Name: ___________________________

Date: ______________ Pd.___

Chemistry Unit 7 Worksheet 4

Samples of Every Kind of Problem

On a separate sheet of paper, write a complete solution to each of the problems below. Follow the procedure outlined in class. Be sure to circle your final answer.

1. Calculate the number of moles of potassium chlorate, $KClO_3$ (s), that must decompose to produce potassium chloride, KCl (s), and 1.8 moles of oxygen gas.

2. In a single displacement reaction, magnesium metal reacts with hydrochloric acid to produce magnesium chloride and hydrogen gas. How many moles of hydrochloric acid are needed to completely react with 2.43 g of magnesium?

3. Ethane, C_2H_6 reacts with oxygen gas to produce carbon dioxide gas and water vapor. What mass of oxygen gas is required to react with 2.20 moles of ethane?

4. Determine the mass of sodium nitrate produced when 0.73 g of nickel (II) nitrate reacts with sodium hydroxide according to the following equation:
   $Ni(NO_3)_2 + 2\ NaOH \rightarrow Ni(OH)_2 + 2\ NaNO_3$

5. In the copper-silver nitrate lab copper metal and silver nitrate solution reacted to produce silver metal and copper(II) nitrate in solution.
   A student placed a copper wire with a mass of 2.00 g in the reaction test tube. The silver nitrate solution contained 1.61 g of silver nitrate.
   He obtained 0.97 g of silver metal. Calculate the percent yield of silver.

6. When hydrochloric acid (HCl) is added to sodium hydrogen carbonate, the products are water, aqueous sodium chloride and carbon dioxide gas. What is the per cent yield if 4.68 g of CO_2 are collected when 10.0 g of sodium hydrogen carbonate reacts with excess HCl?

7. Phosphorus and bromine react vigorously together to form phosphorus tribromide. If 5.0 g of phosphorus and 35 g of bromine react, how many grams of PBr_3 could be produced?

8. Zinc sulfide and oxygen gas react to form zinc oxide and sulfur dioxide. Determine the amount of ZnO that should be produced in a reaction between 46.1 g of ZnS and 13.4 g of oxygen. What is the mass of the xs reactant?

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1. 1.2 moles $KClO_3$ 2. 0.200 moles HCl 3. 246 g O_2 4. 0.68 g $NaNO_3$

5. 95% 6. 89.3% 7. 40 g PBr_3 8. 22.6 g ZnO; 18.9g ZnS xs