

Science Homework

Sections 5A, B, C, D, & E

AUGUST 28-SEPT. 1, 2023

Day	Homework
Monday	Speed Bag pages 1-3 → Page 1-2: Read the passage. → Page 3: Complete the graphic organizer.
Tuesday	Speed Bag page 4 → Reread passage on pages 1 & 2 → Complete Vocabulary Drill and Writing to Tie it Together
Wednesday	Speed Bag page 5-6 → Reread passage on pages 1 & 2 → Answer questions on pages 5-6
Thursday	Reread passage on pages 1-2 → Highlight vocabulary terms and definitions and important facts
Friday	• No Homework! Enjoy your weekend 😊

Reminders

- HW 8/28-9/1 DUE Tuesday, September 5
- Vocabulary Quiz Friday, September 1st.
- No School Monday, September 4th.

Science VOCABULARY

Problem Statement
Research
Hypothesis
Manipulated/Independent/Test Variable
Responding/Dependent Variable
Control Variables
Materials
Procedures
Results
Conclusion
Applications
Abstract

[Topic 1a Working
Like a Scientist
Vocabulary Quizlet](#)



The **Scientific Method** is a logical problem-solving technique used to investigate natural occurrences, make decisions, and form new ideas. The Scientific Method involves a series of steps designed to help support a theory or hypothesis. It allows the results from an experiment to be repeated for validity and reliability.

The first step is to define or **state the problem** being researched. The problem must be in the form of a question that examines what, when, where, who, or how. The problem statement must be focused on only one problem. It must be written in no more than two sentences and must not give a possible solution to the problem. The problem statement must be testable. In order for an experiment to be testable, it must have an identified control group and an experimental group. The key to any successful experiment is identifying and managing the three requirements involved in the experimental group. The three requirements include the independent, the dependent, and the controlled variables.

The second step involves **researching the problem**. The problem must be researched using appropriate reference materials to support scientific understanding. Research is the collection of background information on the problem being investigated. Research may be collected from various resources, including books, the internet, personal experiences, initial investigations, or expert opinions on the subject.

The third step is creating a **hypothesis**. The hypothesis is an educated guess based on the research from the previous step. The hypothesis may be written as a simple "if and then" statement that predicts the outcome of the experiment.

The fourth step of the scientific method is designing the **experiment**. This step involves listing and gathering materials, as well as developing and carrying out the procedures.

The **materials** are a list of all the supplies used to carry out the experiment. The materials list consists of specific information about the amounts, sizes, and colors of each item used in the experiment.

The **procedure** is a numbered vertical list of the step-by-step directions for carrying out the experiment. The procedure is clearly written with details so concise that another experimenter could easily perform the same experiment. The experiment must be carried out a minimum of three times (three trials) for the experiment to be reliable.

The fifth step is to **record and organize the collection of data and/or observations**. The information collected is called **data**. This data may be organized in a journal, table, chart, or graph. Scientists often have to make measurements to study objects. Data may be quantitative or qualitative. All quantitative data must include measurements using appropriate units or fixed amounts used as a standard to measure. The units scientists use are grouped in a system called the **metric system**. Three of the most popular measurements made in science are an object's mass in grams, its volume in milliliters, and its length or height in centimeters.

The sixth step is to **analyze the results**. Looking at your data, you must figure out exactly what the information means. The experiment results should be written based on the experiment's collected data, both quantitative and qualitative. Comparative phrases such as "more than," "less than," etc., are instrumental in writing a results paragraph.

The final step of the scientific method is to **draw a conclusion**. At this stage, you must write a summary that indicates whether or not the results support your original hypothesis.

Graphic Organizer

Steps of the Scientific Method	<u>DIRECTIONS:</u> Use the passage to explain the following steps:
Step 1: State the problem	
Step 2: Research your question	
Step 3: State your hypothesis	
Step 4: Perform the experiment	
Step 5: Organize the data	
Step 6: Analyze the data	
Step 7: Draw a conclusion	

Vocabulary Drill

DIRECTIONS: Identify the statement which best depicts the key vocabulary word.

