.
 2. Identify any brand names.
 3. List the specific type & sizes.
 4. Use metric system units.

V. PROCEDURES

- A. Write accurate step-by-step directions, like a recipe.
- B. Can it be followed easily?
- C. Is it easily replicated? (Can someone else follow it?)
- D. Did you identify the control, independent, & dependent variable?

VI. OBSERVATION / DATA COLLECTION

- A. Collect data at least 10 times.
- B. Record observations in your science log using a data table.
- C. Design your data table.
 1. Include a title.
 2. Include numbers for each data table. (Figure 1, Figure 2, etc.)
 3. Label all columns and rows.
 4. Include a caption that describes the data table.
 5. Is the data related to the topic? Is it useful?
 6. Be neat, organized & legible.

VII. RESULTS (create a visual of the data in the form of a graph)

- A. Graph designs must include:
 1. Title,
 2. A caption (figure heading) (A graph showing ...)
 3. A number for each graph (Figure 1, Figure 2, etc.)
 4. Labels using specific units,
 5. Data that reflects the experiment results.
 6. An appropriate type of graph : bar, line, pie, picto, etc.,
 7. Neatness, legibility and well organized

VII. DATA ANALYSIS / CONCLUSION

- A. Discuss any patterns or relationships found.
- B. Calculate mathematical averages, mean, mode, or median.
- C. Explain what the data shows.
- D. Discuss any experimental errors.

VIII. CONCLUSION (What did I find out or learn from the experiment)

- A. Explain if your results agree or disagree with your hypothesis.
- B. Explain what the data means, why things happened the way they did.
- C. Include any ways to improve this project.

Glossary of science experiment terms

1. Hypothesis an educated guess about how the independent variable will affect the dependent variable.
2. Variables the things in the experiment that change or could be changed
3. Independent variable the variable you change on purpose
4. Dependent variable the variable that responds to the independent variable
5. Constant the standard for comparison
6. Control the things in the experiment that are kept the same for all trials