Chemical Changes

1. **Select the reactants in this equation.** $Zn(s) + S(s) \rightarrow ZnS(s)$

2. **Select the products in this equation.** $Zn(s) + S(s) \rightarrow ZnS(s)$

3. What is the physical state of both the reactants and the products?
   Reactants: Zn (solid liquid gas) **S** (solid liquid gas) **Products: ZnS** (solid liquid gas)

4. According to the law of conservation of mass, if the total mass of the product in this chemical reaction is 14 g, what must the combined masses of the reactants be? _____ g

$$2H_2(g) + O_2(g) \rightarrow 2H_2O(l)$$

5. What name describes the product in this reaction?
   Write the name of the compound, or element.

6. What names describe the reactants?
   Write the name of the compound, or element.

7. What are the physical states of the reactants in this reaction? (solid liquid gas)

8. What is the physical state of the product? (solid liquid gas)

9. What do the coefficients tell you about the ratio of the reactants?
   It tells you that there are _____ unit(s) of H_2 for every ____ unit(s) of O_2

10. How many units of the product are produced?

Directions: ***Write chemical equations for the following reactions.*** solid (s), liquid (l), gas (g), dissolved in water-aquous (aq)

11. One unit of methane gas CH_4, plus two units of oxygen gas, O_2, produce one unit of carbon dioxide gas CO_2, and two units of liquid water, H_2O.

    _____ CH_4( ) + _____ O_2( ) → ____ CO_2( ) + _____ H_2O( )

12. One unit of aqueous aluminum sulfate $Al(SO_4)$ plus three units of aqueous barium chloride $BaCl_2$ yield two units aqueous aluminum $AlCl_3$ plus three units of solid barium sulfate $Ba(SO_4)$.

    ____ $Al(SO_4)$( ) + ____ $BaCl_2$( ) → ____ $AlCl_3$( ) + ____ $Ba(SO_4)$( )

13. Two units of solid Na plus one unit of chlorine Cl_2 gas produce two units of sodium chloride NaCl solid.

    ____ Na( ) + ____ Cl_2( ) → ____ NaCl( )