

# Scientific Method Notes

***A. STEPS OF THE SCIENTIFIC METHOD:***

1) State the Problem or Ask a Question.

2) Form a Hypothesis

- 3) Test the Hypothesis
- 4) Analyze the Results.
- 5) Form a Conclusion.
- 6) Communicate Results

## B. DEFINITIONS:

1. Investigation: one of two possible methods for testing a hypothesis. This includes research and gathering facts to try and solve a problem.

2. Experiment: tests only one factor at a time, and has two parts:

- experimental group,
- control group.

3. Experimental Group: the part of the experiment setup with one changed variable.

4. Control Group: the setup that is exactly like the experimental group but w/o the changed variable.

5. Variable: is the thing that was changed, and is being tested in the experiment.

C. *DETAILS OF THE SCIENTIFIC METHOD:*

1) *State the problem or ask a question.*

- Write what you are trying to solve, or the question you're trying to answer.

## 2) Form a hypothesis:

- It is a clear statement of what you think the answer to the question is.
- You generally need to gather some information to help come up with a good hypothesis.
- It should be simple and reasonable and explain most of the data.

### 3) Test the hypothesis:

- This will be either (1) an investigation or (2) an experiment.
- Keep it simple & organized.
- Observe and collect data.

- Types of data are
  - 1) pictures, 2) descriptions and 3) numbers.

## 4) Analyze the Results:

- Organize data in  
1) tables, & 2) graphs,
- This will allow you to more easily interpret the data and form an accurate conclusion.

## 5) Form a Conclusion:

- Write down if your results (or data) support your hypothesis.

- Give a reasonable answer to the "Statement of the Problem" based on your data.

## 6) Communicate Results:

- Do this by writing or giving an oral report.
- Include the procedure that you followed in your experiment or investigation.

- If possible provide an answer to the Problem/Question.
- It is possible that your experiment/investigation will not lead you to an answer.
- You may have to conduct another experiment/investigation.

## **References:**

Holt, Rinehart & Winston textbook, 2001, “Life Science,” pp 10 – 18.