

Name: _____

Date: _____

Period: _____

Seat #: _____

Raoult's Law:

Write the formula for Raoult's Law: $P_{\text{solution}} =$

A solution is made by dissolving 164 g of glycerin ($\text{C}_3\text{H}_8\text{O}_3$) in 338 mL of H_2O at $40.0\text{ }^\circ\text{C}$.

The vapor pressure of pure H_2O at $40.0\text{ }^\circ\text{C}$ is 54.74 torr.

The density of H_2O at $39.8\text{ }^\circ\text{C}$ is 0.992 g/mL. The molar mass of glycerin is 92.11 g/mol.

- How many moles of glycerin are in this solution?
- How many moles of water are in this solution?
- What is the mole fraction, X , of solvent in this solution?
- Calculate the vapor pressure of the solution.

Osmotic Pressure: SKIP

Blood has an osmotic pressure of 7.65 atm at $37\text{ }^\circ\text{C}$. What concentration of glucose ($\text{C}_6\text{H}_{12}\text{O}_6$) should be used for an intravenous solution to match the blood?

- What is the formula for osmotic pressure? $\Pi =$
- Calculate the concentration.

$$\begin{aligned}\text{Gas constant, } R &= 8.31 \text{ J mol}^{-1} \text{ K}^{-1} \\ &= 0.0821 \text{ L atm mol}^{-1} \text{ K}^{-1} \\ &= 62.4 \text{ L torr mol}^{-1} \text{ K}^{-1}\end{aligned}$$