Writing/Balancing Chemical Equations Name _____

Write chemical equations for the following reactions. Include states of matter. Balance the equations.

1. Aqueous solutions of copper (I) nitrate and potassium sulfide are mixed to form a precipitate of copper(I) sulfide and aqueous potassium nitrate.

$$CuNO_3(aq) + K_2S(aq) \rightarrow Cu_2S(s) + KNO_3(aq)$$

2. Solid aluminum metal burns in oxygen gas react to produce solid aluminum oxide.

$$Al(s) + O_2(g) \rightarrow Al_2O_3(s)$$

3. Solid iron metal and sulfuric acid react to produce aqueous iron(III) sulfate and hydrogen gas.

$$Fe(s) + H_2SO_4(aq) \rightarrow Fe_2(SO_4)_3(aq) + H_2(g)$$

4. Carbonic acid is an unstable acid that breaks down to produce water and carbon dioxide gas.

$$H_2CO_3(aq) \rightarrow H_2O(l) + CO_2(g)$$

5. Hydrogen chloride gas reacts with ammonia gas to produce solid ammonium chloride.

$$HCl(g) + NH_3(g) \rightarrow NH_4Cl(s)$$

6. Aqueous solutions of magnesium chloride and potassium carbonate react to form aqueous potassium chloride and a precipitate of magnesium carbonate.

$MgCl_2(aq) + K_2CO_3(aq) \rightarrow KCl(aq) + MgCO_3(s)$

7. Aqueous chlorous acid breaks down to produce water and dichlorine trioxide gas.

$HClO_2(aq) \rightarrow H_2O(l) + Cl_2O_3(g)$

8. Hydrobromic acid solution can be neutralized by adding aqueous lithium hydroxide to produce aqueous lithium bromide and water.

$HBr(aq) + LiOH(aq) \rightarrow LiBr(aq) + H_2O(l)$

9. Aqueous solutions of bismuth(III) nitrate and sodium sulfide yield a precipitate of bismuth(III) sulfide and aqueous sodium nitrate.

$Bi(NO_3)_3(aq) + Na_2S(aq) \rightarrow Bi_2S_3(s) + NaNO_3(aq)$

10. Liquid pentane is burned in the presence of oxygen gas to produce carbon dioxide gas and water vapor.

$C_5H_{12}(l) + O_2(g) \rightarrow CO_2(g) + H_2O(l)$