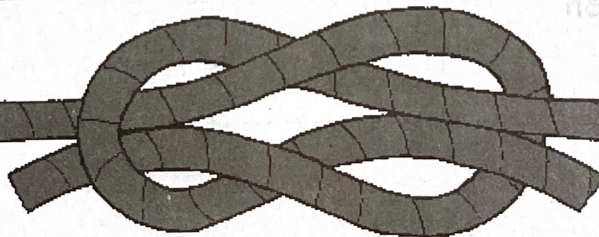
- _____ 1. The hypothesis can be accepted because the electromagnet with the longer copper wire had greater strength
- _____ 2. The electromagnet with 60 cm of wire picked up six more paper clips on average as compared to using 30 cm of wire
- _____ 3. One D-cell battery and one battery holder
- _____ 4. Attach one end of the wire to the negative pole of the battery
- _____ 5. If a longer copper wire is used, then the electromagnet will have greater strength
- _____ 6. Does the length of a copper wire affect the strength of an electromagnet?

KEY VOCABULARY

- A. Problem
- B. Hypothesis
- C. Conclusion
- D. Results
- E. Procedure
- F. Materials

Writing to Tie It Together

Explain why the scientific method is an important part of all scientific investigations.



PRACTICE QUESTIONS

SC.5.N.1.1

- 1 Scientists throughout the world follow a standard used to guide scientific investigations from beginning to end. What scientific term is used to describe this universal scientific practice?

☐ A conclusion
☐ B metric system
☐ C materials list
☐ D scientific method

- 2 Michelle's science lab teacher instructed her to follow these procedures:

Step 1: Collect three different types of bean seeds.

Step 2: Place three of each type of bean seed in three different potting soils.

Step 3: Provide them each with the same amount of sunlight and water.

Step 4: Record observations.

Which of the following statements is Michelle **most likely** testing?

☐ A the effect of potting soil on the germination of bean seeds
☐ B the effect of sunlight on the growth rate of bean seeds
☐ C the variant amount of water on the growth of bean seeds
☐ D the growth rate of different types of bean seed

- 3 Clyde notices that a television commercial he watches regularly advertises a **laundry** detergent for its ability to make white clothes brighter than when using any **other** detergent. How can Clyde determine if the laundry detergent being advertised is capable of making whites brighter?

☐ A Clyde needs to know that all information advertised on television commercials are true.
☐ B There is no need for Clyde to test this claim because all brands of detergents clean the same.
☐ C Clyde can compare different brands of detergents with the one advertised to see which one cleans whites best.
☐ D Clyde can compare different pieces of white clothing after **washing** them with the advertised detergent.

PRACTICE QUESTIONS

SC.5.N.1.1

- 4 Ming Lee set up her experiment and begin to list everything she did step by step. By the time Ming Lee finished her list, she had recorded 21 steps altogether.

Step 1: Label three 6-ounce cups A, B, and C.

Step 2: Fill each 6-ounce cup with baking soda.

Step 3: Half-fill a 16-ounce cup with vinegar.

Step 4: Use modeling clay to mold a volcano look-alike around a 16-ounce cup.

What is another name used to describe the list that Ming Lee made?

- ☐ A Data Log
- ☐ B Results
- ☐ C Materials
- ☐ D Procedures

- 5 As Mollie prepared to place all of her written parts on her science board, she noticed that one part was not labeled. Mollie could not use her science fair packet to determine which part of the experiment it belonged to because she had left it in her desk at school. Mollie then decides to call a classmate from school and read her the unlabeled part to see if she could help.

Unlabeled part to a science project:

"Brand A diapers absorbed 10 milliliters more water than Brand B and 16 milliliters more water than Brand C diapers. It was interesting to see how Brand C diapers began to come apart after only a few minutes of soaking in the water."

What should Mollie's classmate tell her about the unlabeled part?

- ☐ A The unlabeled part must be the conclusion.
- ☐ B The unlabeled part is the results from the experiment.
- ☐ C The unlabeled part has to be a part of the materials.
- ☐ D The unlabeled part is the hypothesis.