NTI Day 7 Assignment
Lesson 7 Review
Content Standard: Chemical Reactions
Class: Chemistry **Teacher: K. Kelly**

1.

$$PbCl_2 \rightarrow Pb + Cl_2$$

Does the chemical reaction shown above obey the law of conservation of mass?

- **A.** No, because a new molecule is produced.
- **B.** No, because one particle breaks into two particles.
- **C.** Yes, because the equation is balanced.
- **D.** Yes, because the moles of Cl_2 and Pb are equal.

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2. The balanced chemical equation for the combustion of butane (C_4H_{10}) is:

- **A.** $2C_2H_2 + 5O_2 \rightarrow CO_2 + 2H_2O$
- **B.** $C_4H_{10} + 12O_2 \rightarrow 4CO_2 + 5H_2O$
- **C.** $2C_4H_{10} + 13O_2 \rightarrow 8CO_2 + 10H_2O$
- **D.** $2CH_4 + 5O_2 \rightarrow 2CO_2 + 4H_2O$

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3. Lithium and oxygen react to form lithium oxide. What is the balanced equation for this reaction?

- **A.** $2Li + 2O_2 \rightarrow 4Li_2O$
- **B.** $2Li + O_2 \rightarrow Li_2O$
- **C.** $4Li + O_2 \rightarrow 2Li_2O$
- **D.** $Li + O_2 \rightarrow Li_2O$

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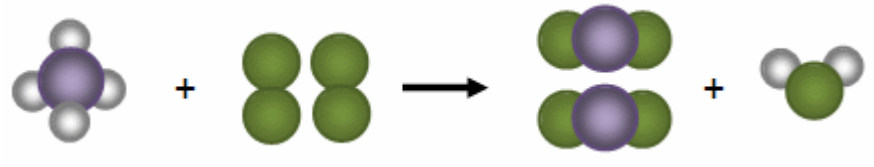
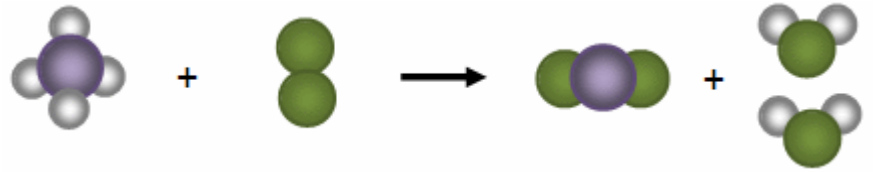
4. An unbalanced chemical equation is shown below.

$$CH_4 + O_2 \rightarrow CO_2 + H_2O$$

Which of the following particle diagrams correctly represents the balanced form of the equation?

○ **A.** 

○ **B.** 

○ **C.** 

○ **D.** 

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5. The chemical equation below shows the process of forming water. Balance the equation by calculating the coefficients.

$$\_\_ H_2 + \_\_ O_2 \rightarrow \_\_ H_2O$$

○ **A.** 1, 1, 1

○ **B.** 1, 2, 2

○ **C.** 1, 1, 2

○ **D.** 2, 1, 2

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6. Potassium (K) combines with magnesium bromide ($MgBr_2$) to form potassium bromide (KBr) and magnesium (Mg) during a chemical reaction.

Which of the following shows the balanced chemical equation for this reaction?

○ **A.** $2K + MgBr_2 \rightarrow 2KBr + Mg$

○ **B.** $2K + MgBr \rightarrow 2KBr + Mg$

○ **C.** $K + MgBr_2 \rightarrow KBr_2 + Mg$

○ **D.** $K + MgBr_2 \rightarrow KBr + Mg$

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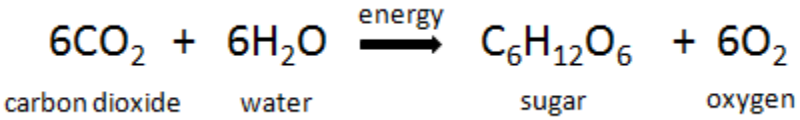
7. The balanced equation for the production of sugars by photosynthesis is shown below.



This equation demonstrates the law of conservation of mass because

- **A.** there is the same number of compounds on the right side of the equation as the left.
- **B.** the sugar molecule on the right has the same mass as the carbon dioxide molecules on the left.
- **C.** there are more oxygen atoms on the right side of the equation than on the left.
- **D.** there is the same number of each type of atom on the right side of the equation as the left.

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8. The outer _____ are the parts of an atom that are involved in chemical reactions.

- **A.** protons and neutrons
- **B.** protons
- **C.** electrons
- **D.** electrons and protons

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9. Which set of products is most likely to result from the combustion reaction shown below?

$C_4H_8(l) + 6O_2(g) \rightarrow$

- **A.** $4CO_3(g) + 4H_2(g)$
- **B.** $4C(s) + 4H_2O(l) + 4O_2(g)$
- **C.** $4CO_2(g) + 4H_2O(g)$
- **D.** $2C_2H_4O_6(g)$

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10. Oxygen is in group 16 of the periodic table. An oxygen ion (O^{2-}) has a charge of -2. Which of the following would be most likely to combine with an oxygen ion to form a new compound?

