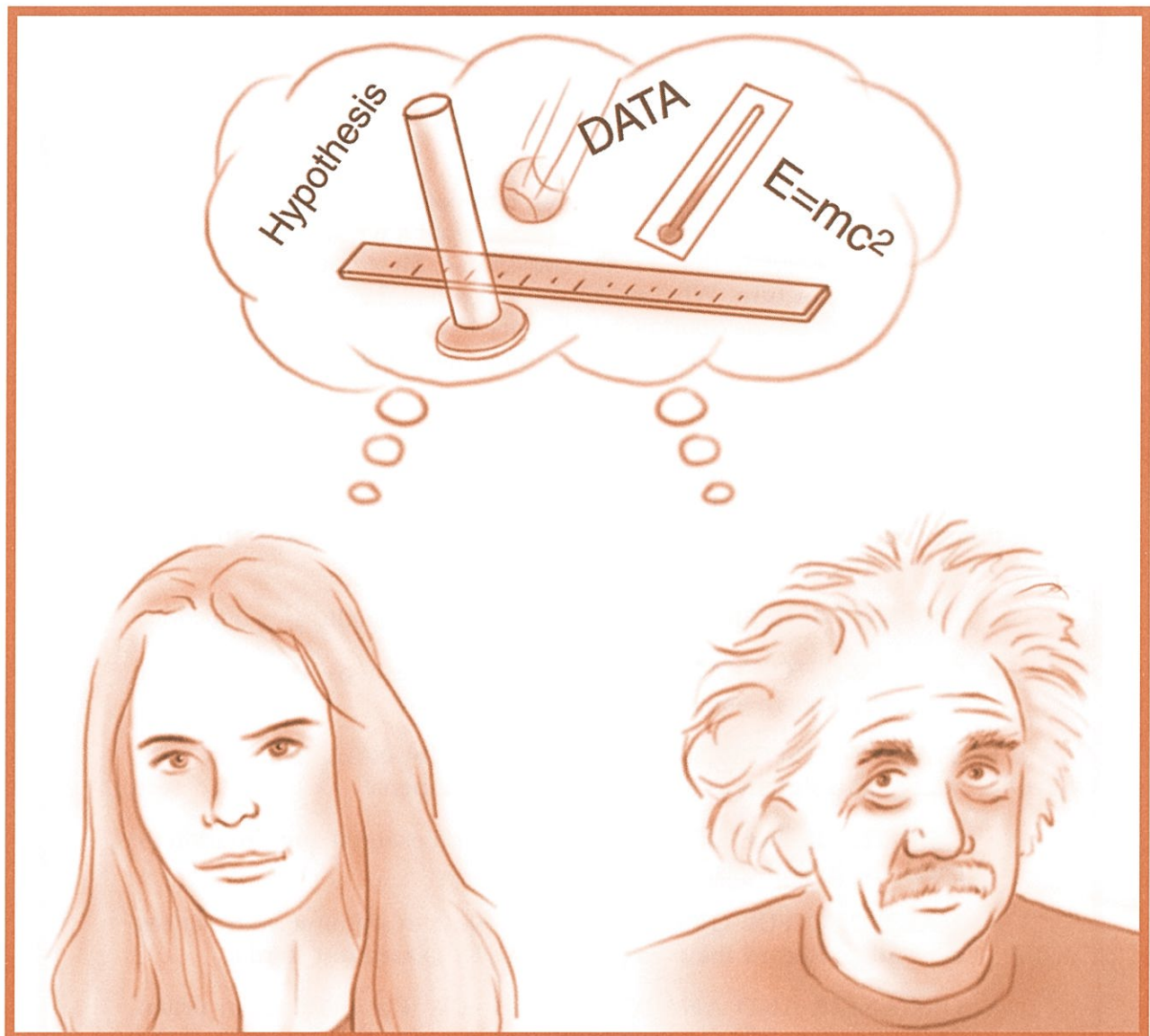


What is scientific method?



KEY TERMS

scientific method: problem solving guide

hypothesis: suggested solution to a problem based upon known information

data: record of observations

LESSON 2 | What is scientific method?

You may not realize it, but you do problem-solving every day. You do not always think about how to solve a particular problem. You solve problems in sort of a “natural” way, a way that seems to “make sense.” And it usually does.

For example, suppose you put your key into your house door and try to turn it, but it does not budge. You wonder what’s wrong. You examine the key to make certain that it is the correct one. Then you try again. The key still does not turn. What next? You might “jiggle” the key. Or, you might pull back on the doorknob as you try to turn the key. One of these approaches might work. If not, you try other methods until the problem is solved.

