

Stoichiometry Homework #2

Questions 1-2: $\text{N}_2 + 3\text{F}_2 \rightarrow 2\text{NF}_3$

1. To produce 12 grams of NF_3 , how many moles of F_2 are needed?
2. If 10.0 grams of N_2 are used, how many grams of NF_3 are produced?

Question 3: $2\text{CO}(\text{g}) + \text{O}_2(\text{g}) \rightarrow 2\text{CO}_2(\text{g})$

3. How many liters of O_2 gas are needed to produce 4.75×10^{23} molecules of CO_2 gas at STP?

Question 4: $\text{C}_3\text{H}_8 + 5\text{O}_2 \rightarrow 3\text{CO}_2 + \text{H}_2\text{O}$

4. How many grams of CO_2 are produced by the complete combustion of 2.5 liters of C_3H_8 gas at STP?

Question 5: $8\text{Zn}(\text{s}) + \text{S}_8(\text{s}) \rightarrow 8\text{ZnS}(\text{s})$

5.
 - a. If 2.00 mol of Zn are heated with 1.00 mol of S_8 , how many moles of product are formed?
 - b. What is the limiting reactant?
 - c. If in a lab experiment, 1.00 mol of ZnS is made. What is the percent yield?

ANS: 1) 0.25 mol F_2 2) 50.7 g NF_3 3) 8.84 L O_2 4) 15 g CO_2

5a) 2.00 mol ZnS 5b) Zn 5c) 50.0% yield