## Decomposition Worksheet

Predict the products of the reaction below. Write the balanced equation. Include the phase information. Remember, ionic compounds are usually solid. Watch out for those diatomic molecules.

Example: 
$$2H_2O(l) \xrightarrow{\text{elect.}} 2H_2(g) + O_2(g)$$

Example: 
$$2HgO(s) \xrightarrow{\Delta} 2Hg(l) + O_2(g)$$

1. 
$$2 \operatorname{Fe_2O_3}(s) \xrightarrow{\operatorname{elect.}} 4 \operatorname{Fe}(s) + 3 \operatorname{O_2}(g)$$

2. 
$$2 \text{ NaCl(s)} \xrightarrow{\text{elect.}} 2 \text{Na(s)} + \text{Cl}_2(g)$$

3. 
$$2 \text{ NH}_3(g) \xrightarrow{\Delta} \text{N}_2(g) + 3 \text{H}_2(g)$$

4. 
$$CaF_2(s) \xrightarrow{elect.} Ca(s) + F_2(g)$$

5. 
$$2 \text{ H}_2\text{O}_2(\text{aq}) \xrightarrow{\text{MnO}_2(\text{s})} 2\text{H}_2\text{O}(1) + \text{O}_2(g)$$

When a metal carbonate is heated, it breaks down to produce a metal oxide and carbon dioxide gas.

6. 
$$CaCO_3(s) \xrightarrow{\Delta} CaO(s) + CO_2(g)$$

Metal hydroxides will often decompose when heated to yield metal oxides and water.

7. 
$$Ca(OH)_2(s) \xrightarrow{\Delta} CaO(s) + H_2O(l)$$

When a metal chlorate is heated, it decomposes to produce a metal chloride and oxygen.

8. 
$$2 \text{KClO}_3(s) \xrightarrow{\Delta} 2 \text{KCl}(s) + 3 \text{O}_2(g)$$

Certain acids decompose into nonmetal oxides and water.

9. 
$$H_2SO_4(aq) \xrightarrow{\Delta} SO_3(g) + H_2O(l)$$