CHEMISTRY MATTERS
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NOTE-TAKING GUIDE: Unit 7, SEGMENT F

Name:

Date:

Main Ideas, Key Points, Questions:

After watching the video segment, write down key points, main ideas and big questions.

Objective(s):

- *To investigate the colligative properties of solutions, including freezing point depression and boiling point elevation.*
- *To calculate the concentration of a solution using molality.*
- *To calculate freezing point depression and boiling point elevation.*

Notes:

During the video segment, use words, phrases or drawings to take notes.

Summary:

After watching the video segment, write at least three sentences explaining what you learned.
You can ask yourself: "If I was going to explain this to someone else, what would I say?"

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QUESTIONS TO CONSIDER:
Unit 7, SEGMENT F

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After watching the video and performing any associated labs and/or experiments, you should be able to answer the following:

1. A colligative property is a property of a solution that is different from the properties of the pure solvent by itself. What two colligative properties are investigated in this video?

2. Calculating colligative properties requires the calculation of molality, because molality, unlike molarity, is not temperature dependent. Why not?

3. The formula for calculating molarity is Moles of solute/Liters of solution. What is the formula for calculating molality?

4. Calculate the molality of a solution that contains 0.5 moles of sodium chloride in 2 liters of water.

Freezing point depression is a colligative property that describes how the freezing point of a solution is lowered by the addition of solute. You are now expected to carry out an investigation of freezing point depression by making ice cream. Once you have made and tasted your ice cream, you should continue the Unit 7F video by measuring the temperature of the saltwater solution in the ice cream freezer apparatus.

5. Record the temperature of the salt water solution:

6. The freezing point of water is usually 0 degrees Celsius. How could the salt water in the freezer still be liquid at this temperature lower than 0 degrees Celsius?

7. Write the formula for calculating freezing point depression.

8. Identify the meaning of the symbols in this formula.
   - ΔT means what?
   - K_f and K_b mean what?
   - Where do you find the values for K_f or K_b?
   - i means what?
   - m means what?

9. If a salt like NaCl dissolves in water, how many particles are contributed to the solution?

10. If a non-electrolyte like sugar dissolves in water, how many particles are contributed to the solution?

You will now either calculate the boiling point elevation of 0.73 moles of glucose dissolved in 225 grams of phenol OR calculate the freezing point depression of 28 grams of salt dissolved in 100 milliliters of water.

11. Why does the "King of Pops" company usually add sugar and salt to every popsicle they make?