**Synthesis/composition reactions**

1. Reactions of elements with oxygen and sulfur

Ex: + S8

Ex: + O2

2. Reactions of metals with halogens

Ex: + Cl2

3. Synthesis reactions with oxides

a. metallic oxide + water metallic hydroxide

ex:

b. nonmetallic oxide + water acid

ex:

c. metallic oxide + nonmetallic oxide salt

ex:

**Decomposition Reactions**

1.Binary compounds

ex:

2. metallic carbonates metallic oxide and carbon dioxide

Ex:

3. metallic hydroxides metallic oxide and water

Ex:

4. metallic chlorates metallic chloride and oxygen

Ex:

5. acids nonmetallic oxide and water

Ex:

**Single-Replacement (displacement) reactions**

**1. replacement of a metal in a compound by another metal**

**Ex:**

**2. replacement of hydrogen in water by a metal**

**a. active metals (Li, K, Ba, Ca, and Na) – produce hydroxides**

**ex:**

**b. les active metals (Mg, Al, Mn, Zn, Cr, Fe, and Cd) – produce oxides**

**ex:**

**3. replacement of hydrogen in a acid by a metal**

**Ex:**

**4. replacement of halogens**

**Ex:**

**Double-replacement (displacement) reactions**

**Ex:**

**Combustion reactions**

**Organic compound + Oxygen carbon dioxide + water**

Ex: C3H8 + 5O2 3CO2 + 4H2O