AP Chemistry
Ms. Ye

Name _____
Date _____ Block _____

Balancing & Types of Reactions Review

Types of Reactions:

Synthesis: 2 or more elements combine to make a compound;
Ex: $8\ Fe + S_8 \rightarrow 8\ FeS$

Decomposition: A compound breaks down into 2 or more simpler substances;
Ex: $2\ H_2O \rightarrow 2\ H_2 + O_2$

Combustion: A compound containing carbon and hydrogen is burned in the presence of oxygen, and the products are carbon dioxide & water vapor
Ex: **C**H_4 + 2 **O_2** → **CO_2** + 2 **H_2O**

Single Replacement: 1 element replaces another element in a compound;
Ex: **Zn** + 2 **H**Cl → **Zn**Cl_2 + **H_2**

Double Replacement: 2 elements of 2 different compounds switch places with one another;
Ex: **Na**Cl(aq) + **Ag**NO_3(aq) → **Na**NO_3(aq) + **Ag**Cl(s)

Neutralization: A double replacement reaction that takes place when an acid and a base react to form a metal salt and water. (This is also known as an Acid-Base Reaction)
Ex: **H**Cl + Na**OH** → NaCl + **H_2O**

Chemical Reactions and Law of Conservation of Matter:

Matter cannot be created or destroyed. This means that you end up with the same number of atoms of each element that you started with in a chemical reaction. We balance chemical reactions by adding coefficients in front of the reactants or products so that there are equal numbers of each element on both sides.

In balanced chemical reaction equations: the **coefficients** represent the relative number of **moles** of substance that is being reacted or produced.

Ex: Consider the balanced equation $2\ H_2 + 1\ O_2 \rightarrow 2\ H_2O$

This equation can be read as "2 moles of H_2 react with 1 mole of O_2 to make 2 moles of H_2O"

PRACTICE: Balance the following reactions AND identify the reaction type. The first one has been completed for you.

Balanced Reaction	Reaction Type
1) __1___Cl_2 (aq) + ___2__KBr (aq) → ___2__KCl (aq) + ___1__Br_2 (aq)	Single replacement
2) _____HgO (s) → _____Hg (l) + _____O_2 (g)	
3) _____$AlBr_3$ + _____K_2SO_4 → _____$Al_2(SO_4)_3$ + _____KBr	
4) _____Al (s) + _____O_2 (g) → _____Al_2O_3 (s)	
5) _____$FeCl_3$ + _____NaOH →_____$Fe(OH)_3$ + _____NaCl	
6) _____C_3H_8 (g) + _____O_2 (g) → _____CO_2 (g) + _____H_2O (g)	
7) _____NaOH (aq) + _____HCl (aq) → _____NaCl (aq) + _____H_2O (aq)	
8) _____H_2O (l) + _____Fe (s) → _____Fe_2O_3 (s) + _____H_2 (g)	
9) _____$AgNO_3$ (aq) + _____Cu (s) → _____$Cu(NO_3)_2$ (aq) + _____Ag (s)	
10) _____KOH(aq) + _____H_2SO_4 (aq) → _____H_2O (l) + _____K_2SO_4(aq)	
11) _____ $(NH_4)_2CO_3$ → _____NH_3 + _____CO_2 + _____H_2O	
12) _____C_7H_{16} (l) + _____O_2 (g) → _____CO_2 (g) + _____H_2O (l)	