

SECTION**1****Reinforcement****The Methods of Science****Chapter 1.1 Review**

Directions: Complete the following.

1. Place the following in logical order by writing the numbers 1 through 6 in the spaces provided.

- _____ a. analyze the data
- _____ b. test the hypothesis
- _____ c. form a hypothesis
- _____ d. gather information
- _____ e. state the problem
- _____ f. draw conclusions

2. What is an experiment?

3. Why is a control important in an experiment?

4. Why is it important to follow all directions in an experiment carefully?

5. How can a model be useful to a scientist?

6. Why is gravity an example of a scientific law?

7. Does technology always follow science? Explain.

Directed Reading for
Content Mastery**Section 1 ■ The Methods of
Science****Section 2 ■ Standards of
Measurement**

Directions: In each of the following statements, a term has been scrambled. Unscramble the term and write it on the line provided.

- _____ 1. An exact quantity that people agree to use for comparison is a *ndtsarda*.
- _____ 2. A process that uses observation and experimentation to gain knowledge is *nseccie*.
- _____ 3. An explanation based on many observations supported by experimental results is a *yethor*.
- _____ 4. A statement about what happens in nature that seems to be true all the time is a *scenicifit wal*.
- _____ 5. An educated guess using what you know and observe is a *pythoshise*.
- _____ 6. An idea, event, or object that represents something that is being explained is a *domel*.
- _____ 7. A hypothesis can be tested by conducting an *pexetrimne*.
- _____ 8. The solution is not obvious, and important information is missing in a *blepmor*.
- _____ 9. Different SI units are combined to obtain a *rvidede tniu*.
- _____ 10. Mass per unit volume of material is *ndseyit*.
- _____ 11. A quantity that can have more than a single value is called a *lebirava*.
- _____ 12. Solving a problem involves finding missing *timrifonona*.
- _____ 13. SI is an abbreviation for *aiItonanerntl* System of Units.
- _____ 14. The amount of space occupied by a substance is its *lvuoem*.
- _____ 15. Absolute zero is zero on the *lKneiv lsace*.



The Scientific Method

First read the outline of the scientific investigation below. Then match each letter from the outline with a step in the scientific method.

- A. Ask a question about something you have observed:
Do objects that float in water float in other liquids?
- B. Research in a library to find out how density affects floating.
- C. State a guess about density and floating that you can test.
- D. Perform an experiment with controls to test your hypothesis.
- E. State a conclusion about the relationship of density and floating based on the results of your experiment.
- F. Communicate the results in a report.

- 1. _____ Forming a hypothesis
- 2. _____ Stating a conclusion
- 3. _____ Gathering information
- 4. _____ Stating the problem
- 5. _____ Testing the hypothesis
- 6. _____ Reporting results

Use each term below to complete statements 7–10.

dependent independent controls variables

- 7. Factors that must remain the same throughout an experiment are called _____.
- 8. Factors that change during an experiment are called _____.
- 9. Variables that you cause to change are called _____ variables.
- 10. Factors that change because of changes in the independent variable are called _____ variables.

In the following scientific investigation, identify the steps of the scientific method and the variables in the experiment:

Teresa wants to know if plants grow as well in artificial light as they do in sunlight. She talks to her biology teacher about the subject and reads a book on plants at the library. She thinks that plants will probably get enough light from ordinary light bulbs. She decides to set up an experiment to find out. There's a little plant with red and green leaves on the window sill in her room. She takes a picture of it then covers up the windows in her room completely. During the day she keeps the light on. She is sure to water the plant in the usual way during the two weeks of experimenting. After two weeks, she compares the plant to the picture of it. She makes a determination about the affects of artificial light on plant growth. She presents her entire investigation to her classmates.

