

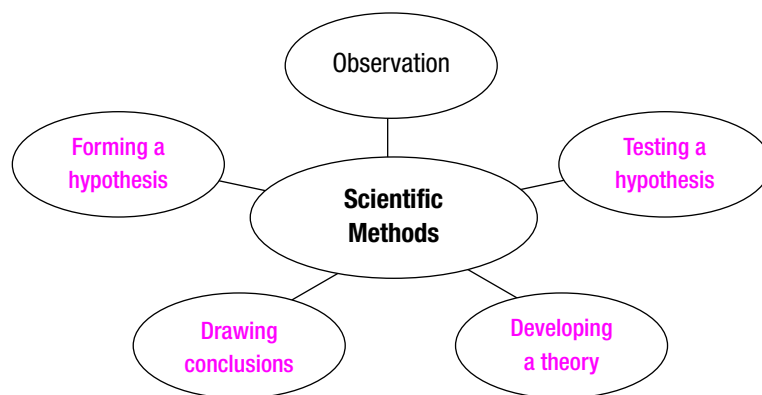
Chapter 1 Science Skills

# Section 1.2 Using a Scientific Approach (pages 7–11)

*This section describes scientific methods and how they are used to understand the world around you.*

## Reading Strategy (page 7)

**Using Prior Knowledge** Before you read, add to the web diagram what you already know about scientific methods. After you read the section, revise the diagram based on what you have learned. For more information on this Reading Strategy, see the **Reading and Study Skills** in the **Skills and Reference Handbook** at the end of your textbook.



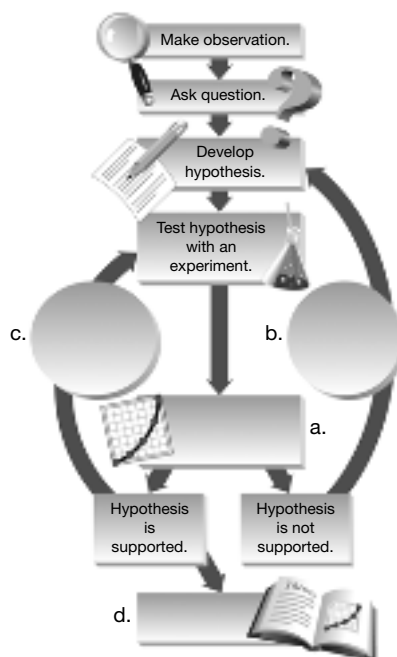
## Scientific Methods (pages 7–9)

1. Identify the goal of any scientific method. The goal of any scientific method is to solve a problem or better understand an observed event.
2. Name three types of variables in an experiment.  
 a. Manipulated variable    b. Responding variable    c. Controlled variable
3. Is the following sentence true or false? If the data from an experiment do not support your hypothesis, you can revise the hypothesis or propose a new one. true
4. How does a scientific theory differ from a hypothesis? A hypothesis is an untested explanation for an observation while a theory is a well-tested explanation for a set of observations.

Match the following vocabulary terms to the correct definition.

Definition	Vocabulary Terms
<u>c</u> 5. Information that you obtain through your senses	a. theory
<u>a</u> 6. A well-tested explanation for a set of observations	b. hypothesis
<u>b</u> 7. A proposed answer to a question	c. observation

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8. Complete the model of a scientific method by filling in the missing steps.

- a. Analyze data and draw conclusions      b. Revise hypothesis  
 c. Test hypothesis with further experiments      d. Develop theory

**Scientific Laws (page 9)**

9. Is the following sentence true or false? A scientific law attempts to explain an observed pattern in nature. false  
 10. All scientists may accept a given scientific law, but different scientists may have different scientific theories to explain it.

**Scientific Models (page 10)**

11. Why do scientists use scientific models? Scientists use scientific models to make it easier to understand things that might be too difficult to observe directly.  
 12. Circle the letters that correctly state what scientists do if data show that a model is wrong.  
 (a) Change the model.      (b) Replace the model.  
 c. Ignore the data.      d. Revise the data.

**Working Safely in Science (page 11)**

13. Circle the letters of safety precautions to follow whenever you work in a science laboratory.  
 (a) Study safety rules.      b. Never ask questions.  
 (c) Read all procedural steps.      (d) Understand the procedure.  
 14. Why should you wash your hands after every experiment? You should wash your hands after experiments to remove chemicals that you may have touched.