

# Scientific Method Laboratory Activity – Student Edition

## Applying the Scientific Method

### Background Information:

The scientific method is a procedure used to provide scientific explanations for questions about the world. It outlines the way a scientist can perform an experiment to collect empirical data which can be used to answer a question. The scientist plans their experiment based on background research that allows them to form a hypothesis predicting what may happen. When the experiment is complete, they will use their data to form a conclusion. The key difference between the scientific method and other ways of acquiring knowledge are forming a hypothesis and then testing it with an experiment.

In this laboratory activity, you will apply what you know about the scientific method by following its steps in conducting a simple scientific investigation.

### Learning Objectives:

At the end of this laboratory activity, students are expected to:

- enumerate the steps in the scientific method.
- follow the different steps in scientific method in conducting a simple scientific investigation.

### Pre-lab Activity:

Define the following terms.

a. Problem

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b. Hypothesis

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c. Experiment

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d. Variables

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e. Conclusion

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## Laboratory Proper:

### Materials

For each group of 4 students:

- 4 pieces of same kind of hard candy
- 4 250 mL beakers
- water
- ruler
- scalpel or blade
- timer/stopwatch

### Procedure:

1. The problem that you have to answer in this science investigation is: ***How does surface area of a candy affect how quickly it dissolves in water?***

2. Based on the problem, write a hypothesis in If and then format.

If \_\_\_\_\_, then \_\_\_\_\_.

3. Before you test your hypothesis, list down the variables in the experiment you are planning to conduct. Make sure to have only one independent variable.

Constant Variable(s)	Independent Variable	Dependent Variable

4. Now that you have listed your variables, list down your procedure for testing your hypothesis. Take note of the given materials that you can use for your experiment.

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Period: \_\_\_\_\_

Date: \_\_\_\_\_

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5. Do the experiment based on the procedure you have created. Make sure to gather the results and present it in a table form. Write your table below.

6. Based on the results you obtained, formulate a conclusion.

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### Post-Lab Questions:

1. What was your basis in formulating your hypothesis?

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2. Which part of doing the scientific method did you find challenging? Why?

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3. Did your conclusion support or reject your hypothesis?

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4. How does writing a detailed procedure help you in conducting this science investigation?

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5. What recommendations would you make to those who want to redo your experiment?

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