**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