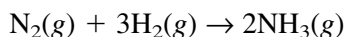


**CHAPTER 9 REVIEW***Stoichiometry***SECTION 9-3**

**PROBLEMS** Write the answer on the line to the left. Show all your work in the space provided.

1. \_\_\_\_\_ If the actual yield of a reaction is 22 g and the theoretical yield is 25 g, calculate the percent yield.

2. 6.0 mol of N<sub>2</sub> are mixed with 12.0 mol of H<sub>2</sub> according to the following equation:

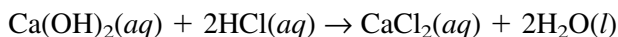


- \_\_\_\_\_ a. Which chemical is in excess? What is the excess amount in moles?

- \_\_\_\_\_ b. Theoretically, how many moles of NH<sub>3</sub> will be produced?

- \_\_\_\_\_ c. If the percent yield of NH<sub>3</sub> is 80%, how many moles of NH<sub>3</sub> are actually produced?

3. 0.050 mol of Ca(OH)<sub>2</sub> are combined with 0.080 mol of HCl according to the following equation:



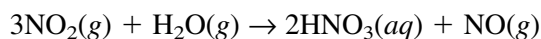
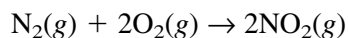
- \_\_\_\_\_ a. How many moles of HCl are required to neutralize all 0.050 mol of Ca(OH)<sub>2</sub>?

**SECTION 9-3 continued**

\_\_\_\_\_ b. Which is the limiting reactant in this neutralization reaction?

\_\_\_\_\_ c. How many grams of water will form in this reaction?

4. Acid rain can form from the combustion of nitrogen gas producing  $\text{HNO}_3(aq)$  in a two-step process.



\_\_\_\_\_ a. A car burns 420. g of  $\text{N}_2$  according to the above equations. How many grams of  $\text{HNO}_3$  will be produced?

\_\_\_\_\_ b. For the above reactions to occur,  $\text{O}_2$  must be in excess in the first step. What is the minimum amount of  $\text{O}_2$  needed in grams?

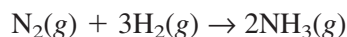
\_\_\_\_\_ c. What volume does the amount of  $\text{O}_2$  in part b occupy if its density is 1.4 g/L?

**CHAPTER 9 REVIEW***Stoichiometry***SECTION 9-3**

**PROBLEMS** Write the answer on the line to the left. Show all your work in the space provided.

1. 88% If the actual yield of a reaction is 22 g and the theoretical yield is 25 g, calculate the percent yield.

2. 6.0 mol of N<sub>2</sub> are mixed with 12.0 mol of H<sub>2</sub> according to the following equation:

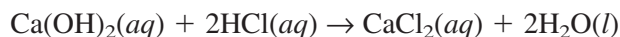


- N<sub>2</sub>; 2.0 mol a. Which chemical is in excess? What is the excess amount in moles?

- 8.0 mol b. Theoretically, how many moles of NH<sub>3</sub> will be produced?

- 6.4 mol c. If the percent yield of NH<sub>3</sub> is 80%, how many moles of NH<sub>3</sub> are actually produced?

3. 0.050 mol of Ca(OH)<sub>2</sub> are combined with 0.080 mol of HCl according to the following equation:



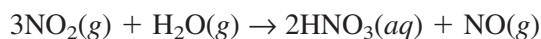
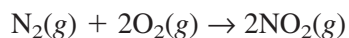
- 0.10 mol a. How many moles of HCl are required to neutralize all 0.050 mol of Ca(OH)<sub>2</sub>?

**SECTION 9-3 continued**

\_\_\_\_\_ **HCl** \_\_\_\_\_ b. Which is the limiting reactant in this neutralization reaction?

\_\_\_\_\_ **1.44 g** \_\_\_\_\_ c. How many grams of water will form in this reaction?

4. Acid rain can form from the combustion of nitrogen gas producing  $\text{HNO}_3(aq)$  in a two-step process.



\_\_\_\_\_ **1260 g** \_\_\_\_\_ a. A car burns 420. g of  $\text{N}_2$  according to the above equations. How many grams of  $\text{HNO}_3$  will be produced?

\_\_\_\_\_ **960 g** \_\_\_\_\_ b. For the above reactions to occur,  $\text{O}_2$  must be in excess in the first step. What is the minimum amount of  $\text{O}_2$  needed in grams?

\_\_\_\_\_ **690 L** \_\_\_\_\_ c. What volume does the amount of  $\text{O}_2$  in part b occupy if its density is 1.4 g/L?