

# Chapter 10 – Solutions

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- Solution = Solvent + Solute
  1. Solvent does dissolving
  2. Solute gets dissolved
  3. If noting is mentioned, assume water is the solvent
- Molarity – The amount of moles of solute per liters of solution
- Mole Fraction – The moles of a substance per the total moles
- Mass Percent – Mole Fraction times 100%
- ppm = milligrams per liter, whereas ppb = micrograms per liter
- Molality – Moles of solute per kilograms of solvent
- Solubility – How much of a substance will dissolve
- Principles
  1. Nature of Solute – Solvent interaction (like dissolves like).
  2. Temperature – Increase in temperature will increase solubility of endothermic reaction (solids). Gases are exothermic.
  3. Pressure – Increase in pressure will increase solubility for gas-liquid systems, such as bottled soda.
- Colligative Properties – Depends on concentration, not nature.
  1. Vapor Pressure – Rate at which a solution evaporates is reduced by increase of solute.
  2. Boiling Point Elevation or Freezing Point Depression – Increase in solute causes boiling point to go up, and freezing point to go down.