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### WHAT'S THE MATTER?



fixed shape and fixed volume

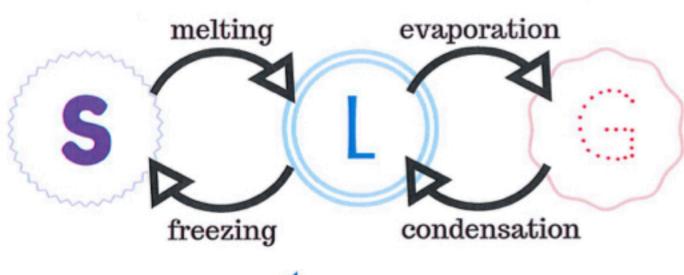


not a fixed shape and fixed volume



not a fixed shape and not a fixed volume







# MASS, volume, DENSITY

MASS:

The amount of matter in an object.

A scale is used to find the mass of different objects.

The unit of mass is grams (g).



volume:

The amount of space something takes up.

The unit of volume is liters (1) or centimeters (cm).

V = length x width x height

DENSITY: The amount of mass in a given volume.

$$D = \frac{m \text{ (mass)}}{V \text{ (volume)}}$$

Lets calculate the density of the Learning Box below!



The mass is 800 g, length is 10 cm, height 3 cm and the width is 4 cm.

### Physical

#### PHYSICAL PROPERTIES

Matter you can see without changing the identity of the substances that make it up.



- Changes shape
- · Silver in color
- Density: 7.87
- Boiling point: 3,000 °C
- Melting point: 1,536• C

#### PHYSICAL CHANGE

A change in the size, shape, form or matter that does not change the matters identity.



CAN reverse!



#### **EXAMPLES**

melting boiling mixing dissolving

changing shape changing state

## Chemical

#### **CHEMICAL PROPERTIES**

A substance can or cannot combine with or change into one or more new substances.



- · Iron can rust
- · Reacts with acid

#### **CHEMICAL CHANGE**

A change in which something new is made with different properties.



CANNOT reverse!



#### **EXAMPLES**

burning rusting rotten food digestion

#### SIGNS

release a gas color change solid forms heat is released

#### PRACTICE-MATTER

Aisha left her bicycle in the garden for a few weeks. The bicycles' color changed to an orange color. What is the type of change that happened? How did you know?

Determine whether each picture is a physical or chemical change.













#### **Revision Sheets**

#### Chapter Matter and Its Properties

#### Answer the following questions.

|   |    | rue/False<br>hether the statement is true or false.  |
|---|----|--|
|   | ı. | Ice, liquid water, and water vapor are the three states of water.  |
|   | 2. | The odor of a substance is an example of a physical property.  |
|   | 3. | Physical changes are difficult or impossible to reverse.   |
|   | 4. | Sugar dissolved in tea, and sugar in a bowl, are not the same substance.   |
| _ | 5. | Weight is defined as the amount of space that matter takes up.   |
|   | 6. | Copper is a metal and is a conductor of electricity.   |
|   | 7. | A liquid will begin to solidify at its freezing point.   |
|   |    | •  |
|   |    | ultiple Choice choice that best completes the statement or answers the question.                                     |
|   | 8. | Which is not a physical change?  |
|   |    | <ul> <li>a. tearing paper</li> <li>b. baking a cake</li> <li>c. crushing ice</li> <li>d. cutting an apple</li> </ul> |
|   | 9. | Chopping a piece of wood and burning it demonstrates   |
|   |    |  |

- a. a chemical change followed by a physical change
- b. a physical change followed by a chemical change
- c. kinetic energy changes into potential
- d. kinetic energy changes into chemical

10. The table shows the masses and volumes of three substances, which are named A, B, and C.

| Substance | Mass (grams) | Volume (cubic centimeters) |
|-----------|--------------|----------------------------|
| A         | 2.4          | 2.0                        |
| В         | 3.1          | 2.0                        |
| C         | 2.0          | 2.0                        |

Along with mass, what property must be different for all three substances?

| a. | de | nsity |
|----|----|-------|

c. odor

b. volume

d. color

11. In which state do particles spread apart quickly in all directions?

a. solid

c. gas

b. liquid

d. plasma

The temperature at which ice melts is called \_\_\_\_\_.

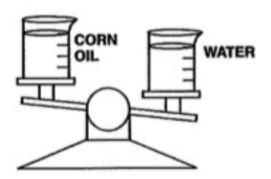
a. boiling point

c. 50 °C

b. melting point

d. evaporation

13. A beaker of corn oil was put on one side of a balance and the same size beaker of water was put on the other side of the balance. What can be concluded about corn oil and water from looking at the picture?



- a. Corn oil and water have the same density.
- b. Corn oil weighs less than water.
- c. Corn oil weighs more than water.
- Water and corn oil have the same weight.

14. Which is a chemical change?

a. change in shape

c. forming a new substance

b. mixture

d. boiling water

|   | 15. | The change of a liquid to a gas as heat is applied is called |              |  |
|---|-----|--|--------------|--|
|   |     |  |              |  |
|   |     | a. evaporation   | c.           | condensation                                 |
|   |     | b. boiling   | d.           | melting                                      |
| _ | 16. | The color, odor, and density of a subs                       | tance are    | all  |
|   |     | a. imagined properties                                       | c.           | physical properties                          |
|   |     | <ul> <li>b. material properties</li> </ul>                   | d.           | chemical properties                          |
|   | 17. | Which is not a physical property?                            |              |  |
|   |     | a. hardness  | c.           | density                                      |
|   |     | b. strength  | d.           | flammability                                 |
| _ | 18. | Which state of matter has no definite                        | shape and    | does not take up a definite amount of space? |
|   |     | a. gas   | c.           | solid  |
|   |     | b. plasma  | d.           | liquid                                       |
|   | 19. | What is the temperature at which a su                        | bstance c    | hanges from a liquid to a gas?               |
|   |     | a. melting point   | c.           | condensation point                           |
|   |     | b. dew point   | d.           | boiling point                                |
|   |     | atching<br>h term with its correct description by writi      | ng the lette | er on the line.                              |
|   |     | a. gas   | e.           | physical property                            |
|   |     | b. liquid  | f.           | solid  |
|   |     | c. density d. mass   | g.<br>h.     | volume<br>weight                             |
|   | 1.2 |  |              | noight .                                     |
|   | 20. | The amount of matter in an object.                           |              |  |
|   | 21. | The measurement of the pull of gravi                         | ty on an o   | bject.                                       |
|   |     |  |              |  |

| <br>22. | The amount of space that matter takes up.  |
|---------|--|
| <br>23. | Matter that has a definite shape and occupies a definite amount of space.          |
| <br>24. | Matter that takes up a definite amount of space but has no definite shape          |
| <br>25. | Matter that has no definite shape and does not take up a definite amount of space. |
| 26.     | The measurement of how much mass fits within a certain volume.                     |
| <br>27. | A property that can be observed without changing the identity of a substance.      |
|         | ort Answer ch question using the space provided.                                   |
| 28.     | Density can be calculated using an object's and                                    |
| 29.     | Describe three physical properties that can help to identify copper.               |
| 30.     | The evaporation of water is an example of a change in                              |