

# Unit 10: Solutions

## Learning Targets

1. Define concentration in terms of solute and solvent.
  - a) I can discuss the difference between the terms concentrated and dilute.
  - b) I can explain the difference between the solute and the solvent.
2. Calculate the concentration of a solution.
  - a) I can convert grams of solute to moles of solute.
  - b) I can calculate the molarity of a solution.
  - c) I can calculate the molality of a solution.
  - d) I can calculate the concentration of an ion in a solution.
3. Use concepts of colligative properties to explain how freezing and boiling points of solutions are different than pure water.
  - a) I can explain that solutions have higher boiling points and lower freezing points than the pure solvent.
  - b) I can demonstrate that ionic solids that dissociate in more ionic particles have greater changes in freezing and boiling points.
4. Calculate the freezing and/or boiling point of a solution.
  - a) I can calculate the total molality of a solution.
  - b) I can use the total molality of particles to find the boiling or freezing point of a solution.
5. Use colligative properties to determine the molar mass of a covalent solvent. (Note: ionic solvents will not be used for these calculations.)
  - a) I can use the freezing point of a solution to calculate the molar mass of the solute.
  - b) I can use the boiling point of a solution to calculate the molar mass of the solute.