

**Reinforcement****Structure of the Atom**

Directions: Answer the following questions on the lines provided.

1. How is the chemical symbol of an element determined?

2. What are atoms composed of?

3. Are electrons, protons, or neutrons the smallest particles? If not, what are?

4. How many types of quarks are there and what is the name of one of them?

5. Why do scientists use models to study atoms?

6. Why has the atomic model changed over time?

7. Why is the current atomic model called the "Electron Cloud Model"?

Directions: Match the term in Column I with the definition in Column II. Write the letter of the correct definition in the blank at the left.

Column I

_____ 8. electron

_____ 9. neutron

_____ 10. nucleus

_____ 11. proton

_____ 12. quark

Column II

a. positively charged particle

b. negatively charged particle

c. neutral particle

d. smaller particles that make up protons and neutrons

e. positively charged center of an atom

**Reinforcement****Masses of Atoms**

Directions: Answer the following questions on the lines provided.

1. What are isotopes?

2. How do Boron-10 and Boron-11 differ?

3. What is the average atomic mass of an element?

4. Compare and contrast the atomic structure of the chlorine-35 and chlorine-37 isotopes.

5. Suppose that a newly discovered element called centium has three isotopes that occur in nature. These are centium-200, centium-203, and centium-209. Assume that these isotopes occur in equal amounts in nature. What will be the average atomic mass of this element?

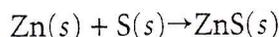
SECTION



Reinforcement

Chemical Changes

Directions: Use the equations below to answer the following questions.

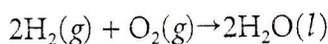


1. What are the reactants in this chemical reaction?

2. What is the product? _____

3. What is the physical state of both the reactants and the products?

4. According to the law of conservation of mass, if the total mass of the product in this chemical reaction is 14 g, what must the combined masses of the reactants be?



5. What name describes the product in this reaction? _____

6. What names describe the reactants? _____

7. What are the physical states of the reactants in this reaction?

8. What is the physical state of the product? _____

9. What do the coefficients tell you about the ratio of the reactants?

10. How many units of the product are produced? _____

Directions: Write chemical equations for the following reactions.

11. One unit of methane gas, CH_4 , plus two units of oxygen gas, O_2 , produce one unit of carbon dioxide gas, CO_2 , and two units of liquid water.

12. One unit of aqueous aluminum sulfate, Al_2SO_4 , plus three units of aqueous barium chloride, BaCl_2 , yield two units of aqueous aluminum chloride, AlCl_3 , plus three units of solid barium sulfate, BaSO_4 .

13. Two units of solid sodium, Na , plus one unit of chlorine gas produce two units of sodium chloride, Cl_2 , a solid.

**Reinforcement****Chemical Equations**

Directions: Answer the following questions using complete sentences.

1. Describe, in words, a balanced chemical equation. Give an example.

2. Use the law of conservation of mass to explain why a chemical equation must be balanced.

Directions: Balance the following equations. If you need help, review the steps for balancing equations in your textbook. Use the space below for your work.

