

Concentration of solutions

p. 237 – KCQ

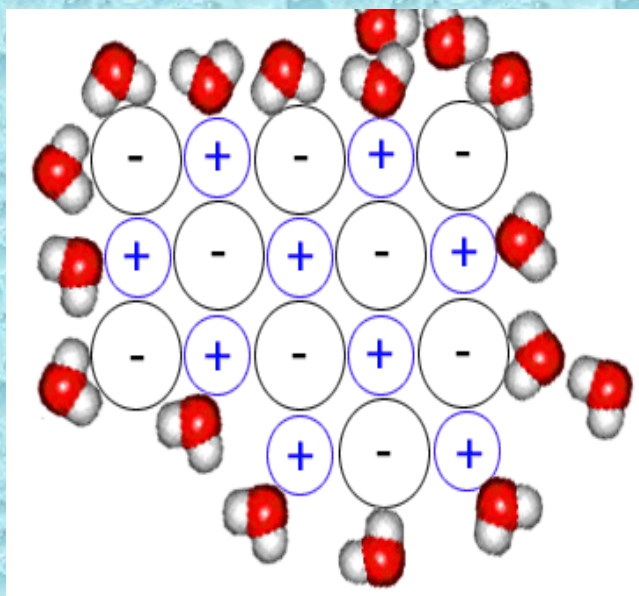
Target: I can calculate molarity and perform dilution calculations to be used in kinetics problems

Vocabulary

- **Solute** = the thing that is dissolving
(*What you have **less** of*)
- **Solvent** = what it is dissolving IN
(*What you have **more** of*)
- **Solution** = solute + solvent

What happens at the molecular level?

- **Random motion of molecules** causes mixing
- The solvent molecules surround the solute molecules, in a process called **solvation**.

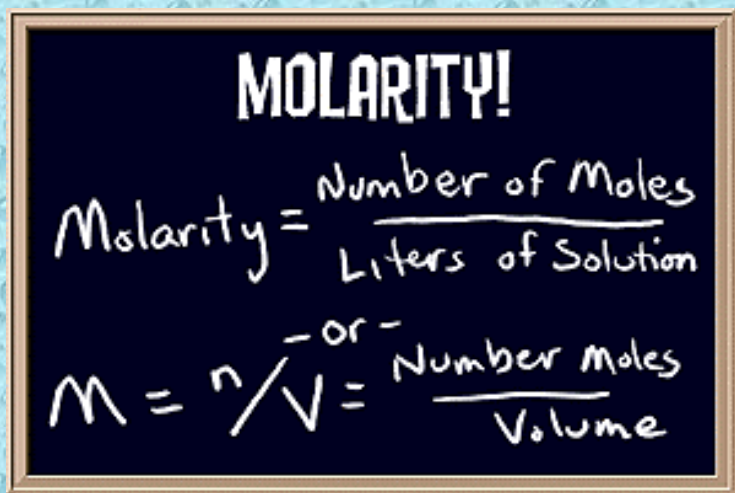


<http://group.chem.iastate.edu/Greenbowe/sections/projectfolder/flashfiles/thermochem/solutionSalt.html>

Molarity

- $M = \frac{\text{moles of solute}}{\text{liters of solution}}$

Example: What is the molarity of 5 moles of iodine dissolved in 50 liters of water?

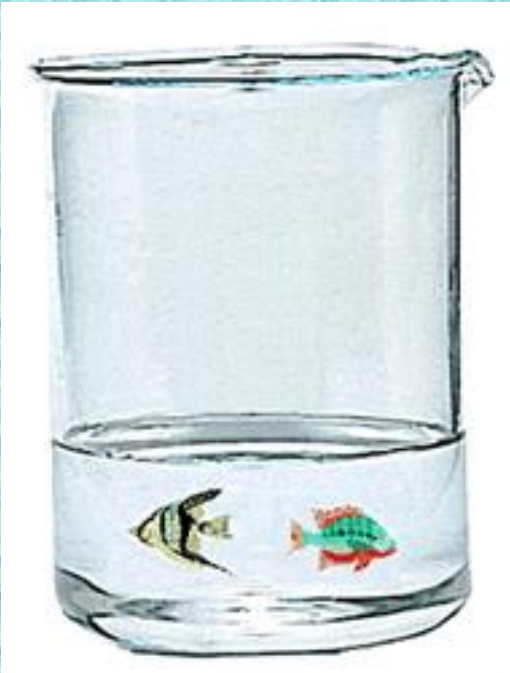


MOLARITY!

$$\text{Molarity} = \frac{\text{Number of Moles}}{\text{Liters of Solution}}$$

-or-

$$M = \frac{n}{V} = \frac{\text{Number moles}}{\text{Volume}}$$



2 fish / 2 Liter



2 fish / 4 Liter

Molarity looks at the number of solute particles / volume of solution

Making Solutions with a Certain Concentration

$$M_1V_1 = M_2V_2$$

Example: How many milliliters of 3M NaOH do you need to make 45 mL of a 1.85M NaOH solution?