Name _____ Date _____ Class _____

1.3 THINKING LIKE A SCIENTIST

Section Review

Objectives

- Explain how alchemy laid the groundwork for chemistry
- Describe how Lavoisier transformed chemistry
- Identify three steps in the scientific method
- Explain why collaboration and communication are important in science

Vocabulary

- scientific method
- observation
- hypothesis
- experiment
- manipulated variable
- responding variable
- theory
- scientific law

Part A Completion

Use this completion exercise to check your understanding of the concepts and terms that are introduced in this section. Each blank can be completed with a term, short phrase, or number.

Before there were chemists, ___1___ were studying matter. They developed ___2___ and ___3___ for working with chemicals.

Lavoisier helped make chemistry a science of ___4___.

A logical, ___5___ approach is the best way to solve a difficult problem. One logical approach to solving scientific problems is the ___6___. This method may begin with an observation, followed by ___7___, or a proposed explanation for what is observed. You can conduct an ___8___ to test a hypothesis. If a hypothesis meets the test of repeated experimentation, it may become a ___9___, which is a well-tested explanation for a broad set of observations. A ___10___ is a concise statement that summarizes the results of many observations and experiments.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Name _____ Date _____ Class _____

Part B True-False

Classify each of these statements as always true, AT; sometimes true, ST; or never true, NT.

_____ **11.** A theory can be easily proved.

_____ **12.** Scientific laws explain observations.

_____ **13.** A well-planned experiment will disprove a hypothesis.

Part C Matching

Match each description in Column B to the correct term in Column A.

Column A	Column B
_____ **14.** scientific method	**a.** variable that one changes during an experiment
_____ **15.** observation	**b.** information obtained through one's senses
_____ **16.** manipulated variable	**c.** a logical approach to the solution of scientific problems
_____ **17.** hypothesis	**d.** a means to test a hypothesis
_____ **18.** experiment	**e.** a proposed explanation for an observation
_____ **19.** responding variable	**f.** variable that is observed during an experiment

Part D Questions and Problems

Answer the following questions in the space provided.

20. Classify each step in the following application of the scientific method as an observation, a hypothesis, an experiment, or a scientific law.

a. An iron ball falls to the ground when you drop it.

_____

b. Earth is a giant magnet, which attracts iron objects.

_____

c. An iron ball and a piece of wood are dropped from the same height.

_____

d. The iron ball and wood fall at the same rate.

_____

e. Gravity attracts every object in the universe to every other object.

_____

21. What two processes practiced by scientists increase the likelihood of a successful outcome in science?

_____