The Mole Lesson 4 Check for Understanding

Stoichiometry Worksheet

Directions: Solve the following problems in your journal. Be sure to show all work. Use units in your final answer to the proper number of sig figs.. *Please note that you will find the answers at the end of the document*.

All Calculations Must use a Mole Ratio to convert from one substance to another!

Mole Ratio: ? mol A = ? mol B ***(?= coefficient from balanced chemical equation)***

Other conversion factors needed: 1 mol = molar mass (g) ← found on Periodic Table

PART ONE:

1. $N_2 + 3H_2 \rightarrow 2NH_3$ How many moles of NH_3 are produced when **.60 mol** of N_2 reacts with H_2?

2. $4Li + O_2 \rightarrow 2\ Li_2O$ How many moles of Li_2O will form if **2.00 mol** Li reacts?

3. $2Mg + O_2 \rightarrow 2MgO$ What mass in grams of MgO is produced from **2.00 mol** Mg?

4. $2HgO \rightarrow 2\ Hg + 1\ O_2$ How many moles of HgO are needed to produce **125 g** of O_2?

5. $2\ NaCl + 2\ H_2O \rightarrow 2\ NaOH + Cl_2 + H_2$ If brine contains **250. g** NaCl, how many moles of Cl_2 are produced?

Answers: 1) 1.2 mol NH_3 2) 1.00 mol Li_2O 3) 80.6 g MgO 4) 7.81 mol HgO 5) 2.14 mol Cl_2

PART TWO

Equation for questions 1-4: $4\,Al + 3\,O_2 \rightarrow 2\,Al_2O_3$

Mol-Mol

1. How many moles of oxygen are needed to react with 7.5 moles of aluminum?

Mol-Mass

2. How many grams of aluminum oxide would form if 12.5 moles of aluminum burned?

Mass-Mol

3. How many moles of oxygen are needed to react with 100.0 grams of aluminum?

Mass-Mass

4. How many grams of aluminum burned if 200.0 grams of aluminum oxide formed?

Ans: 1) 5.6 mol O_2 2) 637 g Al_2O_3 3) 2.780 mol O_2 4) 105.9 g Al

Equation for questions 5-8: $C_3H_8 + 5\ O_2 \rightarrow 3\ CO_2 + 4\ H_2O$

Mol-Mol

5. How many moles of carbon dioxide will form if 5.5 moles of C_3H_8 is burned

Mol-Mass

6. If 30.0 moles of oxygen are used, how many grams of water will form?

Mass-Mol

7. If 100. grams of C_3H_8 burns, how many moles of carbon dioxide will form?

Mass-Mass

8. How many grams of oxygen are needed to burn 5.0 grams of C_3H_8?

Equation for question 9: $2\ KClO_3 \rightarrow 2\ KCl + 3\ O_2$

Mass-Mass

9. If 5.0 g of $KClO_3$ is decomposed, how many grams of KCl would be produced?

5) 17 mol CO_2 6) 430 g H_2O 7) 6.80 mol CO_2 8) 18 g O_2 9) 3.0 g KCl