Chemical Reaction Practice Problems Name:

1. Which of the following is true regarding the law of conservation of mass?
    a. It dictates that the number of molecules on each side of a chemical equation must be the same.
    b. It dictates that the number of atoms of each element must be the same on both sides of a chemical equation.
    c. It states that the mass of the reactants must remain constant in order for a chemical reaction to proceed.
    d. It does not apply to chemical reactions.

2. Which of the following may indicate that a chemical reaction has occurred?
    a. release of energy as light
    b. a color change
    c. gas bubble formation
    d. All of the above

3. Which of the following is a product in the reaction described by the word equation below?
    iron + copper(II) sulfate → iron(II) sulfate +copper
    a. iron(II) sulfate
    b. copper
    c. iron
    d. Both (a) and (b)

4. Which of the following is not true regarding a properly written chemical equation?
    a. It must be balanced.
    b. It must contain proper chemical formulas.
    c. It must show the formation of a precipitate or a gas.
    d. It should represent known data.

5. What will be the result of the reaction described by the following chemical equation?
    $PCl_5(g) \rightleftharpoons PCl_3(g) + Cl_2(g)$
    a. a mixture of PCl5(g) and PCl3(g) only
    b. a mixture of PCl3(g) and Cl2(g) only
    c. a mixture of PCl5(g), PCl3(g), and Cl2(g)
    d. PCl5(g) only

What are the coefficients to balance the equations below.

6. ____ P_4 + ____ O_2 → ____ P_2O_3

7. ____ CF_4 + ____ Br_2 → ____ CBr_4 + ____ F_2

8. ____ N_2 + ____ H_2 → ____ NH_3

9. ____ $Pb(OH)_2$ + ____ HCl → ____ H_2O + ____ $PbCl_2$

10. ____ NaOH + ____ $Cu(NO_3)_2$ → ____ $Cu(OH)_2$ + ____ $NaNO_3$