

# Chapter Review

## USING KEY TERMS

- 1 Use each of the following terms in a separate sentence: *physical property*, *chemical property*, *physical change*, and *chemical change*.

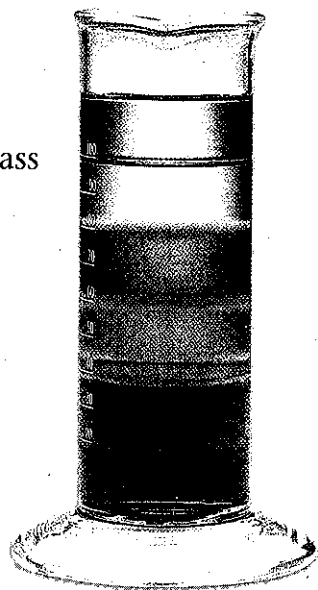
For each pair of terms, explain how the meanings of the terms differ.

- 2 *mass* and *weight*  
3 *inertia* and *mass*  
4 *volume* and *density*

## UNDERSTANDING KEY IDEAS

### Multiple Choice

- 5 Which of the following properties is NOT a chemical property?  
a. reactivity with oxygen  
b. malleability  
c. flammability  
d. reactivity with acid
- 6 The volume of a liquid can be expressed in all of the following units EXCEPT  
a. grams.  
b. liters.  
c. milliliters.  
d. cubic centimeters.
- 7 The SI unit for the mass of a substance is the  
a. gram.  
b. liter.  
c. milliliter.  
d. kilogram.
- 8 The best way to measure the volume of an irregularly shaped solid is to  
a. use a ruler to measure the length of each side of the object.  
b. weigh the solid on a balance.  
c. use the water displacement method.  
d. use a spring scale.
- 9 Which of the following statements about weight is true?  
a. Weight is a measure of the gravitational force on an object.  
b. Weight varies depending on where the object is located in relation to the Earth.  
c. Weight is measured by using a spring scale.  
d. All of the above
- 10 Which of the following statements does NOT describe a physical property of a piece of chalk?  
a. Chalk is a solid.  
b. Chalk can be broken into pieces.  
c. Chalk is white.  
d. Chalk will bubble in vinegar.
- 11 Which of the following statements about density is true?  
a. Density is expressed in grams.  
b. Density is mass per unit volume.  
c. Density is expressed in milliliters.  
d. Density is a chemical property.



### Short Answer

- 12 In one or two sentences, explain how the process of measuring the volume of a liquid differs from the process of measuring the volume of a solid.

- 13 What is the formula for calculating density?
- 14 List three characteristic properties of matter.

### Math Skills

- 15 What is the volume of a book that has a width of 10 cm, a length that is 2 times the width, and a height that is half the width? Remember to express your answer in cubic units.
- 16 A jar contains 30 mL of glycerin (whose mass is 37.8 g) and 60 mL of corn syrup (whose mass is 82.8 g). Which liquid is on top? Show your work, and explain your answer.

### CRITICAL THINKING

- 17 **Concept Mapping** Use the following terms to create a concept map: *matter, mass, inertia, volume, milliliters, cubic centimeters, weight, and gravity.*
- 18 **Applying Concepts** You hear an advertisement for a medicine that is available in a time-release formula. What property might be important in the design of this product? As an informed consumer, under what conditions would you most likely choose this product? Explain your reasoning.
- 19 **Analyzing Processes** You are making breakfast for your friend Filbert. When you take the scrambled eggs to the table, he asks, "Would you please poach these eggs instead?" What scientific reason do you give Filbert for not changing his eggs?

- 20 **Identifying Relationships** You look out your bedroom window and see your new neighbor moving in. Your neighbor bends over to pick up a small cardboard box, but he cannot lift it. What can you conclude about the item(s) in the box? Use the terms *mass* and *inertia* to explain how you came to your conclusion.
- 21 **Analyzing Ideas** You may sometimes hear on the radio or on TV that astronauts are weightless in space. Explain why this statement is not true.

### INTERPRETING GRAPHICS

Use the photograph below to answer the questions that follow.



- 22 Why is aluminum suitable for use in the technological design of this can?
- 23 When this can was crushed, did it undergo a physical change or a chemical change?
- 24 How does the density of the metal in the crushed can compare with the density of the metal before the can was crushed?
- 25 Can you tell what the chemical properties of the can are by looking at the picture? Explain your answer.