1. List the 4 criteria used in class to determine if a chemical reaction has occurred. (Not observations made in lab, but when writing chemical reactions on paper.)

2. List the 7 elements that should always be written as diatomics.

3. List the 11 elements that are found as gases. List the 2 elements that are found as liquids.

4. List 8 common molecular gases that are likely to be found in chemical reactions.

5. How can one identify if a compound is a base. Give the formula and name for 4 bases.

6. How can one identify if a compound is an acid? Give the formula and name for the 10 most common acids.

7. Are the following species Insoluble (s) or Soluable (aq) in water?
   (a) MgC_2O_4
   (b) Zn(OH)_2
   (c) CuCl_2
   (d) (NH_4)_2S
   (e) Ni(NO_3)_2
8. Change these word equations into formula equations. Balance all ionic compounds. Balance the overall reaction. Include the state of each reactant and product when known.

(a) water $\rightarrow$ hydrogen + oxygen

(b) acetic acid + potassium hydroxide $\rightarrow$ potassium acetate + water

(c) phosphorus + iodine $\rightarrow$ phosphorus triiodide

(d) aluminum + copper (II) sulfate $\rightarrow$ copper + aluminum sulfate

(e) ammonium sulfate + barium chloride $\rightarrow$ ammonium chloride + barium sulfate

(f) sulfur tetrachloride + water $\rightarrow$ sulfur dioxide + hydrochloric acid

(g) chromium (III) carbonate $\rightarrow$ chromium (III) oxide + carbon dioxide