

LESSON
73

ACTIVITY

What's Your Reaction? Types of Reactions

Name _____

Date _____ Period _____

Purpose

To find patterns in the types of chemical equations and to classify a reaction by type.

Materials

- Toxic Reactions cards

Part I: Sorting Chemical Equations

Use the Toxic Reactions cards from Lesson 1: Toxic Reactions. Sort the cards according to the directions for Questions 1 through 4, then answer the questions.

1. Find all the cards that have only one product formed in the reaction. List the letters on the cards.
 - a. Describe how the atoms rearrange in these reactions.
 - b. Why do you think these reactions are called *combination reactions*?
2. Find all the cards that have a reactant that is an elemental metal. List the letters on the cards.
 - a. Describe how the atoms rearrange in these reactions.
 - b. Why do you think these reactions are called *single exchange reactions*?
3. Consider all the cards that have a reactant that is an ionic compound. List the letters on the cards.
 - a. Describe how the atoms rearrange in these reactions.
 - b. Why do you think these reactions are called *double exchange reactions*?

4. Examine all the remaining cards.
 - a. Verify that these reactions involve reactants that are molecules. List the letters on the cards.
 - b. Describe how the atoms rearrange in these reactions.
 - c. Classify these reactions to the best of your ability.

5. $2\text{H}_2\text{O}_2(l) \longrightarrow 2\text{H}_2\text{O}(l) + \text{O}_2(g)$
 Why do you think this reaction is called a *decomposition reaction*?

Part 2: Classifying Reactions

1. Classify each reaction as combination, decomposition, single exchange, or double exchange.
 - a. Fill in any missing reactants or products.
 - b. Balance the equation if necessary.

Reaction	Type
$\text{N}_2(g) + \text{H}_2(g) \longrightarrow 2\text{NH}_3(g)$	
$\text{C}_2\text{H}_4(g) + \text{H}_2(g) \longrightarrow$	
$\text{CaCO}_3(s) \longrightarrow \text{CaO}(s) + \text{CO}_2(g)$	
$\text{Cl}_2(g) + \text{CaI}_2(s) \longrightarrow \text{I}_2(s) +$	
$\text{NaOH}(aq) + \text{HCl}(aq) \longrightarrow \text{H}_2\text{O}(l) +$	
$2\text{KClO}_3(s) \longrightarrow 2\text{KCl}(s) + 3\text{O}_2(g)$	
$\text{Mg}(s) + 2\text{HCl}(aq) \longrightarrow \text{H}_2(g) +$	
$\text{AgNO}_3(aq) + \text{KCl}(aq) \longrightarrow \text{AgCl}(s) +$	

2. List six *molecules* in the reactions in the table.

3. List six *ionic compounds* in the reactions in the table.

4. **Making Sense** You can remove the toxin carbon monoxide, $\text{CO}(g)$, from the air through a reaction with oxygen, O_2 , to produce carbon dioxide, $\text{CO}_2(g)$. Write a balanced chemical equation for this combination reaction.