

Skills Worksheet

Directed Reading B

Section: What Is Matter? (pp. 78–83)

MATTER

1. What characteristic do a human, hot soup, the metal wires in a toaster, and the glowing gases in a neon sign have in common?

2. What is matter?

MATTER AND VOLUME

_____ 3. Which of the following units would be best for expressing the amount of water in a lake?

- a. grams (g)
- b. liters (L)
- c. meters (m)
- d. milliliters (mL)

_____ 4. Which of the following units would be best for expressing the volume of soda in a can?

- a. centimeters (cm)
- b. grams (g)
- c. liters (L)
- d. milliliters (mL)

5. What is volume?

6. Things with _____ cannot share the same space at the same time.

7. To measure the volume of water in a graduated cylinder, you should look at the bottom of the curve at the surface of the water called

the _____.

8. The volume of solid objects is commonly expressed

in _____ units.

9. What three dimensions are needed to find the volume of a rectangular solid?

Directed Reading B *continued*

10. How could the volume of a 12-sided object be found using water and a graduated cylinder?

11. If the volume of water displaced by the 12-sided object is 8 mL, what is the volume of the 12-sided object in cubic units?

MATTER AND MASS

_____ **12.** The measure of the amount of matter in an object is its

- a. volume.
- b. length.
- c. meniscus.
- d. mass.

_____ **13** The measure of the gravitational force on an object is its

- a. mass.
- b. length.
- c. weight.
- d. volume.

_____ **14.** The SI unit of mass is the

- a. newton.
- b. liter.
- c. kilogram.
- d. pound.

_____ **15.** One newton is about equal to the weight of an object that has

- a. a mass of 100 g on the moon.
- b. a volume of 1 m³ on Earth.
- c. a mass of 1 kg on Earth.
- d. a mass of 100 g on Earth.

16. What is the only way to change the mass of an object?

Directed Reading B *continued*

For each description, write whether it applies to mass or to weight.

_____ **17.** is always constant no matter where the object is located

_____ **18.** is measured using a spring scale

_____ **19.** is expressed in grams (g), kilograms (kg), or milligrams (mg)

_____ **20.** is expressed in newtons (N)

_____ **21.** is less on the moon than on Earth

Skills Worksheet

Directed Reading B**Section: Physical Properties** (pp. 84–89)**IDENTIFYING PHYSICAL PROPERTIES**

- _____ 1. A characteristic of matter that can be observed or measured without changing the identity of the matter is a
- matter property.
 - physical property.
 - chemical property.
 - volume property.
- _____ 2. Some examples of physical properties are
- color, odor, and reactivity.
 - color, odor, and speed.
 - color, odor, and mass.
 - color, odor, and anger.

Match the correct example with the correct physical property. Write the letter in the space provided.

- | | |
|---|-------------------------|
| _____ 3. Aluminum can be flattened into sheets of foil. | a. state |
| _____ 4. Water is frozen into ice. | b. solubility |
| _____ 5. Copper can be pulled into thin wires. | c. thermal conductivity |
| _____ 6. Your hand grows warm from holding a cup of hot liquid. | d. malleability |
| _____ 7. Flavored drink mix dissolves in water. | e. odor |
| _____ 8. An onion gives off a very distinctive smell. | f. ductility |
| _____ 9. A golf ball has more mass than a table tennis ball. | g. density |

10. Density is the _____ that describes the relationship between mass and volume.

11. The amount of matter in a given space, or volume, is called _____.

12. What is the equation for density?

Directed Reading B *continued*

13. What do D , V , and m stand for in the equation for density?

14. The units for density consist of a mass unit divided by a(n)

_____ unit.

15. What happens to the density of a given substance if you increase the amount of the substance that you have?

16. What are two reasons why density is a useful physical property for identifying substances?

17. Why would 1 kilogram of lead be less awkward to carry around than 1 kilogram of feathers?

18. What will happen to a solid object made from matter with a greater density than water when it is dropped into water?

19. How will knowing the density of a substance help you determine whether an object made from that material will float in water?

20. If you pour different liquids into a graduated cylinder, the liquids will form layers based upon differences in their _____.

