Tips for Balancing Equations:

- Don't balance atoms present in more than two substances until the end
- Balance polyatomic ions as 'one'
- If a fractional coefficient is needed, multiply all coefficients by denominator

Balancing Chemical Equations

Copper and silver nitrate react to produce silver and copper (II) nitrate.

Aluminum reacts with sulfuric acid to produce hydrogen and aluminum sulfate.

Balancing Equations

a)
$$Ca(OH)_2 + 2HCl \rightarrow CaCl_2 + 2H_2O$$

b)
$$\underline{\hspace{1cm}}$$
 KHCO₃ \rightarrow $\underline{\hspace{1cm}}$ K₂CO₃ + $\underline{\hspace{1cm}}$ H₂O + $\underline{\hspace{1cm}}$ CO₂

c)
$$\underline{\hspace{1cm}}$$
 Fe + $\underline{\hspace{1cm}}$ HCl \rightarrow $\underline{\hspace{1cm}}$ FeCl₃ + $\underline{\hspace{1cm}}$ H₂

d)
$$P_4 + F_2 \rightarrow PF_3$$

Worksheet

p. 327 #3,4

p. 328 #5,6

p. 329 #11,12

Balancing Chemical Equations

$$Al_{(s)} + 3H_2SO_{4(aq)} \longrightarrow H_{2(g)} + Al_2(SO_4)_{3(aq)}$$
 $NH_{3(g)} + O_{2(g)} \longrightarrow H_2O_{(g)} + NO_{2(g)}$
 $2C_8H_{18(l)} + 2O_{2(g)} \longrightarrow BH_2O_{(g)} + BCO_{2(g)}$
 $9 - 16$

$$-(aSQ_4-2H_2O+2SO_3-)-(aSQ_4+2H_2SQ_4)$$

Types of Chemical Reactions

There are five types of chemical reactions:

- I. Formation/Combination reactions occur when two substances (normally elements) react to form an ionic or molecular compound
- -when a metal and nonmetal react, the product will be the ionic compound formed by the most common ions.

$$\begin{array}{ccc} \text{Mg}^{2+} & \text{O}^{2-} \\ \text{Ex.} \text{Mg}_{(s)} + \text{O}_{2(g)} & \rightarrow \text{2 MgO}_{\text{CS}} \\ & \text{elements} & \text{compound} \\ & \text{reactants} & \text{product} \end{array}$$

II. A decomposition reaction is the result of an ionic or molecular compound breaking down into its elements. ⇒it is the reverse of a formation reaction

$$\begin{array}{ccc} Ex.2H_2O_{(l)} & \rightarrow & 2 H_{2(g)} & + & \bigcirc_{2(g)} \\ & compound & elements \\ & reactant & products \end{array}$$

$$K_{(s)} + N_{2(g)} \longrightarrow$$

$$Pb_{(s)} + O_{2(g)} \longrightarrow$$

$$C_6H_{12}O_{6(s)}$$
 \longrightarrow

$$H_3PO_{4(I)} \longrightarrow$$

Homework

Worksheet

p. 331 #13, 14

p. 332 #15, 16