**Boiling point elevations for solutions of benzoic acid in acetone**

**Objective** – To investigate the relationship between the molality and the boiling point of a solution.

1. In each of the 6 test tubes, measure 5.00 g acetone.
2. Leaving one of the test tubes with no solute, add 0.50, 1.00, 1.50, 2.00 and 2.50 g of benzoic acid.
3. Stir the solutions to ensure all the benzoic acid has dissolved.
4. Calculate the molalities of each solution (considering SFs/DPs).

*Molar mass benzoic acid:* g/mol *(You must find an in text and bibliography reference for this value)*

0.00 g benzoic acid in 5.00 g acetone – 0.00 m

0.50 g benzoic acid in 5.00 g acetone -

1.00 g benzoic acid in 5.00 g acetone -

1.50 g benzoic acid in 5.00 g acetone -

2.00 g benzoic acid in 5.00 g acetone –

2.50 g benzoic acid in 5.00 g acetone -

1. Hold each test tube in a water bath and record at which temperature the solution boils. How will you know it is boiling? ……………………………………………………………………………………………
2. What is the boiling point of acetone?

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1. Create a table of your results here:

<https://docs.google.com/spreadsheets/d/17WnitFU0Pnxww4mu_YBqhse1MFN2K3NhRJe49QmmJIw/edit?usp=sharing>

1. Plot a graph of molality (x-axis) against the boiling point (y-axis).
2. Create a blog to appropriately present this investigation and its findings. It should include a: title, objective, detailed hypothesis, complete table of results, graph (with error bars showing the standard deviation of the temperatures measures), conclusion (explaining the results and how they match to your hypothesis), evaluation (discussing problems and suggesting improvements) and a minimum of 2 references.

**Freezing point depressions for solutions of sugar in water**

**Objective** – To investigate the relationship between the molality and the freezing point of a solution.

1. In each of the 6 test tubes, measure 5.00 g water.
2. Leaving one of the test tubes, add 0.50, 1.00, 1.50, 2.00 and 2.50 g of sugar.
3. Stir the solutions to ensure all the salt has dissolved (you may need to warm the water slightly to dissolve all of the sugar).
4. Calculate the molalities of each sugar solution (considering SFs/DPs).

*Molar mass sucrose: g/mol (You must find an in text and bibliography reference for this value)*

0.00 g sugar in 5.00 g water – 0.00 M

0.50 g sugar in 5.00 g water –

1.00 g sugar in 5.00 g water –

1.50 g sugar in 5.00 g water –

2.00 g sugar in 5.00 g water –

2.50 g sugar in 5.00 g water –

1. Place the test tubes in a salt ice mixture and note at which temperature each solution freezes. How will you know it is freezing?

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1. What is the freezing point of water?

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1. Create a table of your results here:

<https://docs.google.com/spreadsheets/d/17WnitFU0Pnxww4mu_YBqhse1MFN2K3NhRJe49QmmJIw/edit?usp=sharing>

1. Plot a graph of molality (x-axis) against the freezing point (y-axis).
2. Create a blog to appropriately present this investigation and its findings. It should include a: title, objective, detailed hypothesis, complete table of results, graph (with error bars showing the standard deviation of the temperatures measures), conclusion (explaining the results and how they match to your hypothesis), evaluation (discussing problems and suggesting improvements) and a minimum of 2 references.