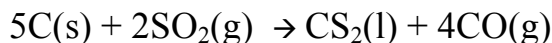


Name: \_\_\_\_\_ Date: \_\_\_\_\_ Pd: \_\_\_\_\_ Teacher: Ms. Wagner

## Chapter 12 Problem Set Regular Chemistry

### Mole-Mole

1. Carbon disulfide is an important industrial solvent. It is prepared by the reaction of coke with sulfur dioxide.



- a. \_\_\_\_\_ How many moles of  $\text{CS}_2$  form when 2.7 mol C reacts?  
b. \_\_\_\_\_ How many moles of carbon are needed to react with 5.44 mol  $\text{SO}_2$ ?

### Mole-Mass, Mass-Mole

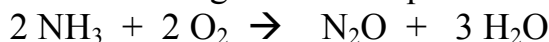
For problems 2-4, use and balance the following equation:



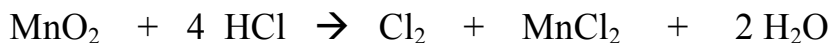
2. \_\_\_\_\_ How much Fe is required to generate 6 moles of  $\text{H}_2$  gas?  
3. \_\_\_\_\_ If 7.0 moles of HCl is added to enough iron that the HCl is completely used up, how much hydrogen gas will be produced?  
4. \_\_\_\_\_ How much HCl is required to completely react with 2.8 moles of Iron?

### Mass-Mass

For problems 5 and 6, use the following balanced equations:



5. \_\_\_\_\_ If 80.0 grams of  $\text{O}_2$  are reacted in the above reaction, how many grams of  $\text{N}_2\text{O}$  will be produced?



6. \_\_\_\_\_ Given 145.7 grams of manganese (IV) oxide, how much hydrochloric acid (HCl) is needed to use up the  $\text{MnO}_2$  completely?

### **Mixed Stoichiometry**

7. Ammonium nitrate will decompose to form nitrogen, oxygen, and water vapor.

a. Write the balanced chemical reaction:

b. \_\_\_\_\_ Determine the total number of liters of oxygen gas formed when 228 g  $\text{NH}_4\text{NO}_3$  is decomposed. Assume STP.

8. In the unbalanced reaction



a) Calculate how many grams of silver nitrate can be made from 2.55 grams of nitric acid.

b) Calculate how many L of nitrogen monoxide can be made, starting with 4.25 grams of silver.

### **Limiting Reagent and Percent Yield:**

9. For a party, Susie has 15 buns, 12 hamburgers and 30 pieces of cheese.

a. How many cheeseburgers can Susie make?

b. What is in excess and by how much?

c. What is limiting?

10. Heating an ore of antimony ( $\text{Sb}_2\text{S}_3$ ) in the presence of iron gives the element antimony and iron (II) sulfide.



When 15.0 g  $\text{Sb}_2\text{S}_3$  reacts with an excess of Fe, 9.84 g Sb is produced. What is the percent yield of this reaction? \_\_\_\_\_

### **Be able to define:**

Stoichiometry

Mole ratio

Limiting Reagent

Excess reagent

Theoretical yield

Actual yield

Percent Yield