Without knowing it, you solve problems very much like a scientist does. You use **scientific method**. Scientific method is a guide used to solve problems. It involves asking questions, making observations, and trying things out in an orderly way. Scientists use certain steps to solve problems. The steps of scientific method are:

- **IDENTIFY THE PROBLEM** State it clearly—usually as a question.
- **GATHER INFORMATION** Research; ask questions. Discover what is already known about the problem.
- **STATE A HYPOTHESIS** A **hypothesis** [hy-PAHTH-uh-sis] is a suggested solution as to why something happens.
- **TEST THE HYPOTHESIS** Experiment and examine the situation to check the hypothesis.
- **MAKE CAREFUL OBSERVATIONS** Note everything your senses can gather. Record the **data** [DAYT-uh]. Keep careful records.
- **ORGANIZE AND ANALYZE THE DATA** Put the data in order. Scientists often use charts and tables to organize data. Figure out the meaning of the data.
- **STATE A CONCLUSION** Explain the data. State whether or not it supports the hypothesis.

Different problems require different approaches. Not every step in scientific method needs to be used. And the steps can be used in any order.

CHOOSE THE RIGHT CAPTION

Below are eight figures and eight captions. Each caption matches one of the figures. Choose the caption that best describes each figure. Write the correct caption on the line provided.

Choose from these captions:

