**Water Potential & Molarity Mixup:**

*A Lab Puzzle*

**Activity 1: Experimental Determination of Unknown Molarities.**

Task:

**You will be given six unlabeled sucrose solutions of concentrations spanning from 0.0M to 1.0M in 0.2M increments (0.0M, 0.2M, 0.4M, 0.6M, 0.8M, 1.0M).  You will use your understanding of water potential and tonicity to determine the molarity of each solution.**

Methods

You can use the following materials to make your determination

* Up to 300ml of each unknown solution
* Distilled water.
* An Electronic Balance
* Dialysis Tubing (assume it accurately models the permeability of the cell membrane with regard to water and sucrose)
* Disposable pipettes

You can construct a model cell by using the dialysis tubing.  To do this, place the dialysis tubing in water until it is soaked.  Remove a section of the tubing from the water and tightly twist one end several times.  Then, fold the twisted end over and tie it tightly with a string.  Now rub the sides of the tubing between your fingers to separate the sides.  You can then fill this “model cell” with any types of solution you wish.  Once filled, twist the open end several times, and tie it tightly.  You can then rinse off the bag with water (to remove anything you might have spilled on it), dry the bag, weigh it, and place it into a beaker filled with a liquid.

Procedure

    With your group, develop a procedure that will enable you to complete your task.  You can use as many of the supplies available to you to test your ideas as you wish.  Make sure that you generate the evidence you will need to support your explanation as you work.  You can record your **method** and any **observations** you make in your lab notebooks.  Feel free to document any pictorial evidence, etc. as well.

    Show your procedure to your instructor prior to beginning work in the lab.

**Activity 2: Experimental Determination of the Water Potential of a Vegetable Sample.**

Task:

**You will need to determine the water potential of a sample of a vegetable.**

Methods

You can use the following materials to make your determination

* Samples of the vegetable
* Up to 150 ml of each solution from part 1.
* An Electronic Balance
* A thermometer

Procedure

    With your group, develop a procedure that will enable you to complete your task.  You can use as many of the supplies available to you to test your ideas as you wish.  Make sure that you generate the evidence you will need to support your explanation as you work.  You can record your **method** and any **observations** you make in your lab notebooks.  Feel free to document any pictorial evidence, etc. as well.

Show your procedure to your instructor prior to beginning work in the lab.

Final Product

    Once you have gathered all of your data for both experiments, you will complete Argumentation documents for each part of the lab (using the Claim, Evidence, Reasoning format).  As you frame your arguments, remember to do the following:

* State your claim.
* Include genuine evidence (data, analysis, and interpretation)
* Explain why the evidence is important and relevant
* Organize your argument in a way that aides readability.
* Use a broad range of words including relevant vocabulary.
* Include at least one graphic representation of your data.