

STOICHIOMETRY WORKSHEET 1, MOLE TO MOLE, MASS TO MOLE, & MOLE TO MASS EQUATIONS.

1. Given the following equation: $2 \text{C}_4\text{H}_{10} + 13 \text{O}_2 \rightarrow 8 \text{CO}_2 + 10 \text{H}_2\text{O}$, Show what the following molar ratios should be:

a. $\underline{\quad 2 \quad} \text{C}_4\text{H}_{10} / \underline{\quad 13 \quad} \text{O}_2$

b. $\underline{\quad 13 \quad} \text{O}_2 / \underline{\quad 8 \quad} \text{CO}_2$

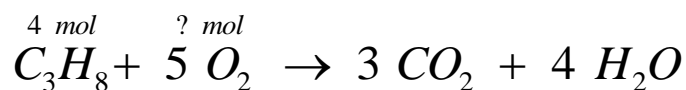
c. $\underline{\quad 2 \quad} \text{C}_4\text{H}_{10} / \underline{\quad 10 \quad} \text{H}_2\text{O}$

d. $\underline{\quad 13 \quad} \text{O}_2 / \underline{\quad 10 \quad} \text{H}_2\text{O}$

e. $\underline{\quad 2 \quad} \text{C}_4\text{H}_{10} / \underline{\quad 8 \quad} \text{CO}_2$

2. Given the following equation: $2 \text{KClO}_3 \rightarrow 2 \text{KCl} + 3 \text{O}_2$. How many moles of oxygen can be produced by letting 12.00 moles of KClO_3 react?

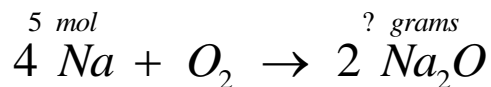
3. How many moles of oxygen are necessary to react completely with four moles of propane (C_3H_8) to form carbon dioxide and water?



$$\frac{4 \text{ mol C}_3\text{H}_8}{1 \text{ mol C}_3\text{H}_8} \times \frac{5 \text{ mol O}_2}{1 \text{ mol C}_3\text{H}_8} = 20.0 \text{ mol O}_2$$

4. Calculate the number of moles of methane, CH_4 , will form if 24 grams of carbon react with hydrogen gas?

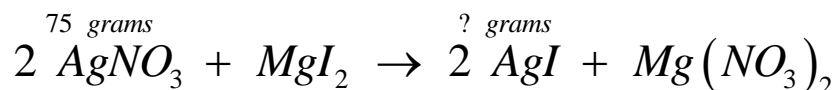
5. Calculate the number of grams of sodium oxide, Na_2O , that will be produced when 5.00 moles of solid sodium react with oxygen gas.



$$\frac{5 \text{ mol Na}}{4 \text{ mol Na}} \times \frac{2 \text{ mol Na}_2\text{O}}{1 \text{ mol Na}_2\text{O}} \times \frac{61.98 \text{ g}}{1 \text{ mol Na}_2\text{O}} = 155 \text{ g Na}_2\text{O}$$

6. Calculate the number of grams of carbon dioxide that will be produced when 135.0 grams of butane gas, C_4H_{10} , react with oxygen gas. Also, water vapor is produced in the reaction.

7. Calculate the number of grams of the silver iodide that will be produced when 75.0 grams of silver nitrate react with magnesium iodide. Also, magnesium nitrate is produced in the reaction.



$$\frac{75.0 \text{ g AgNO}_3}{169.88 \text{ g}} \times \frac{1 \text{ mol AgNO}_3}{2 \text{ mol AgNO}_3} \times \frac{2 \text{ mol AgI}}{1 \text{ mol AgI}} \times \frac{234.78 \text{ g}}{1 \text{ mol AgI}} = 104 \text{ g AgI}$$

8. Calculate the number of grams of gold metal that will be produced when 20.3 milligrams of lithium metal react with gold(III) iodate. Also, lithium iodate is produced in the reaction.