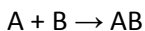


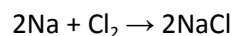
Types of Chemical Reactions

1. Synthesis

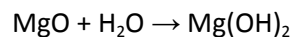
2 or more elements or compounds combine to form a new substance



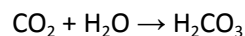
Ex.1 element + element \rightarrow compound



Ex. 2 metal oxide + water \rightarrow base



Ex. 3 non-metal oxide + water \rightarrow acid



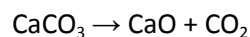
2. Decomposition

A compound breaks down into elements or simpler compounds

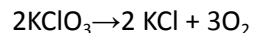
Ex.1 compound \rightarrow element + element



Ex.2 carbonate \rightarrow oxide + carbon dioxide



Ex. 3 chlorate \rightarrow chloride + oxygen



3. Combustion

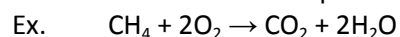
The reaction of a substance with oxygen, producing oxides and energy (light/heat)

Often occurs with hydrocarbons (compounds that contain only hydrogen and carbon such as methane, propane, etc.)

A. Complete Combustion

Occurs when sufficient oxygen is present

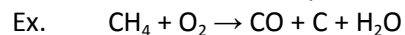
Most common oxides are produced



B. Incomplete Combustion

Occurs when insufficient oxygen is present

Less common oxides are produced

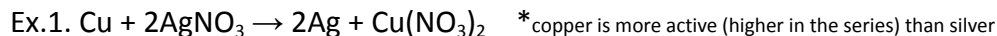


4. Single Displacement

A single element in a compound is replaced by another element.

A. With a Metal

Will only occur if the metal is more active than the metal ion in the compound
(see activity series p. 126)



B. With a Halogen

Will only occur if the halogen is more active than the halogen in the compound
(see activity series p. 127)



Hint: The less active element wants to be alone

5. Double Displacement

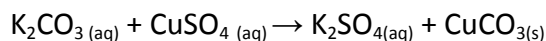
This type of reaction involves the exchange of cations between 2 ionic compounds

Reactants are usually aqueous (dissolved in water, called a solution)

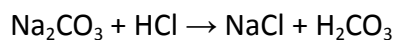
Products can be a precipitate (a solid), a gas, or become neutral.

Look up solubilities on the solubility table p. 137

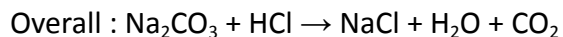
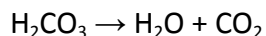
Ex. 1. Formation of a precipitate



Ex.2. Formation of a gas



Carbonic acid is very unstable and breaks down.



Ex. 3. Neutralization

Acid + Base \rightarrow Salt (any ionic compound) + water

