

The Basics

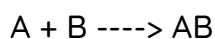
CHEMICAL REACTIONS:

A chemical reaction is a process that leads to the chemical transformation of one set of chemical substances to another. Chemists have discovered a variety of different types of reactions by noticing patterns. Patterns such as metals reacting with non-metals, and metals reacting with ionic compounds.

SIX TYPES OF REACTIONS:

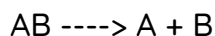
Synthesis Reactions:

A synthesis reaction occurs when two elements combine to form a compound.



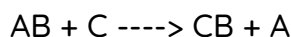
Decomposition Reactions:

A decomposition reaction occurs when a compound decomposes (breaks apart) into its parts. It's basically the opposite of a synthesis reaction.



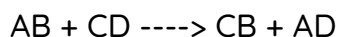
Single Replacement Reactions:

A single replacement reaction occurs when an element reacts with a compound and one of the elements is replaced.



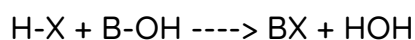
Double Replacement Reactions:

A double replacement reaction occurs when two compounds react and two of the elements replace each other.



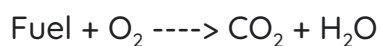
Acid-Base Neutralization Reactions:

An acid-base neutralization reaction occurs when an acid neutralizes (completely reacts with) a base, resulting in a neutral solution. The products of a neutralization reaction are salt and water. Acid + Base ----> Salt + Water



Combustion Reactions:

A combustion reaction occurs when an organic (carbon-hydrogen) substance reacts with oxygen and releases light energy and heat. Combustion can be rapid or slow.



RATES OF CHEMICAL REACTIONS:

The reaction rate of a chemical reaction is the amount of a reactant consumed per unit time or the amount of a product formed per unit time.

Kinetic Molecular Theory:

The kinetic molecular theory suggests that matter is made up of tiny particles in constant, random motion.

Solid Particles- Packed very closely together; barely move.

Liquid Particles- Small spaces between each other; move slowly.

Gas Particles- Spread out; move very fast.

Collision theory:

The collision theory states that in order for moving particles to react, first, they must collide.

Reaction Rate:

Reaction rate can be increased by increasing the following:

- The Concentration of Reactants
- The Surface Area of Reactants
- The Temperature

Or by adding a Catalyst.

A catalyst is a substance that, when added to a reaction, increases the reaction rate without being consumed. Adding a catalyst increases the reaction rate by increasing the percentage of effective collisions.