Name _____ Date _____ Period _____ Page _____

What is a Chemical Reaction - Activity Sheet

Objectives:

1. To be able to explain that for chemical reaction to take place, _____

_____, _____

_____, and _____

are formed to make the _____.

2. To be able to explain that _____, _____

_____.

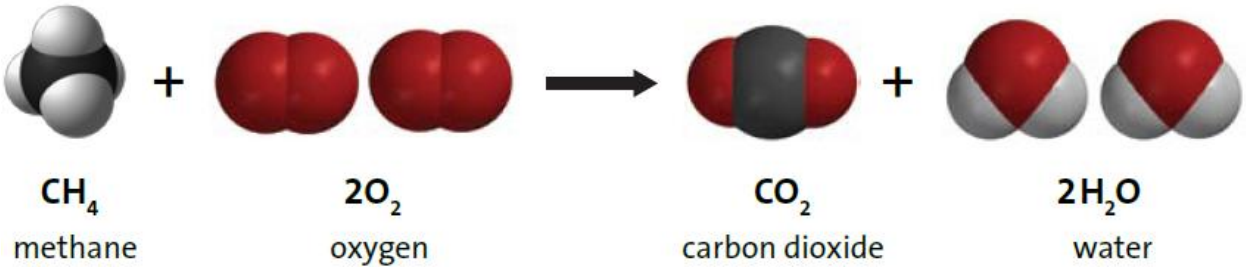
DEMONSTRATION

1. Your teacher lit a candle and told you that this was a chemical reaction. What are the ***reactants*** in this chemical reaction?

2. What are the ***products*** in this chemical reaction?

3. Why did the flame go out when your teacher put a jar over the candle?

4. Where do the atoms come from that make carbon dioxide and the water on the right side of the equation?



ACTIVITY

Question to investigate
What do the atoms in the products of a chemical reaction come from?

Materials for Each Student

- Atom model cut - outs (carbon, oxygen, and hydrogen)
- Sheet of colored paper or construction paper
- Colored pencils
- Scissors
- Glue or tape

Procedure

Prepare the Atoms

1.Color the carbon atoms black, the oxygen atoms red, and leave the hydrogen atoms white.

2. Use scissors to carefully cut out the atoms.

Build the Reactants

3. On a sheet of paper, place the atoms together to make the molecules of the reactants on the left side of the chemical equation for the combustion of methane.

4. Write the chemical formula under each molecule of the reactants. Also draw a + sign between the reactants.

Build the Products

5. Draw an arrow after the second oxygen molecule to show that a chemical reaction is taking place.

6. Rearrange the atoms in the reactants to make the molecules in the products on the right side of the arrow.

7. Write the chemical formula under each molecule of the products. Also draw a + sign between the products.

In a chemical reaction, the atoms in the reactants come apart, rearrange, and make new bonds to form the products.

Represent the chemical equation

8. Use your remaining atoms to make the reactants again to represent the chemical reaction as a complete chemical equation.

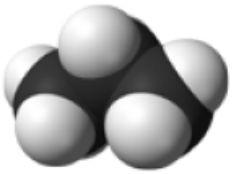
9. Glue or tape the atoms to the paper to make a more permanent chemical equation of the combustion of methane.

TAKE IT FURTHER

Molecules made up of only carbon and hydrogen are called ***hydrocarbons.*** The candle and the hydrocarbons listed below react with oxygen in a chemical reaction called ***combustion***.

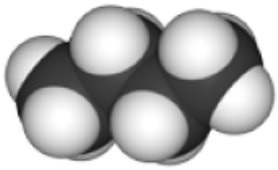
CH_4
methane

Fuel in gas stoves in many home kitchens



C_3H_8
propane

Fuel in outdoor gas grills



C_4H_{10}
butane

Fuel in disposable lighters

Count the number of carbon, hydrogen, and oxygen atoms in the reactants and products of each equation to see if the equation is balanced. Record the number of each type of atom in each chart.

Combustion of Propane

$C_3H_8 + 5O_2 \longrightarrow 3CO_2 + 4H_20$

$C_3H_8 + 5O_2 \longrightarrow 3CO_2 + 4H_2O$		
Atom	**Reactant side**	**Product side**
Carbon		
Hydrogen		
Oxygen		

Combustion of Butane

$2C_4H_{10} + 13O_2 \longrightarrow 8CO_2 + 10H_2O$

$2C_4H_{10} + 13O_2 \longrightarrow 8CO_2 + 10H_2O$		
Atom	**Reactant side**	**Product side**
Carbon		
Hydrogen		
Oxygen		

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