Warm-UP:

1. When you dissolve Koolaid into water, which is the solute and which is the solvent? → solute → solvent
2. How do you create a super saturated solution? Provide a common example. → Heat → sweet tea
3. In the human body, name the main solvent and list examples of solutes. → Blood → O_2, Na, Ca, Fe, Cholesterol

• **concentration:** amount of solute dissolved in a solution

↳ units: ppm: parts per million (solute particles / total # of particles)

$$\text{Molarity [M]} = \frac{\text{Moles of Solute}}{\text{Liters of solution}}$$

3M HCl → Three Molar HCl solution → 3 mol of HCl in 1 Liter of solution

Ex: What is the molarity of a solution with 100mL of H_2O & 0.90g NaCl?

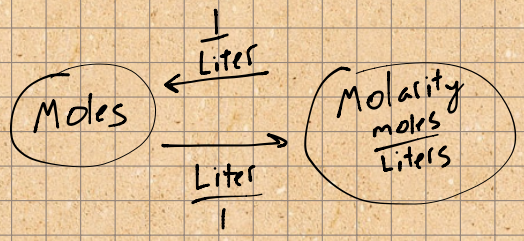
$$[NaCl] = ?M = \frac{\text{Moles NaCl}}{\text{Liters } H_2O}$$

$$\frac{0.9\text{g NaCl} \mid 1\text{ mol NaCl}}{\mid 58.45\text{ g}} = 0.015\text{ mol NaCl}$$

$$\frac{100\text{mL} \mid 1\text{ L}}{\mid 1000\text{ mL}} = 0.1\text{ L}$$

$$[NaCl] = \frac{0.015\text{mol}}{0.1\text{L}} = \boxed{0.15\text{ M}}$$

★ Use Molarity as a conversion factor



Ex2: How many moles of NaHClO in 1.5L of 0.7M solution?

$$L \cdot M = \frac{\text{mol}}{L} \cdot L \qquad \frac{1.5L \mid 0.7\text{mol}}{\mid 1\text{ Liter}} = \boxed{1.05\text{ mol}}$$

★ Solutions can be diluted by adding more solvent

$$\text{Molarity} = \frac{\text{mol}}{\text{Liters}\uparrow} \Rightarrow M\downarrow$$

Dilution: $M_1V_1 = M_2V_2$ M = Molarity, V = Volume

Ex 3:

$M_1 = 2.00\ M\ MgSO_4$
$V_1 = ?$
$M_2 = 0.40\ M\ MgSO_4$
$V_2 = 100.0\ mL$
$0.1\ L$

$$\frac{M_1 V_1}{M_1} = \frac{M_2 V_2}{M_1} = \frac{0.4 \cdot 0.1}{2.00} = 0.02\ L$$

(V_1 → ?)

HW: ch 18 EOC: 45, 49, 52, 54