## **Chemical Reactions**

## **Synthesis**

### (Combination/Composition)

two or more substances forming one compound

$$A + B \rightarrow AB$$
  
Ex:  $Na_2O + CO_2 \rightarrow Na_2CO_3$ 

## **Decomposition**

breaking down a compound into simpler substances (often by using heat)

$$AB \rightarrow A + B$$

Ex: 
$$MgCO_3 \xrightarrow{\Delta} MgO + CO_2$$

# **Single Replacement**

#### (Single Displacement)

a single element replaces an ion of a compound

$$A + XY \rightarrow AY + X$$

Ex:  $3 \text{ Mg} + 2 \overset{+3}{\text{Fe}} \overset{1}{\text{Cl}}_3 \rightarrow 2 \text{ Fe} + 3 \overset{+2}{\text{Mg}} \overset{1}{\text{Cl}}_2$ 

$$B + XY \rightarrow XB + Y$$

Ex:  $Cl_2 + 2 \overset{\scriptscriptstyle \uparrow 1}{K} \overset{\scriptscriptstyle \downarrow 1}{I} \rightarrow 2 \overset{\scriptscriptstyle \uparrow 1}{K} \overset{\scriptscriptstyle \downarrow 1}{C} l + I_2$ 

## **Double Replacement**

two compounds switch ions

$$AX + BY \rightarrow AY + BX$$

Ex:  $KBr + AgNO_3 \rightarrow AgBr + KNO_3$ 

## **Combustion**

a hydrocarbon reacts with oxygen forming carbon dioxide and water

$$C_xH_v + O_2 \rightarrow CO_2 + H_2O$$

Ex:  $C_3H_8 + 5O_2 \rightarrow 3CO_2 + 4H_2O$