Text-Book Reference: Section 6.7, pages 233 – 235, Section 6.10, pages 240 – 241

Many of the reaction you will encounter in this class can be classified under 4 reaction types.

1. Synthesis or Combination reactions are those in which a compound is formed from simpler substances.



$$2 \text{ Na}_{(s)} + \text{Cl}_{2(g)}$$
 $2 \text{ NaCl}_{(s)}$

$$N_{2(g)} + O_{2(g)} \longrightarrow 2NO_{(g)}$$

Their general format is:

$$A + B \longrightarrow AB$$



Decomposition reactions are the opposite of synthesis reactions and consist of a compound breaking down into simpler substances or smaller units.



$$2 H_2 O_{(l)}$$
 \longrightarrow $2 H_{2(g)}$ + $O_{2(g)}$

2 HgO
$$_{(g)}$$
 \longrightarrow 2 Hg $_{(l)}$ + O $_{2(g)}$

Their general format is:



$$AB \longrightarrow A + B$$



Single Displacement reactions involve one element or atom taking the place of another in a compound.

$$Zn_{(s)} + 2HCl_{(aq)} \longrightarrow H_{2(q)} + ZnCl_{2(aq)}$$

$$\rightarrow$$
 $H_{2(g)}$ + $ZnCl_{2(aq)}$

$$2Al_{(s)} + Fe_2O_{3(s)} \longrightarrow 2Fe_{(l)} + Al_2O_{3(l)}$$

Their general format is:

$$A + BC \longrightarrow AC + B$$



Double Displacement reactions are like the single displacement reactions except that compounds exchange (trade) atoms.

$$BaCl_2 + Na_2SO_4 \longrightarrow BaSO_4 + 2NaCl$$

$$2 \operatorname{BiCl}_3 + 3 \operatorname{H}_2 S \longrightarrow \operatorname{Bi}_2 S_3 + 6 \operatorname{HCl}$$

Their general format is:

$$AB + CD \longrightarrow AD + CB$$

Assignment

- Section 6.7, page 235, Understanding Concepts, # 1,2, 3,4,5,6
- 2. Section 6.10, page 241, Understanding Concepts, # 1,2, 3