Scientific Method

How Teresa used the steps

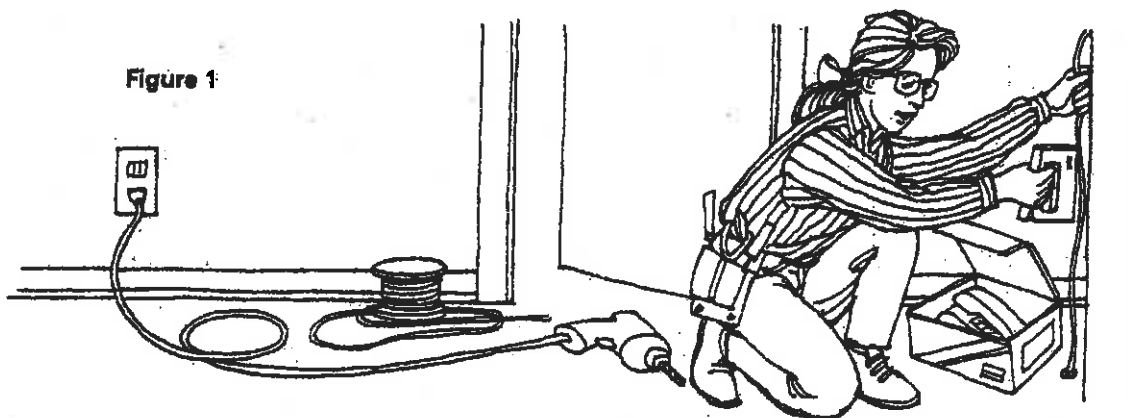
_____	Step One	_____
_____	Step Two	_____
_____	Step Three	_____
_____	Step Four	_____
_____	Step Five	_____
_____	Step Six	_____

Independent variable _____

Dependent variable _____

Controls _____

Observations and Inferences



Look at Figure 1. After statements 1–8, write *observation* if the statement is an observation, or write *inference* if the statement is an inference.

3. The woman is kneeling.
4. The woman works for a telephone company.
5. The woman is using a staple gun.
6. There is a telephone in a box.
8. The woman has done this many times before.

Use Figure 2 to complete exercises 9–10.

9. Look at the line segment from A to B in Figure 2. Now look at the line segment from B to C. Make an inference about the line segments. Is one line segment longer? Which one?
10. Use a ruler to compare the lengths of the two line segments in Figure 2. Does this observation change the inference you made above? Explain why or why not.

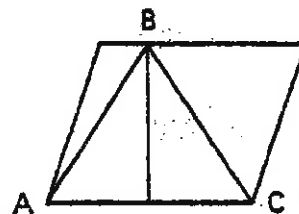


Figure 2

Listening In

1. Figure out what step in the scientific method the scientists are practicing. Write the name of the step in the blank.

a. "Wow! I can't believe how green the grass is over there. Why isn't it brown like on our side of the mountain?"

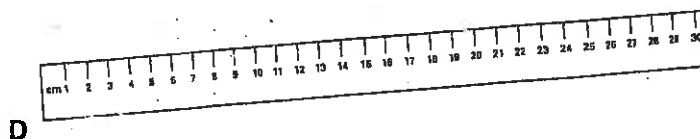
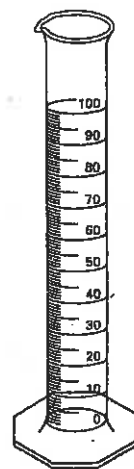
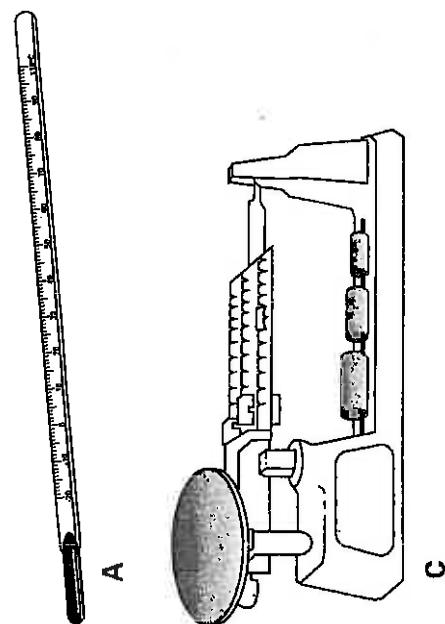
b. "All right, Nan, flip that switch and cross your fingers."

c. "And that concludes my presentation on the effects of music on mollusk reproduction rates. Are there any questions?"

d. "Hmmm . . . If television viewing is important to weasel growth, then weasels who watch less television will not grow as much."

e. "Interesting. My graph of weasel weights shows that weasels that watch sitcoms weigh about 2 kg more!"

f. "The soil is richer where the grass is green. Shall we conclude that the soil is always richer on the other side?"



24. Match the letters in the diagram with the following descriptions. Write the correct letters on the lines provided.

a. used to measure length

a. _____

b. used to measure volume of a liquid

b. _____

c. used to measure temperature

c. _____

d. used to measure mass

d. _____