Directed Reading B *continued*

21. If you pour different liquids into a graduated cylinder, which layer of liquid will settle on the bottom?

22. If you pour different liquids into a graduated cylinder, where will the layer of liquid with the lowest density be found?

PHYSICAL CHANGES: NO NEW SUBSTANCES

23. A change that affects only the physical properties of a substance is known as a(n) _____.

24. What kind of changes are changes of state, such as melting and freezing?

Identify which of the following activities represent physical changes by writing *PC* in the space provided. Put an *X* beside activities that do not.

_____ **25.** sanding a piece of wood

_____ **26.** baking bread

_____ **27.** crushing an aluminum can

_____ **28.** melting an ice cube

_____ **29.** dissolving sugar in water

_____ **30.** molding a piece of silver

31. When a substance undergoes a physical change, its _____ does not change.

32. What is changed when matter undergoes a physical change? Give an example to explain your answer.

Directed Reading B

Section: Chemical Properties (pp. 90–95)

IDENTIFYING CHEMICAL PROPERTIES

- _____ 1. A property of matter that describes its ability to change into new matter with different properties is known as a(n)
- a. chemical change.
 - b. physical change.
 - c. chemical property.
 - d. physical property.
- _____ 2. The chemical property that describes the ability of substances to change and form one or more new substances is called
- a. reactivity.
 - b. flammability.
 - c. density.
 - d. solubility.
- _____ 3. The ability of a substance to burn is a chemical property known as
- a. ductility.
 - b. flammability.
 - c. density.
 - d. solubility.
- _____ 4. An iron nail is reactive with
- a. rubbing alcohol.
 - b. other iron nails.
 - c. wood in a house.
 - d. oxygen in the air.
- _____ 5. Which of the following statements is true about characteristic properties of matter?
- a. Characteristic properties depend on the size of the sample.
 - b. Characteristic properties may be either physical or chemical properties.
 - c. Characteristic properties involve only chemical properties.
 - d. Characteristic properties involve only the physical nature of the matter.

6. Describe how burning changes the nature of wood.

7. Observing the _____ properties of a substance involves changing the identity of the substance.
8. The properties that are most useful in identifying a substance are called _____ properties.

Directed Reading B *continued*

CHEMICAL CHANGES AND NEW SUBSTANCES

- _____ **9.** Chemical changes are the processes by which substances
- a.** move from place to place.
 - b.** change into new substances.
 - c.** change their physical properties.
 - d.** become greater in mass.

- _____ **10.** Which of the following would NOT be considered an example of a chemical change?
- a.** the bubbling action of effervescent tablets
 - b.** the formation of green coating on copper statues
 - c.** the melting of an ice cream bar
 - d.** the burning of rocket fuel

- 11.** How do you know that baking a cake involves chemical changes?

- 12.** List some signs or clues that show that a change you are observing is a chemical change.

- 13.** An increase in the surrounding temperature is felt when a chemical change _____ heat.

- 14.** A decrease in the surrounding temperature is felt when a chemical change _____ heat.

- 15.** Because _____ changes cause a change in the identity of the substances involved, they are hard to reverse.

Directed Reading B *continued*

16. How could some chemical changes be reversed? Give an example.

PHYSICAL VERSUS CHEMICAL CHANGES

_____ **17.** What is the most important question to ask to determine whether a change is physical or chemical?
a. Was there a color change?
b. Did the composition change?
c. Was there a change in size?
d. Did the change involve a change in state?

_____ **18.** The composition of a substance does not change during
a. physical changes.
b. chemical changes.
c. reactivity.
d. reversibility.

_____ **19.** The chemical changes that happen when a firework explodes are
a. physical changes.
b. easily reversed.
c. almost impossible to reverse.
d. changes only in state.

Identify whether the following changes are physical changes or chemical changes. Label each change either *PC* for physical change or *CC* for chemical change.

_____ **20.** effervescent tablets bubbling in water

_____ **21.** grinding baking soda into a powder

_____ **22.** souring milk

_____ **23.** freezing water into ice cubes

_____ **24.** burning a wooden match

_____ **25.** mixing drink mix into water

_____ **26.** bending an iron nail