

Name _____ Period _____

Understanding Chemical Reactions Do Now

In chemical reactions, substances called reactants change into different substances, known as products. The Law of Conservation of Mass tells us that mass is neither created nor destroyed in a chemical reaction. Compounds are made up of two or more different elements. We use subscripts and coefficients in chemical formulas to show the number of atoms of each element. Counting atoms in a formula helps us understand how reactants change into products.

Fill in the Blank: Fill in the blank with the correct words.

1. In a chemical reaction, the substances you start with are called _____.
2. The substances you end up with after a chemical reaction are called _____.
3. The _____ in a chemical formula indicates how many atoms of an element are present.
4. The number in front of a chemical formula is called a _____, and it tells you how many molecules there are.
5. The law that states mass is neither created nor destroyed in a chemical reaction is called the _____.

Word bank: reactants, products, subscript, coefficient, Law of Conservation of Mass

Multiple Choice Questions: Choose the correct answer from the choices for each question.

1. What are compounds made of?
 - ☐ A) Only one element
 - ☐ B) Two or more different elements
 - ☐ C) Liquids
2. Which of the following is a reactant in the chemical equation $2H_2 + O_2 \rightarrow 2H_2O$?
 - ☐ A) H_2O
 - ☐ B) O_2
 - ☐ C) Water

3. In the chemical formula CH_4 , what does the subscript "4" represent?

- ☐ A) Four molecules of methane
- ☐ B) Four atoms of carbon
- ☐ C) Four atoms of hydrogen

4. Which statement best describes the Law of Conservation of Mass?

- ☐ A) Mass can be created
- ☐ B) Mass can be destroyed
- ☐ C) Mass is neither created nor destroyed

5. What is the coefficient in the chemical equation $3CO_2$?

- ☐ A) 3
- ☐ B) 2
- ☐ C) CO_2

Open Ended Questions: Answer the following questions in complete sentences:

1. Explain why the Law of Conservation of Mass is important in chemical reactions.

2. How do subscripts and coefficients help us understand chemical equations?

3. Describe the difference between reactants and products in a chemical reaction.

Answer Key:**Fill in the Blank:**

1. reactants
2. products
3. subscript
4. coefficient
5. Law of Conservation of Mass

Multiple Choice Questions:

1. B) Two or more different elements
2. B) O_2
3. C) Four atoms of hydrogen
4. C) Mass is neither created nor destroyed
5. A) 3

Open Ended Questions:

1. The Law of Conservation of Mass is important because it helps us understand that in a chemical reaction, the total mass of the reactants is equal to the total mass of the products. This law allows us to predict the outcomes of reactions and balance chemical equations.
2. Subscripts in a chemical formula indicate the number of atoms of each element in a molecule, while coefficients show how many molecules are involved in the reaction. Together, they help us understand the proportions of different elements and compounds in a chemical reaction.
3. Reactants are the substances that are present at the beginning of a chemical reaction, while products are the substances formed as a result of the reaction. Reactants undergo changes to become products.