

$$\text{Molarity} = \frac{\# \text{ mol solute}}{\# \text{ L solution}}$$

$$\text{molality} = \frac{\# \text{ mol solute}}{\# \text{ kg solvent}}$$

$$\text{mole fraction (X)} = \frac{\# \text{ mol sub. of interest}}{\text{total \# mol}}$$

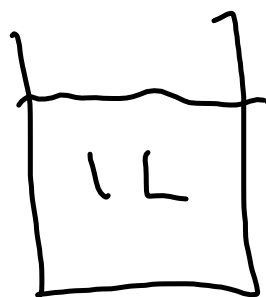
$$\text{mass percent of solute} = 100\% \left(\frac{\text{mass of solute}}{\text{mass of solution}} \right)$$

$$25.7 \text{ g NaCl} \left(\frac{1 \text{ mol NaCl}}{58.44 \text{ g NaCl}} \right)$$
$$= 0.4398 \text{ mol NaCl}$$

$$\text{Molarity} = \frac{\text{# mol}}{\text{# L}} = \frac{0.4398 \text{ mol}}{0.153 \text{ L}}$$
$$= 2.87 \text{ M}$$

$$25.4 \cancel{\text{g KI}} \left(\frac{1 \text{ mol KI}}{166.0 \cancel{\text{g KI}}} \right) \\ = 0.153 \text{ mol KI}$$

$$\text{molality} = \frac{\# \text{ mol solute}}{\# \text{ kg solvent}} = \frac{0.153 \text{ mol}}{0.963 \text{ kg}} \\ \Rightarrow 0.159 \text{ m}$$



$$\text{Molarity} = \frac{\# \text{ mol } \overset{1.75 \text{ mol}}{\text{Na}_2\text{CO}_3}}{\# \text{ L solution } 1 \text{ L}}$$

$$1.75 \text{ M } \text{Na}_2\text{CO}_3 \text{ molality} = \frac{\# \text{ mol } \overset{1.75 \text{ mol}}{\text{Na}_2\text{CO}_3}}{\# \text{ kg H}_2\text{O}}$$

$$d = 1.112 \frac{\text{g}}{\text{mL}}$$

$$0.927 \text{ kg}$$

$$\text{molality} = ? = 1.89 \text{ m}$$

$$1000 \text{ mL} \left(1.112 \frac{\text{g}}{\text{mL}} \right) = 1112 \text{ g}$$

$$1.75 \text{ mol } \text{Na}_2\text{CO}_3 \left(\frac{105.99 \text{ g } \text{Na}_2\text{CO}_3}{1 \text{ mol } \text{Na}_2\text{CO}_3} \right) = 185 \text{ g } \text{Na}_2\text{CO}_3$$

$$\begin{array}{r} 1112 \text{ g } (\text{Na}_2\text{CO}_3 + \text{H}_2\text{O}) \\ - 185 \text{ g } (\text{Na}_2\text{CO}_3) \\ \hline 927 \text{ g } (\text{H}_2\text{O}) \end{array}$$