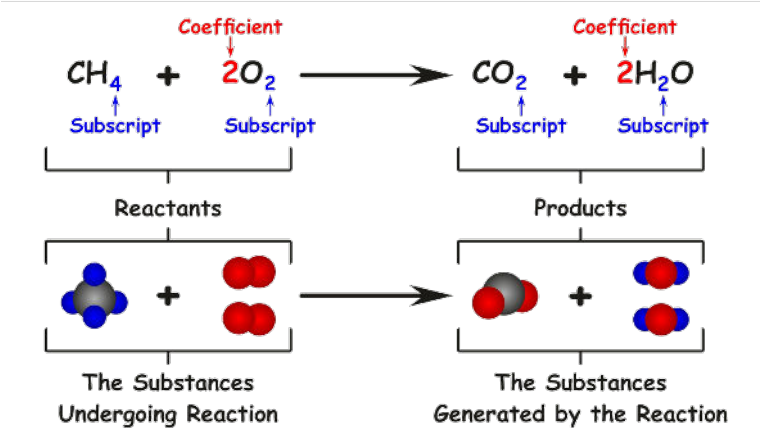
Chemical Bonds & Equations

Section 3: Chemical Reactions

A **chemical reaction** is a process in which one or more substances are changed into new substances with different properties. Chemical reactions occur constantly all around you and even inside your body. For example, when you eat food, digestion begins immediately. Enzymes and other chemicals in your mouth start breaking down the food as you chew. This process continues in the stomach and intestines, where additional chemical reactions break the food into nutrients your body can absorb and use for energy. Another common example of a chemical reaction is lighting a match. Chemicals in the match head react with oxygen in the air, producing heat, light, and fire.

Scientists use chemical equations to describe chemical reactions. A **chemical equation** uses chemical formulas and symbols to show the substances involved in a reaction and the products that are formed. The substances that begin the reaction are called **reactants**, while the new substances produced are called **products**. In a chemical equation, a **coefficient** represents the number of units or molecules of each substance involved in the reaction. A **subscript**, on the other hand, shows the number of atoms of a particular element within a molecule.

Chemical reactions follow the **law of conservation of mass**, which states that mass cannot be created or destroyed during a chemical reaction. This means the total mass of the reactants must equal the total mass of the products. During a reaction, atoms are simply rearranged into new combinations. In other words, the atoms are not lost or created—they are shuffled around to form different substances.



Review:

1. What is a chemical reaction?
2. The new substances that are created during a chemical reaction are called _____.
3. Explain the law of conservation of mass.