

## Unit 1 Review

Name: \_\_\_\_\_

Open Note, closed classmate.

### Question 1 (1 point)

According to the law of conservation of mass, the total mass of the reacting substances is

- A. always more than the total mass of the products.
- B. always less than the total mass of the products.
- C. sometimes more and sometimes less than the total mass of the products.
- D. always equal to the total mass of the products.

### Question 2 (1 point)

The word equation "solid carbon + oxygen gas  $\rightarrow$  carbon dioxide gas + energy" represents a chemical reaction because:

- A. carbon is a solid and carbon dioxide is a gas.
- B. the reaction releases energy.
- C. the reaction absorbs energy.
- D. carbon dioxide has chemical properties that differ from those of carbon and oxygen.

### Question 3 (1 point)

Which observation does NOT indicate that a chemical reaction has occurred?

- A. formation of a precipitate
- B. evolution of heat and light
- C. production of a gas
- D. change in total mass of substances

### Question 4 (1 point)

A measure of the space occupied by matter is

- A. density.
- B. weight.
- C. volume.
- D. mass.

### Question 5 (1 point)

According to the law of conservation of mass, when sodium, hydrogen, and oxygen react to form a compound, the mass of the compound will be \_\_\_\_\_ the sum of the masses of the individual elements.

- A. equal to
- B. less than
- C. greater than
- D. either greater than or less than

**Question 6 (1 point)**

Which of the following is NOT one of the seven diatomic elements?

- A. Carbon
- B. Oxygen
- C. Nitrogen
- D. Fluorine

**Question 7 (1 point)**

According to the law of definite proportions, any two samples of zinc phosphate will have

- A. the same mass.
- B. the same melting point.
- C. slightly different molecular structures.
- D. the same ratio of elements.

**Question 8 (1 point)**

Oxygen can combine with carbon to form two compounds, carbon monoxide and carbon dioxide. The ratio of carbon atoms to oxygen atoms in carbon monoxide is 1:1. The ratio of carbon atoms to oxygen atoms in carbon dioxide is 1:2. This is an example of

- A. the law of conservation of mass.
- B. the law of conservation of energy.
- C. the law of definite proportions.
- D. the law of multiple proportions.

**Question 9 (1 point)**

Which of the following reactions obeys the Law of Conservation of Mass?

- A.  $\text{H}_2\text{O}_2 \rightarrow \text{H}_2\text{O} + \text{O}_2$
- B.  $\text{Na} + \text{CuS} \rightarrow \text{Na}_2\text{S} + 2 \text{Cu}$
- C.  $2 \text{K} + \text{AgCl} \rightarrow 2 \text{KCl} + \text{Ag}$
- D.  $\text{Ba}(\text{OH})_2 + 2 \text{HCl} \rightarrow \text{BaCl}_2 + 2 \text{H}_2\text{O}$

**Question 10 (1 point)**

Density is a physical property (not a chemical one) because

- A. chemicals don't have density.
- B. density can be measured without a chemical reaction occurring.
- C. density is the same for all chemical compounds.
- D. substances with the same density are always identical.

**Question 11 (1 point)**

The compound calcium phosphate has the formula  $\text{Ca}_3(\text{PO}_4)_2$ . Which of the following is true for this compound?

- A. It contains 1 phosphorus atom for every 4 oxygen atoms.
- B. It contains 1 calcium atom for every 2 phosphorus atoms.
- C. It contains 1 phosphorus atom for every 8 oxygen atoms.
- D. It contains 1 calcium atom for every 8 oxygen atoms.

**Question 12 (1 point)**

When sodium chloride reacts with calcium oxide to form sodium oxide plus calcium chloride, which of the following equations best illustrates the Law of Conservation of Mass?

- A.  $\text{NaCl} + \text{CaO} \rightarrow \text{Na}_2\text{O} + \text{CaCl}_2$
- B.  $4 \text{NaCl} + \text{CaO} \rightarrow 2 \text{Na}_2\text{O} + \text{CaCl}_2$
- C.  $2 \text{NaCl} + \text{CaO} \rightarrow \text{Na}_2\text{O} + \text{CaCl}_2$
- D.  $3 \text{NaCl} + 2 \text{CaO} \rightarrow \text{Na}_2\text{O} + 3 \text{CaCl}_2$

**Question 13 (1 point)**

Which of the following is not a chemical change?

- A. rusting
- B. melting
- C. igniting
- D. burning

**Question 14 (1 point)**

The two most important properties of all matter are

- A. the ability to conduct electric current well and hold electric charge.
- B. taking up space and having mass.
- C. being brittle and hard.
- D. being malleable and ductile.

**Question 15 (1 point)**

Which of the following is a chemical compound?

- A. gold
- B. iodine
- C. strontium chloride
- D. lead

**Question 16 (1 point)**

The word equation "solid dihydrogen monoxide + energy → liquid dihydrogen monoxide" does NOT represent a chemical change because:

- A. solids have different physical properties than liquids.
- B. the reaction releases energy.
- C. the reaction absorbs energy
- D. the chemical properties of the reactants and the products are the same.

**Question 17 (1 point)**

A scientist examines data from the twin suns of Tatooine and finds that they are made primarily of hydrogen. What can be predicted about the hydrogen being tested?

- A. It will have the same chemical properties as the hydrogen in the earth's sun.
- B. It will be more reactive than the hydrogen on earth.
- C. It will react more slowly than the hydrogen in the earth's sun.
- D. It cannot be determined without more information.

**Question 18 (1 point)**

When a solid produced by a chemical reaction separates from the solution and settles to the bottom of the container, the solid is called

- A. a precipitate.
- B. a molecule.
- C. a reactant.
- D. the mass of the product.

**Question 19 (1 point)**

How many atoms of oxygen are present in a unit of calcium chlorate,  $\text{Ca}(\text{ClO}_3)_2$ ?

- A. 1
- B. 2
- C. 3
- D. 6

**Question 20 (1 point)**

In oxides of nitrogen, such as  $\text{N}_2\text{O}$ ,  $\text{NO}$ ,  $\text{NO}_2$ , and  $\text{N}_2\text{O}_3$ , atoms combine in different small whole-number ratios. This evidence supports the law of

- A. conservation of mass
- B. definite composition
- C. multiple proportions
- D. mass action