Identify the problem Make careful observations

Gather information Record the data

State a hypothesis Analyze the data

Test the hypothesis State a conclusion



Figure A

1. _____

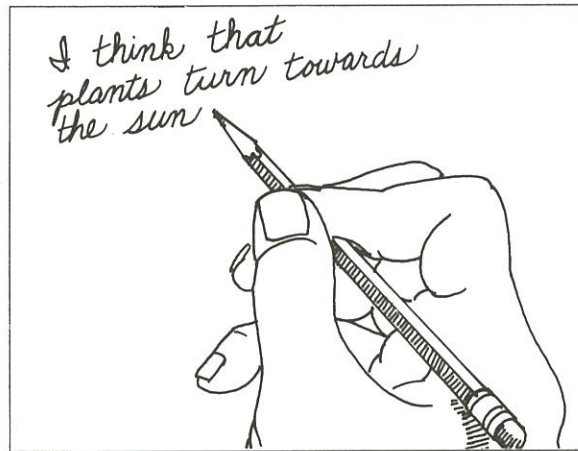


Figure B

2. _____



Figure C

3. _____

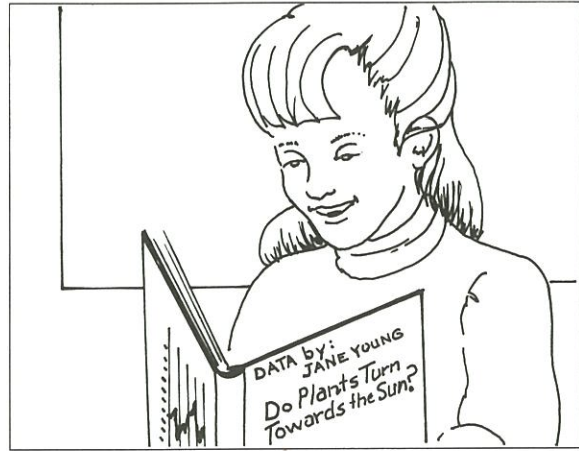


Figure D

4. _____

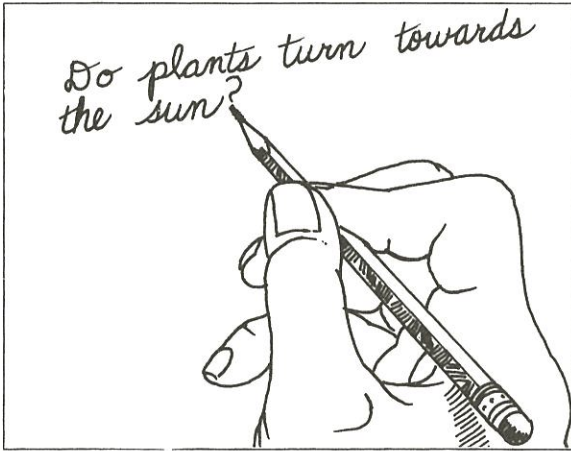


Figure E

5. _____

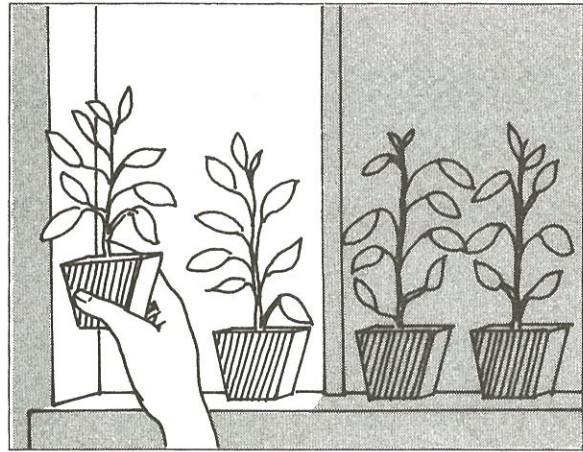


Figure F

6. _____

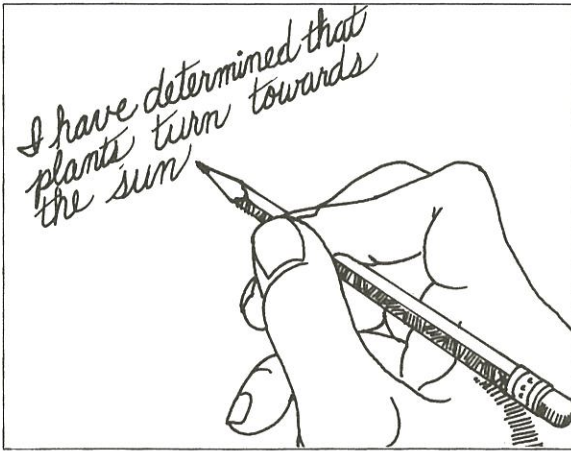


Figure G

7. _____

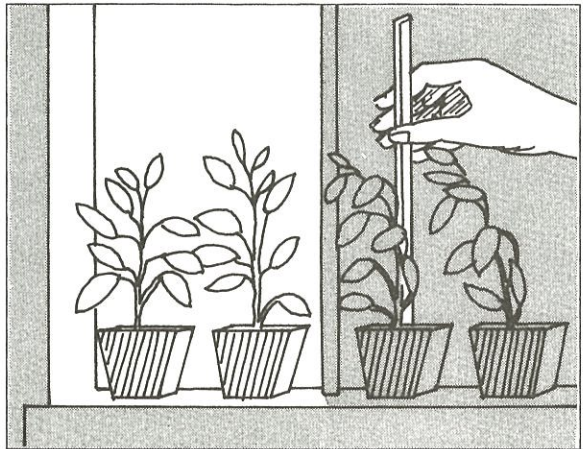


Figure H

8. _____

MATCHING

Match each term in Column A with its description in Column B. Write the correct letter in the space provided.

Column A

- _____ 1. analyze
- _____ 2. scientific method
- _____ 3. conclusion
- _____ 4. hypothesis
- _____ 5. experiment

Column B

- a) explains the data
- b) suggested solution
- c) test the hypothesis
- d) guide for solving problems
- e) figure out the meaning

USING YOUR IMAGINATION AND SCIENTIFIC REASONING

Two separate stories are shown in the figures below. However, the figures in each are not in the proper order (sequence). In the table under each set of figures, list the figures in their proper order. Also, explain what is happening in each figure. Finally, write a hypothesis (in question form) and a conclusion.

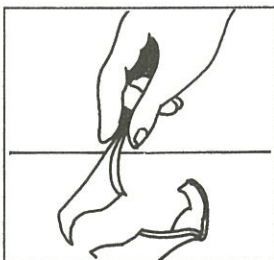


Figure I

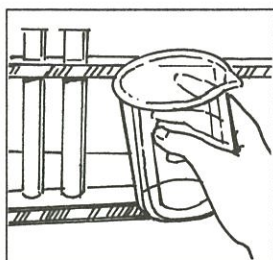


Figure J

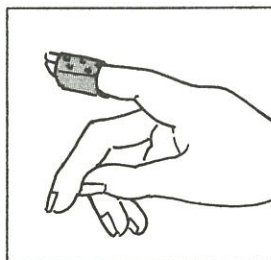


Figure K

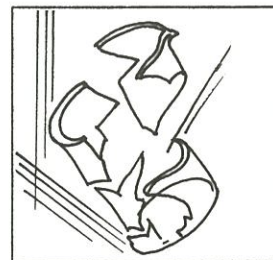


Figure L

Step	Figure	Explanation
1.		
2.		
3.		
4.		

Hypothesis: _____

Conclusion: _____



Figure M



Figure N

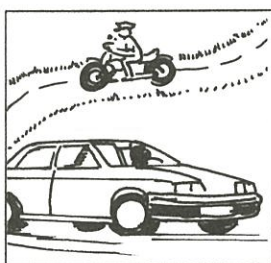


Figure O

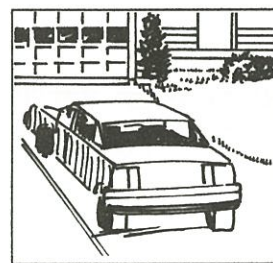


Figure P

Step	Figure	Explanation
1.		
2.		
3.		
4.		

Hypothesis: _____

Conclusion: _____

FILL IN THE BLANK

Complete each statement using a term or terms from the list below. Write your answers in the spaces provided.

supports
problems
data
steps

observe
question
scientific method

different
already known
senses

1. To test a hypothesis, scientists may _____ natural events.
2. When scientists research, they may find out what is _____ about a problem.
3. Your _____ gather information.
4. A conclusion states whether or not data _____ a hypothesis.
5. A problem is usually stated as a _____ .
6. Scientists use certain _____ to solve problems.
7. You solve _____ much like scientists do.
8. Different problems can be solved in _____ ways.
9. A guide used to solve problems is called _____ .
10. Scientists use charts to put _____ in order.

REACHING OUT

Jennifer has never eaten asparagus. She is afraid that it might make her sick. At dinner, she eats some. She likes the taste, but soon she suffers from nausea. Jennifer concludes that asparagus makes her sick.

1. Why might Jennifer's conclusion be incorrect? _____

2. What might be done to further test her conclusion? _____

