

## 2.1

## PROPERTIES OF MATTER

## Section Review

## Objectives

- Identify physical properties and physical changes
- Distinguish intensive properties from extensive properties
- Differentiate among three states of matter

## Vocabulary

- mass
- volume
- extensive property
- intensive property
- substance
- physical property
- solid
- liquid
- gas
- vapor
- physical change

## 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.

Properties used to describe matter can be classified as   1   or   2  . The   3   of an object is a measure of the amount of matter the object contains. The   4   of an object is a measure of the space occupied by the object. An extensive property is one that depends on the   5   of matter. An intensive property is one that depends on the   6   of matter.

A   7   is matter that has uniform and definite composition. A solid has a definite   8   and   9  . A liquid has a definite volume, but takes the   10   of its container. A   11   takes both the shape and volume of its container.

- INTENSIVE
- EXTENSIVE
- MASS
- VOLUME
- AMOUNT
- PHYSICAL PROPERTY
- SUBSTANCE
- SHAPE
- VOLUME
- SHAPE
- GAS

## Part B True-False

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

- T   11. Matter has mass and occupies space.
- NT   12. A liquid has a definite shape.
- ST   13. Heating a solid to 200°C will cause it to change to a liquid.
- T   14. Gases are easier to compress than liquids.

### Part C Matching

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

#### Column A

#### Column B

- |                                 |  |
|---------------------------------|--|
| <u>D</u> 15. volume             | a. a quality or condition of a substance that can be observed or measured without changing the substance's composition |
| <u>I</u> 16. mass               | b. matter that takes both the shape and volume of its container  |
| <u>C</u> 17. substance          | c. matter that has a uniform and definite composition  |
| <u>A</u> 18. physical property  | d. measure of the space occupied by an object  |
| <u>H</u> 19. solid              | e. matter that has a definite volume and takes the shape of its container  |
| <u>E</u> 20. liquid             | f. a change to a material that does not change its composition   |
| <u>B</u> 21. gas                | g. gaseous state of a substance that generally exists as a liquid or solid at room temperature                         |
| <u>G</u> 22. vapor              | h. matter that has a definite shape and volume   |
| <u>F</u> 23. physical change    | i. the amount of matter that an object contains  |
| <u>K</u> 24. extensive property | j. depends on the type of matter in a sample   |
| <u>J</u> 25. intensive property | k. depends on the amount of matter in a sample   |

### Part D Questions and Problems

Answer the following questions in the space provided.

26. Classify each of the following as a solid, liquid, gas, or vapor.

- |                |                  |
|----------------|------------------|
| a. steam       | a. <u>VAPOR</u>  |
| b. apple juice | b. <u>LIQUID</u> |
| c. gasoline    | c. <u>LIQUID</u> |
| d. hockey puck | d. <u>SOLID</u>  |
| e. air         | e. <u>GAS</u>    |

27. State whether the following changes are physical changes.

- |                      |                    |
|----------------------|--------------------|
| a. melting butter    | a. <u>PHYSICAL</u> |
| b. breaking a window | b. <u>PHYSICAL</u> |
| c. burning gasoline  | c. <u>CHEMICAL</u> |
| d. boiling water     | d. <u>PHYSICAL</u> |

# 2.2 MIXTURES

## Section Review

### Objectives

- Classify a sample of matter as a substance or a mixture
- Distinguish between homogeneous and heterogeneous samples of matter
- Describe two ways that components of mixtures can be separated

### Vocabulary

- mixture
- heterogeneous mixture
- homogeneous mixture
- solution
- phase
- filtration
- distillation

### 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.

A physical blend of two or more substances is a 1.

1. MIXTURE

A mixture has a composition that varies. Mixtures may be identified

2. HETEROGENEOUS

as 2 or 3. Homogeneous mixtures are also known

3. HOMOGENEOUS

as 4 and have uniform properties. Any part of a sample

4. SOLUTIONS

with uniform composition and properties is called a 5.

5. PHASE

Many mixtures can be separated into their components by

6. PHYSICAL METHOD

6 methods. 7 is a method of separation that involves

7. DISTILLATION

boiling a liquid, which is then condensed.

### Part B True-False

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

ST 8. Homogeneous mixtures can be separated by distillation.

T 9. A solution has a uniform composition.

ST 10. A heterogeneous mixture contains two or more phases.

T 11. Solutions are liquids.

Name \_\_\_\_\_

Date \_\_\_\_\_

Class \_\_\_\_\_

## Part C Matching

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

### Column A

### Column B

- F 12. mixture  
C 13. heterogeneous mixture  
A 14. homogeneous mixture  
E 15. solution  
B 16. phase  
D 17. distillation  
G 18. filtration

- a. a mixture that has a uniform composition throughout  
b. any part of a sample that has uniform composition and properties  
c. a mixture that is not uniform in composition  
d. separation of a liquid by boiling followed by condensation  
e. another name for a homogeneous mixture  
f. a physical blend of two or more components  
g. a method for separating a solid from a liquid in a heterogeneous mixture

## Part D Questions and Problems

Answer each of the following questions in the space provided.

19. State whether each of the following is a homogeneous or heterogeneous mixture.

- a. table salt dissolved in water  
b. carbon mixed with sand  
c. filtered apple juice  
d. vegetable soup  
e. fresh squeezed lemonade

- a. HOMO  
b. HETERO  
c. HOMO  
d. HOMO  
e. HETERO

20. Classify each of the following as a substance or a mixture.

- a. table sugar (sucrose)  
b. hot tea  
c. table salt (sodium chloride)  
d. vinegar

- a. SUBSTANCE  
b. MIXTURE  
c. SUBSTANCE  
d. MIXTURE