

## SECTION

## 1

## Study Guide

## Chemical Formulas and Equations

## Chapter

## 2

**Directions:** Use the terms from the word bank to fill in the blanks in front of the correct phrases below.

balanced	endothermic	products
bubbles	exothermic	reactants
chemical reaction	iron oxide	silver sulfide
conservation of mass	precipitate	subscripts

- \_\_\_\_\_ 1. substances that are about to take part in a chemical reaction
- \_\_\_\_\_ 2. the numbers in a chemical formula that tell you the ratio of atoms in a compound
- \_\_\_\_\_ 3. the law Lavoisier devised, that says that matter is neither created nor destroyed during a reaction
- \_\_\_\_\_ 4. tarnish on silver
- \_\_\_\_\_ 5. what you call a chemical equation when it is written with the same number of each type of atom on both sides
- \_\_\_\_\_ 6. the process of changing some substances into other substances
- \_\_\_\_\_ 7. a reaction that releases heat to its surroundings. Energy appears on the products side of the equation.
- \_\_\_\_\_ 8. a sign that a gas has been produced
- \_\_\_\_\_ 9. rust
- \_\_\_\_\_ 10. the substances that are formed by a chemical reaction
- \_\_\_\_\_ 11. a reaction that absorbs heat. Energy appears on the left side of the equation.
- \_\_\_\_\_ 12. a solid formed in a reaction by mixing two solutions

**Directions:** List four ways you can detect a chemical reaction.

13. \_\_\_\_\_
14. \_\_\_\_\_
15. \_\_\_\_\_
16. \_\_\_\_\_


 SECTION  
1

## Reinforcement

# Chemical Formulas and Equations

**Directions:** Complete the following sentences by writing the correct terms in the blanks.

1. Chemical changes in a substance result in \_\_\_\_\_  
\_\_\_\_\_
2. Physical changes in a substance result in \_\_\_\_\_  
\_\_\_\_\_
3. A chemical reaction begins with substances called \_\_\_\_\_ and ends with substances called \_\_\_\_\_.
4. In a word equation, the substances on the left of the arrow are the \_\_\_\_\_, and the substances on the right side of the arrow are the \_\_\_\_\_. The arrow should read as \_\_\_\_\_.

**Directions:** Answer the following questions on the lines provided

5. Give two reasons why scientists prefer to use chemical equations instead of word equations.
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
6. What do the subscripts in a chemical equation tell about the equation?  
\_\_\_\_\_
7. Suppose you have a holiday celebration and over the evening six logs are burned in a fireplace. All that's left is ashes, but you know that there are just as many atoms as there were before—they're just in a different form. Explain how you know that.  
\_\_\_\_\_
8. The fire in the fireplace is an example of an exothermic reaction. Explain what happens in an exothermic reaction.  
\_\_\_\_\_
9. In one of the lab experiments you observed, water was split into hydrogen and oxygen in an endothermic reaction. Explain what happens in an endothermic reaction.  
\_\_\_\_\_
10. If the equation below is balanced, write **Yes** on the line provided. If it is not balanced, write **No**.
  - \_\_\_\_\_ a.  $2\text{Na} + 2\text{H}_2\text{O} \rightarrow 2\text{NaOH} + \text{H}_2$
  - \_\_\_\_\_ b.  $4\text{Al} + 3\text{O}_2 \rightarrow \text{Al}_2\text{O}$
  - \_\_\_\_\_ c.  $\text{NH}_4\text{OH} + \text{HC}_2\text{H}_3\text{O}_2 \rightarrow \text{NH}_4\text{C}_2\text{H}_3\text{O}_2 + \text{H}_2\text{O}$
  - \_\_\_\_\_ d.  $2\text{Al} + 6\text{NaOH} \rightarrow 2\text{Na}_3\text{AlO}_3 + 2\text{H}_2$