**A Voyage through Equations**

After working on this worksheet, you should be able to do the following:

1) Given an equation, you should be able to tell what kind of reaction it is.

2) Balance the reactants and products of a reaction.

**Section 1: Identify the type of reaction**

For the following reactions, indicate whether the following are examples of synthesis, decomposition, combustion, single displacement, double displacement, or acid-base reactions (neutralization):

1) Na3PO4 + 3 KOH 🡪 3 NaOH + K3PO4 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2) MgCl2 + Li2CO3 🡪 MgCO3 + 2 LiCl \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3) C6H12 + 9 O2 🡪 6 CO2 + 6 H2O \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4) Pb + FeSO4 🡪 PbSO4 + Fe \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5) CaCO3 🡪 CaO + CO2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6) P4 + 3 O2 🡪 2 P2O3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7) 2 RbNO3 + BeF2 🡪 Be(NO3)2 + 2 RbF \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

8) 2 AgNO3 + Cu 🡪 Cu(NO3)2 + 2 Ag \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9) C3H6O + 4 O2 🡪 3 CO2 + 3 H2O \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

10) 2 C5H5 + Fe 🡪 Fe(C5H5)2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

11) SeCl6 + O2 🡪 SeO2 + 3Cl2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

12) 2 MgI2 + Mn(SO3)2 🡪 2 MgSO3 + MnI4 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

13) O3 🡪 O. + O2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

14) 2 NO2 🡪 2 O2 + N2\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Section 2: Practicing equation balancing**

1. Write a balanced equation for a problem using whole number coefficients.
2. Identify the type of reaction for each problem.

1) \_\_ C6H6 + \_\_ O2 🡪 \_\_ H2O + \_\_ CO2

2) \_\_ NaI + \_\_ Pb(SO4)2 🡪 \_\_ PbI4 + \_\_ Na2SO4

3) \_\_ NH3 + \_\_ O2 🡪\_\_ NO + \_\_ H2O

4) \_\_ Fe(OH)3 🡪 \_\_ Fe2O3 + \_\_ H2O

5) \_\_ HNO3 + \_\_ Mg(OH)2 🡪 \_\_H2O + \_\_ Mg(NO3)2

6) \_\_ H3PO4 + \_\_ NaBr 🡪 \_\_ HBr + \_\_ Na3PO4

7) \_\_ C + \_\_ H2 🡪 \_\_ C3H8

8) \_\_ CaO + \_\_ MnI4 🡪 \_\_ MnO2 + \_\_ CaI2

9) \_\_ Fe2O3 + \_\_ H2O 🡪 \_\_ Fe(OH)3

10) \_\_ C2H2 + \_\_ H2 🡪 \_\_ C2H6

11) \_\_ VF5 + \_\_ HI 🡪 \_\_ V2I10 + \_\_ HF

12) \_\_ OsO4 + \_\_ PtCl4 🡪 \_\_ PtO2 + \_\_ OsCl8

13) \_\_ CF4 + \_\_ Br2 🡪 \_\_ CBr4 + \_\_ F2

14) \_\_ Hg2I2 + \_\_ O2 🡪 \_\_ Hg2O + \_\_ I2

15) \_\_ Y(NO3)2 + \_\_ GaPO4 🡪 \_\_ YPO4 + \_\_ Ga(NO­3)2