

K E Y

Mole Worksheet - Mass, Particles, volume of gas

$$1) 6.02 \times 10^{23} \text{ H}_2\text{O molec.} \times \frac{1 \text{ mol}}{6.02 \times 10^{23}} = \underline{1.00 \text{ moles}}$$

$$2) 4.235 \times 10^{21} \text{ planets} \times \frac{1 \text{ mol}}{6.02 \times 10^{23}} = \underline{0.00703 \text{ mol.}}$$

$$3) 7.5 \text{ mol NaCl} \times \frac{58.5 \text{ g}}{1 \text{ mol}} = \underline{440 \text{ g}}$$

$$4) \underset{\substack{\uparrow \\ 1000 \text{ g.}}}{1.00 \text{ Kg}} \times \frac{1 \text{ mol}}{197 \text{ g}} = \underline{5.08 \text{ mol}}$$

$$5) 4 \text{ L} \times \frac{1 \text{ mol}}{22.4 \text{ L}} = \underline{0.2 \text{ mol}}$$

$$6) 2.60 \text{ mol} \times \frac{44.0 \text{ g}}{1 \text{ mol}} = \underline{114 \text{ g}}$$

$$7) 2.60 \text{ mol} \times \frac{22.4 \text{ L}}{1 \text{ mol}} = \underline{58.2 \text{ L}}$$

$$8) 2.00 \times 10^8 \text{ L} \times \frac{1 \text{ mol}}{22.4 \text{ L}} = \underline{8.93 \times 10^6 \text{ mol}}$$

$$9) 85 \text{ mol} \times \frac{207.2 \text{ g}}{1 \text{ mol}} = \underline{18 \text{ Kg or } 18000 \text{ g.}}$$

$$10) \quad 0.0348 \text{ mol} \times \frac{6.02 \times 10^{23}}{1 \text{ mol}} = 2.09 \times 10^{22} \text{ molec.}$$

$$\times \frac{2 \text{ atoms}}{1 \text{ molec.}} \text{ N}_2 = \underline{4.19 \times 10^{22} \text{ atoms}}$$

$$11) \quad 76.0 \text{ g Ag} \times \frac{1 \text{ mol}}{107.9 \text{ g}} \times \frac{6.02 \times 10^{23}}{1 \text{ mol}} = \underline{4.24 \times 10^{23} \text{ atoms}}$$

$$12) \quad 8.9 \times 10^{23} \text{ molec.} \times \frac{1 \text{ mol}}{6.02 \times 10^{23}} \times \frac{342 \text{ g}}{1 \text{ mol}} = \underline{510 \text{ g}}$$

$$13) \quad 8.93 \times 10^6 \text{ mol H}_2 \times \frac{2.02 \text{ g}}{1 \text{ mol}} = 1.80 \times 10^7 \text{ g}$$

$$14) \quad 3 \times \frac{0.50 \text{ mL}}{\text{fear}} = 1.50 \text{ mL} \times \frac{1.0 \text{ g}}{\text{mL}} = \underline{1.5 \text{ g}}$$

$$1.5 \text{ g} \times \frac{1 \text{ mol}}{18.0 \text{ g}} \times \frac{6.02 \times 10^{23}}{\text{mol}} = \underline{5.0 \times 10^{22} \text{ molec. of H}_2\text{O}}$$

$$15) \quad \begin{matrix} (2,000,000 \text{ g}) \\ 2000 \text{ kg} \end{matrix} \times \frac{1 \text{ mol}}{39.9 \text{ g}} \times \frac{22.4 \text{ L}}{\text{mol}} = 1 \times 10^6 \text{ L}$$

$$\begin{aligned} 16) \quad 75.0 \text{ mL} &\times \frac{0.880 \text{ g}}{\text{mL}} \times \frac{1 \text{ mol}}{46 \text{ g}} \times \frac{6.02 \times 10^{23}}{1 \text{ mol}} \\ &= \underline{8.64 \times 10^{23} \text{ molec.}} \end{aligned}$$

$$17) \quad 580 \text{ mL} = 0.58 \text{ L} \times \frac{1 \text{ mol}}{22.4 \text{ L}} = 0.0259 \text{ mol}$$

$$\text{molar mass} = \frac{\text{g}}{\text{mol}} \quad \text{so ...} \quad \frac{0.828 \text{ g}}{0.0259 \text{ mol}} = 31.98$$

(oxygen.) \rightarrow $\frac{32.0 \text{ g}}{\text{mol}}$