Name KEY Date _____ Class _____

11 CHEMICAL REACTIONS

Practice Problems

In your notebook, solve the following problems. Use the 3-step problem-solving approach you learned in Chapter 1.

SECTION 11.1 DESCRIBING CHEMICAL REACTIONS

1. Write the skeleton equation for the reaction between hydrogen and oxygen that produces water. $H_2(g) + O_2(g) \rightarrow H_2O(l)$
2. Write the skeleton equation for the reaction that produces iron(II) sulfide from iron and sulfur. $Fe(s) + S(s) \rightarrow FeS(s)$
3. Write the skeleton equation representing the heating of magnesium carbonate to produce solid magnesium oxide and carbon dioxide gas. $MgCO_3(s) \xrightarrow{\Delta} MgO(s) + CO_2(g)$
4. Write a balanced equation for the production of HCl gas from its elements. $H_2(g) + Cl_2(g) \rightarrow 2HCl(g)$
5. Write a sentence that completely describes the chemical reaction represented by this balanced equation.

$$2HCl(aq) + CaCO_3(s) \rightarrow CO_2(g) + CaCl_2(aq) + H_2O(l)$$

6. Write the word equation for the following equation. Write a sentence fully describing the reaction. Is the equation correctly balanced? Explain.

$$2Ag(s) + S(s) \rightarrow Ag_2S(s)$$ silver + sulfur → silver sulfide (Yes)

7. Write a balanced equation representing the formation of aqueous sulfuric acid from water and sulfur trioxide gas. $H_2O(l) + SO_3(s) \rightarrow H_2SO_4(aq)$
8. Write a balanced equation from this word equation.
$2AgNO_3(aq)$ $Cu(s)$ $2Ag(s)$ $Cu(NO_3)_2(aq)$
aqueous silver nitrate + copper metal → silver metal + aqueous copper nitrate
9. Write a balanced equation for the following word equation.
$4P(s)$ $5O_2(g)$ $P_4O_{10}(s)$
phosphorus + oxygen → tetraphosphorous decoxide

SECTION 11.2 TYPES OF CHEMICAL REACTIONS

1. Write a balanced equation representing the reaction of magnesium with oxygen gas to produce magnesium oxide. $2Mg(s) + O_2(g) \rightarrow 2MgO(s)$
2. Write the balanced equation for the reaction that occurs between aluminum and fluorine. $2Al(s) + 3F_2(g) \rightarrow 2AlF_3(s)$
3. Write the balanced equation for the production of oxygen gas and potassium chloride from the decomposition of potassium chlorate. $2KClO_3(s) \rightarrow 2KCl(s) + 3O_2(g)$
4. Write the balanced equation for the reaction between hydrochloric acid and calcium metal. The products are hydrogen gas and calcium chloride. $Ca(s) + 2HCl(aq) \rightarrow H_2(g) + CaCl_2(aq)$
5. Write the balanced equation for the combustion of propane (C_3H_8) to produce carbon dioxide and water vapor. $C_3H_8(g) + 5O_2(g) \rightarrow 3CO_2(g) + 4H_2O(g)$
6. Write the balanced equation for the reaction between iron(III) chloride and sodium hydroxide. The products are iron(III) hydroxide and sodium chloride.
$FeCl_3(aq) + 3NaOH(aq) \rightarrow Fe(OH)_3(s) + 3NaCl(aq)$