Chemical Reactions: SOL Review #4 Name: _____

Chapter 9

Core Concepts: **Balancing Equations**
Identify Type of Reaction

Fringe Concepts:
Counting Atoms (Subscripts)
Law of Conservation of Mass

1) What is the difference between the classification of the following reactions?
$H_2SO_4 + Ca(OH)_2 \rightarrow 2H_2O + CaSO_4$ AND $Li_2CO_3 + Al(OH)_3 \rightarrow LiOH + Al_2(CO_3)_3$
They are both double replacement reactions. However, the reaction on the left is a neutralization reaction: Acid + Base → Water + Salt.

2) How many oxygen atoms are represented in each of the following?
(a) $Ti_2(SO_4)_3$ **12** (b) $3Al(OH)_3$ **9** (c) $2Ca_3(PO_4)_2$ **16** (d) $4Fe_2O_3$ **12**

Balancing Equations

3) $2H_2O \rightarrow 2H_2 + O_2$

4) $3AgNO_3 + AlCl_3 \rightarrow 3AgCl + Al(NO_3)_3$

5) $2Al + 3H_2SO_4 \rightarrow Al_2(SO_4)_3 + 3H_2$

6) $3Ca(OH)_2 + Al_2(SO_4)_3 \rightarrow 3CaSO_4 + 2Al(OH)_3$

7) $Mg(OH)_2 + 2HCl \rightarrow MgCl_2 + 2H_2O$

8) $Fe_2O_3 + 3CO \rightarrow 2Fe + 3CO_2$

9) $C_2H_4 + 3O_2 \rightarrow 2CO_2 + 2H_2O$

10) $3Ca(NO_3)_2 + 2H_3PO_4 \rightarrow Ca_3(PO_4)_2 + 6HNO_3$

11) How many grams of product Z will be formed if 12.0 g of W react with 10.0 g of X to form 8.0 g of product Y in the reaction shown? 14.0 g

$W + X \rightarrow Y + Z$

Chemical Equations

(A) Complete and balance the equation showing both reactants and products.
(B) Label the reaction type in the left column as synthesis (S), decomposition (D), single replacement (SR), or double replacement (DR).

S 12) sodium + nitrogen →

$6Na + N_2 \rightarrow 2Na_3N$

SR 13) aluminum iodide + chlorine →

$2AlI_3 + 3Cl_2 \rightarrow 2AlCl_3 + 3I_2$

DR 14) magnesium nitrate + iron (III) phosphide →

$3Mg(NO_3)_2 + 2FeP \rightarrow Mg_3P_2 + 2Fe(NO_3)_3$

D 15) aluminum bromide →

$2AlBr_3 \rightarrow 2Al + 3Br_2$