- **A.** a neon atom that has no charge
- **B.** a calcium ion with a charge of +2
- **C.** a fluoride ion with a charge of -1
- **D.** a sulfide ion with a charge of -2

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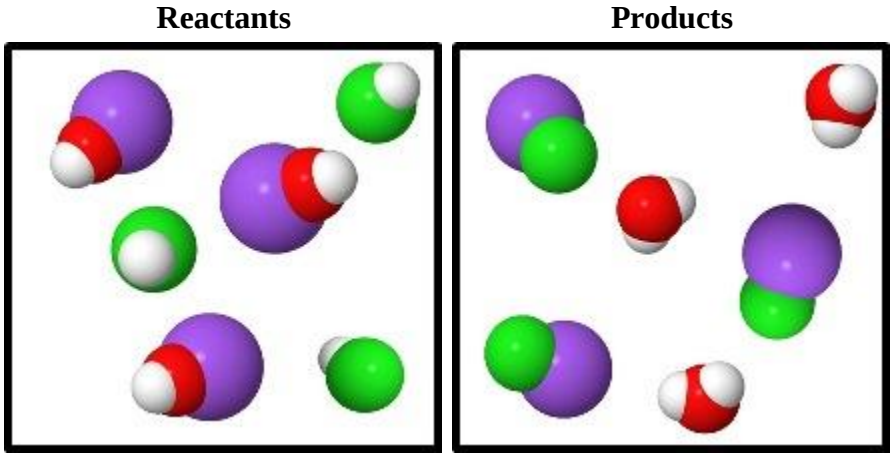
11. The images below are models that represent the reactants and products of a chemical reaction.



Based on the models, was mass conserved in this chemical reaction?

- **A.** Yes, because the number of each type of atom is the same in the products as it is in the reactants.
- **B.** No, because the reactants are made up of different types of molecules than the products.
- **C.** Yes, because the number of reactant molecules is the same as the number of product molecules.
- **D.** No, because the purple atom formed two bonds in its reactant molecule and only one bond in its product molecule.

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12. When magnesium (Mg) metal is placed in hydrochloric acid (HCl), it forms magnesium chloride ($MgCl_2$) and a gas. What gas is formed in this reaction?

- **A.** hydrogen
- **B.** chlorine
- **C.** oxygen
- **D.** nitrogen

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13. The chemical equation below shows the process of forming water. Balance the equation by calculating the coefficients.

$$\_\_\ H_2 + \_\_\ O_2 \rightarrow \_\_\ H_2O$$

- **A.** 1, 2, 2
- **B.** 1, 1, 2
- **C.** 2, 1, 2
- **D.** 1, 1, 1

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14. During combustion, methane yields carbon dioxide and water. The unbalanced equation for this reaction is:

$$CH_4(g) + O_2(g) \rightarrow CO_2(g) + H_2O(l)$$

What will the mole ratios for the balanced equation be? (What coefficients are needed in order to balance this equation?)

- **A.** 1 : 1 : 1 : 2
- **B.** 1 : 1 : 2 : 1
- **C.** 5 : 4 : 3 : 6
- **D.** 1 : 2 : 1 : 2

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15. Respiration describes the process that living cells use to release energy by combining sugar and oxygen. The primary chemical changes that happen during respiration are shown in the equation below.

Which statement correctly compares the reactants and products of the equation?

- **A.** The mass of the reactants is the same as the mass of the products.
- **B.** The number of reactant molecules is greater than the number of products.
- **C.** The mass of the reactants is less than the mass of the products.
- **D.** The mass of the reactants is greater than the mass of the products.

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16. When one atom of carbon reacts with two atoms of oxygen, they combine to form one molecule of carbon dioxide. How many atoms of oxygen must be present in 10 molecules of carbon dioxide?

- **A.** 5
- **B.** 40
- **C.** 10
- **D.** 20

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17. What happens to the nucleus of an atom when the atom is involved in a chemical reaction?

- **A.** It gains or loses electrons
- **B.** It gains or loses protons.
- **C.** It does not change.
- **D.** It gains or loses neutrons.

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18. The chemical equation below shows the process of forming water. Balance the equation by calculating the coefficients.

$$\_\_ H_2 + \_\_ O_2 \rightarrow \_\_ H_2O$$

- **A.** 1, 2, 2
- **B.** 1, 1, 1
- **C.** 1, 1, 2
- **D.** 2, 1, 2

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19. A sample of copper powder is heated in an evaporating dish using a Bunsen burner. If the mass of the powder in the evaporating dish increases after heating, this indicates that

- **A.** the copper must have lost matter.
- **B.** hot copper is more dense than cold copper.
- **C.** hot copper weighs more than cold copper.
- **D.** the copper must have combined with another substance.

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20. The chemical equation below shows the process of forming water. Balance the equation by calculating the coefficients.

$$\_\_ H_2 + \_\_ O_2 \rightarrow \_\_ H_2O$$

- **A.** 1, 1, 1
- **B.** 1, 1, 2
- **C.** 2, 1, 2
- **D.** 1, 2, 2