**Predicting Reaction Products**

*Predict the products for the following reactions, balance the equation, then classify the type of reaction:*

1) \_\_\_\_ Na + \_\_\_\_ FeBr3 🡪

2) \_\_\_\_ NaOH + \_\_\_\_ H2SO4 🡪

3) \_\_\_\_ C2H4O2 + \_\_\_\_ O2 🡪

4) \_\_\_\_ NH3 + \_\_\_\_ H2O 🡪

5) \_\_\_\_ PbSO4 + \_\_\_\_ AgNO3 🡪

6) \_\_\_\_ PBr3 🡪

7) \_\_\_\_ HBr + \_\_\_\_ Fe 🡪

8) \_\_\_\_ KMnO4 + \_\_\_\_ ZnCl2 🡪

9) \_\_\_\_MnO2 + \_\_\_\_ Sn(OH)4 🡪

10) \_\_\_\_ O2 + \_\_\_\_ C5H12O2 🡪

11) \_\_\_\_ H2O2 🡪

12) \_\_\_\_ PtCl4 + \_\_\_\_ Cl2 🡪

**Predicting Reaction Products - Solutions**

*Balance the equations and predict the products for the following reactions:*

1) **3** Na + **1** FeBr3 🡪 **3 NaBr + 1 Fe**

2) **2** NaOH + **1** H2SO4 🡪 **1 Na2SO4 + 2 H2O**

3) **1** C2H4O2 + **2** O2 🡪 **2 CO2 + 2 H2O**

4) **1** NH3 + **1** H2O 🡪 **1 NH4OH**

5) **1** PbSO4 + **2** AgNO3 🡪 **1 Ag2SO4 + 1 Pb(NO3)2**

6) **4** PBr3 🡪 **1 P4 + 6 Br2**

7) **2** HBr + **1** Fe 🡪 **1 H2 + 1 FeBr2** **OR** **6** HBr + **2** Fe 🡪 **3 H2 + 2 FeBr3**

8) **2** KMnO4 + **1** ZnCl2 🡪 **2 KCl + 1 Zn(MnO4)2**

9) **1** MnO2 + **1** Sn(OH)4 🡪 **1 Mn(OH)4 + 1 SnO2**

10) **7** O2 + **1** C5H12O2 🡪 **5 CO2 + 6 H2O**

11) **1** H2O2 🡪 **1 H2 + 1 O2** **OR** **2** H2O2 🡪 **2 H2O + 1 O2**

12) **1** PtCl4 + **1** Cl2 🡪 **1 PtCl6**

**Predicting Reaction Products (cont.)**

For each of the following double replacement reactions, determine what the products of each reaction will be. When you have predicted the products, balance the equation and use a solubility table (like pg. R54 Appendix B in the Prentice Hall Text Book) to determine which of the products (if any) will precipitate (be insoluble). Assume all reactions take place in aqueous solutions (aq).

1) \_\_\_\_ Ca(OH)2 + \_\_\_\_ HF 🡪

2) \_\_\_\_ Pb(NO3)2 + \_\_\_\_ K2CrO4 🡪

3) \_\_\_\_ NaC2H3O2 + \_\_\_\_ H2SO4 🡪

4) \_\_\_\_ Cu(OH)2 + \_\_\_\_ H3PO4 🡪

5) \_\_\_\_ AgNO3 + \_\_\_\_ Na2CO3 🡪

6) \_\_\_\_ Pb(OH)2 + \_\_\_\_ Hg2S 🡪

**Reaction Products Worksheet - Key**

For each of the following reactions, determine what the products of each reaction will be. When you have predicted the products, balance the equation and use a table of solubility products to determine which of the products (if any) will precipitate. Remember in order for a chemical change to occur both reactants must be aqueous and one of the products must be leave the solution (as a gas, a precipitate, or form a molecular compound such as H2O). Check to see that both of the starting reactants are aqueous (soluble in water) or else the reaction will not occur.

1) **1** Ca(OH)2 + **2** HF 🡪 **2 H2O + CaF2 (CaF2 precipitates)**

2) **1** Pb(NO3)2 + **1** K2CrO4 🡪 **2 KNO3 + PbCrO4 (PbCrO4 precipitates)**

3) **2** NaC2H3O2 + **1** H2SO4 🡪 **Na2SO4 + 2 CH3COOH (no precipitate, thus no rxn)**

4) **3** Cu(OH)2 + **2** H3PO4 🡪 **6 H2O + Cu3(PO4)2**

**copper (II) phosphate precipitates**

5) **2** AgNO3 + **1** Na2CO3 🡪 **Ag2CO3 + 2 NaNO3 (Ag2CO­­3 precipitates)**

6) Pb(OH)2 + Hg2S 🡪 **no reaction; neither reagent is soluble in water**