

Quiz 6.1 – Molar Mass and Stoichiometry

Name: Key

Question 1

How many grams will a 0.25 mol sample of each compound weigh?



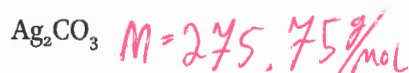
$$\frac{0.25 \text{ mol}}{1 \text{ mol}} \times 44.01 \text{ g} = 11 \text{ g}$$



$$\frac{0.25 \text{ mol}}{1 \text{ mol}} \times 60.05 \text{ g} = 15 \text{ g}$$



$$\frac{0.25 \text{ mol}}{1 \text{ mol}} \times 148.31 \text{ g} = 37 \text{ g}$$



$$\frac{0.25 \text{ mol}}{1 \text{ mol}} \times 275.75 \text{ g} = 69 \text{ g}$$

Question 2

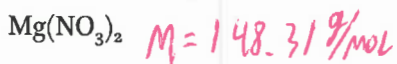
How many moles are in a 2.50 g sample of each compound?



$$\frac{2.50 \text{ g}}{96.09 \text{ g}} \times 1 \text{ mol} = 0.0260 \text{ mol}$$



$$\frac{2.50 \text{ g}}{2.02 \text{ g}} \times 1 \text{ mol} = 1.24 \text{ mol}$$



$$\frac{2.50 \text{ g}}{148.31 \text{ g}} \times 1 \text{ mol} = 0.0169 \text{ mol}$$



$$\frac{2.50 \text{ g}}{146.06 \text{ g}} \times 1 \text{ mol} = 0.0171 \text{ mol}$$

Question 3

Consider the reaction: $\text{C}_3\text{H}_8(\text{g}) + 5 \text{O}_2(\text{g}) \rightleftharpoons 3 \text{CO}_2(\text{g}) + 4 \text{H}_2\text{O}(\text{g})$ How many moles of O_2 are required to react with 0.750 mol of C_3H_8 ?

$$0.750 \text{ mol C}_3\text{H}_8 \left(\frac{5 \text{ mol O}_2}{1 \text{ mol C}_3\text{H}_8} \right) = 3.75 \text{ mol O}_2$$

How many moles of CO_2 and H_2O would be produced?

$$0.750 \text{ mol C}_3\text{H}_8 \left(\frac{3 \text{ mol CO}_2}{1 \text{ mol C}_3\text{H}_8} \right) = 2.25 \text{ mol CO}_2$$

$$0.750 \text{ mol C}_3\text{H}_8 \left(\frac{4 \text{ mol H}_2\text{O}}{1 \text{ mol C}_3\text{H}_8} \right) = 3 \text{ mol H}_2\text{O}$$