Name _____

Date _____ Pd ____

Unit 6: Balancing Chemical Reactions- Worksheet 2

Balance the following equations by inserting the proper coefficients.

1. ____SO_2 + ____O_2 → ____SO_3
2. ____CH_4 + ____O_2 → ____CO + ____H_2O
3. ____P + ____Cl_2 → ____PCl_3
4. ____CO + ____O_2 → ____CO_2
5. ____CH_4 + ____ O_2 → ____CH_3OH
6. ____Li + ____Br_2 → ____LiBr
7. ____Al_2O_3 → ____Al + ____O_2
8. ____Na + ____H_2O → ____NaOH + ____H_2
9. ____CO_2 + ____H_2O → ____$C_6H_{12}O_6$ + ____O_2
10. ____H_2SO_4 + ____NaCl → ____HCl + ____Na_2SO_4

Two reactions used to get rid of sulfur dioxide, a pollutant from burning coal:

11. ____H_2 + ____SO_2 → ____H_2S + ____H_2O
12. ____$CaCO_3$ + ____SO_2 + ____ O_2 → ____$CaSO_4$ + ____CO_2
13. ____$AgNO_3$ + ____$CaCl_2$ → ____AgCl + ____$Ca(NO_3)_2$
14. ____HCl + ____$Ba(OH)_2$ → ____$BaCl_2$ + ____H_2O
15. ____H_3PO_4 + ____NaOH → ____Na_3PO_4 + ____H_2O
16. ____$Pb(NO_3)_2$ + ____KI → ____ PbI_2 + ____KNO_3
17. ____CuO + ____NH_3 → ____N_2 + ____Cu + ____H_2O
18. ____C_2H_5OH + ____O_2 → ____CO_2 + ____H_2O
19. ____C_2H_6 + ____O_2 → ____CH_3COOH + ____H_2O
20. ____NO_2 + ____H_2O → ____HNO_3 + ____NO

Write the formulas of the reactants and products - including the symbols for the state - (s), (l), (g), (aq) - then balance the equations.

1. When a solution of hydrogen chloride is added to solid sodium bicarbonate ($NaHCO_3$), the products are carbon dioxide, water and aqueous sodium chloride.

2. Steam (gaseous water) reacts with carbon at high temperatures to produces carbon monoxide and hydrogen gases.

3. Limestone, $CaCO_3$, decomposes when heated to produce lime, CaO, and gaseous carbon dioxide.

4. Ethyl alcohol (a liquid), C_2H_6O, burns in air to produce carbon dioxide and gaseous water.

5. Solid titanium(IV) chloride reacts with water, forming solid titanium(IV) oxide and aqueous hydrogen chloride.

6. At high temperatures, the gases chlorine and water react to produce hydrogen chloride and oxygen gases.

7. Steel wool (nearly pure Fe) burns in air to form the solid iron oxide, Fe_2O_3.

8. During photosynthesis in plants, carbon dioxide and water are converted into glucose, $C_6H_{12}O_6$, and oxygen gas.

9. Solutions of calcium hydroxide, $Ca(OH)_2$and nitric acid, HNO_3, react to produce water and aqueous calcium nitrate, $Ca(NO_3)_2$.