Guided Notes: Colligative Properties

Name: _____ Period: _____

Molality:

- equation:

  [   ]

- _____ mL = _____ L

- _____mL H_2O = _____ g H_2O (based on the density for water: 1 g/mL)

- _____ g = _____ kg

- Freezing point of water _____°C
- Boiling point of water _____°C
- **Practice:**
  - What is the molality of a solution that contains 5.0 moles of sucrose dissolved in 2500 mL of water?

Colligative Properties:

- Colligative Property: a property that depends only on the _____ of solute particles, and not the _____ of particle.

- List the 4 colligative properties below:

  - _____

  - _____

  - _____

  - _____

Freezing Point Depression:

- The addition of another _____ (_____) disrupts and prevents water molecules from forming an _____.
- Adding a substance to a pure solvent _____ the freezing point.
- equation:

  [   ]

  - ΔT_f = _____

  - m = _____

  - k_f = _____

    - k_f of water is _____

  - i = _____

Boiling Point Elevation:

- _____ particles also get in the way of a _____ ability to boil thereby _____ the boiling temperature.
- Adding a substance to a pure solvent _____ the boiling point.
- equation:

  [   ]

- ○ ΔT = _____

- ○ m = _____

- ○ k_b = _____

  - ▪ k_b of water is _____

- ○ i = _____

Dissociation Factor:
- How many _____ the solute will _____ into in solution.
- Covalent compounds: will not _____, i = _____
- Ionic compounds: will dissociate into _____, i = number of _____ per _____

Practice:
1. $AlPO_4$ _____
2. N_2O_4 _____
3. $LiCl$ _____
4. CaI_2 _____
5. PCl_5 _____
6. $Pb(OH)_4$ _____
7. XeF_4 _____
8. Cu_2CO_3 _____

Practice : Show all of your work!
- What is the freezing point of 10.2 grams of NaCl in 5.1 kg of water?

- What is the boiling point of a solution containing 100.0 g $MgCl_2$ dissolved in 250.0 g of water?

- What would be the new freezing point of a solution made by dissolving 25.2 g $CaCl_2$ into 500 mL of water? (*density for water is 1g/1mL)

- How can you remember whether to add or subtract the ΔT? _____