ACTIVITY 2: RATE OF OSMOSIS

Osmosis is the diffusion of water through a semipermeable membrane. **Dialysis** is the process of molecular filtration through a selectively permeable membrane. In today's experiment you will have to observe the movement of molecules of water from and into the dialysis bags, which you will make using dialysis tubing. This tubing is made of semipermeable material. Thus, the bags you make will allow small molecules such as water molecules to move in and out while the larger molecules such as sucrose (a table sugar which is a disaccharide) will not be able to do so.

Procedure:

1. Prepare the five beakers for the experiment by filling them with the solutions in the following order:

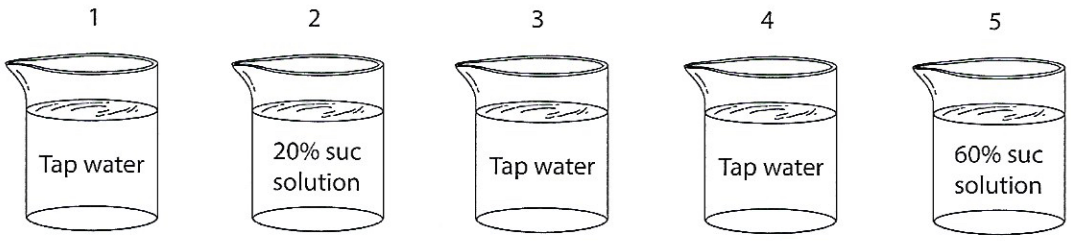


Figure 7.2. Order of the liquids in the beakers.

2. Cut five 15 cm pieces from the dialysis tubing.
3. Put all of the pieces in the beakers filled with tap water. Allow them to soak there for a minute or so.
4. Below, on ***Figure 7.3***, is the general steps of how to proceed with making one of five bags. Your instructor will give you tips on how to do it correctly. Make sure there is no air left in the bag and the bag is somewhat loose.

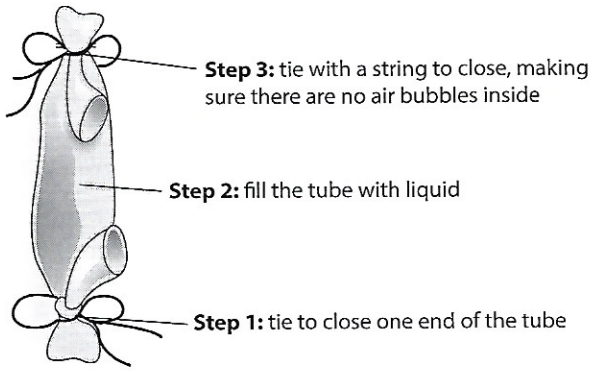


Figure 7.3. Making a dialysis bag for the osmosis experiment.

5. Place all five bags on the paper towel in the order as shown below:

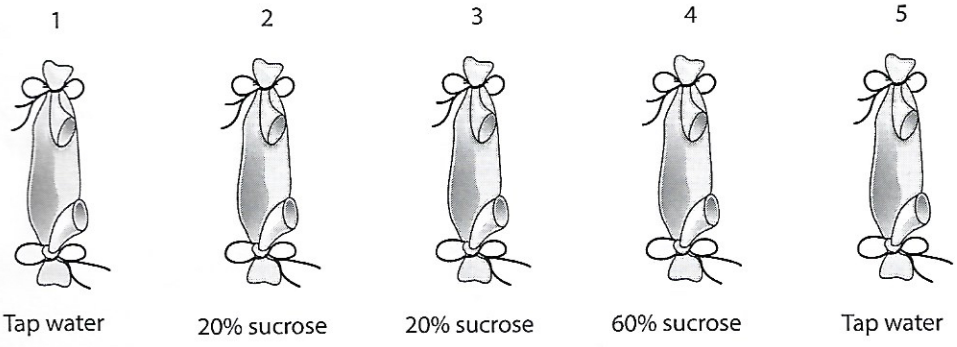


Figure 7.4. The order of the dialysis bags on the paper towel before each trial.

6. Weigh each of the bags using laboratory balances and record your data in ***Table 7.1***.
7. Put all the bags in the corresponding number of the beakers at the same time: the dialysis bag number one goes in the beaker number one, dialysis bag number two goes into the beaker number two, and so on. Allow those bags to set there for exactly 10 minutes.

8. Meanwhile, *label the diagram below. The beaker # 2, is an example to show you how to do it:*

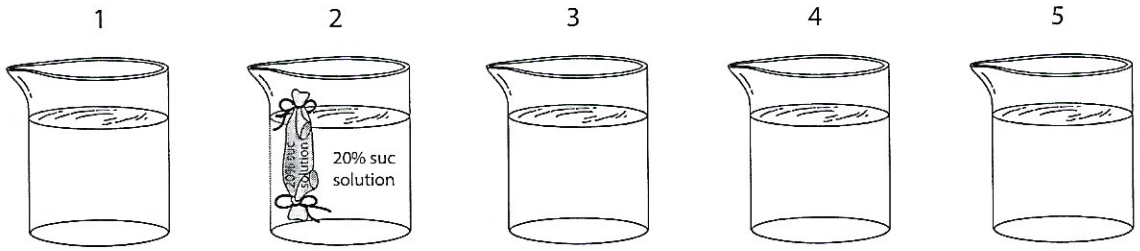


Figure 7.5. Order of the liquids in the beakers.

9. Take all the bags out of the beakers and put them on the towel paper as shown on the ***Figure 7.4***.
10. Weigh each of the bags using laboratory balances and record your data in ***Table 7.6***.
11. Put all the bags in the corresponding numbers of the beakers at the same time as you did in the step 7.
12. Allow those bags to set there for another 10 min. Meanwhile, answer the following questions.

Next to the each number below indicate either weight of the bag will increase, decrease or stay the same:

Bag 1: _____ Bag 4: _____

Bag 2: _____ Bag 5: _____

Bag 3: _____

13. Take all the bags out of the beakers **at the same time** and put them on the paper towel as shown on ***Figure 7.4*** and weigh them as you did in step 10. Then complete ***Table 7.1***.

Table 7.1. The data on the rate-of-osmosis experimental trails.

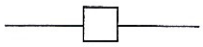
Time intervals/ min	Bag 1 Grams	Bag 2 Grams	Bag 3 Grams	Bag 4 Grams	Bag 5 Grams
0					
5 ~~10~~					
10 ~~20~~					
15 ~~30~~					
20 ~~40~~					
25 ~~50~~					
30 ~~60~~					
Total weight loss or gain/ Grams					

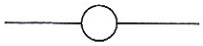
15. Make a linear graph on the graph paper provided by plotting your experimental data. Keep in mind that on x-axis we usually plot independent variables and on y-axis we plot the dependent variables.

Look at your data chart and indicate the independent variable: _____

What is your dependent variable? _____

You may use different symbols for the different bags while plotting your data:

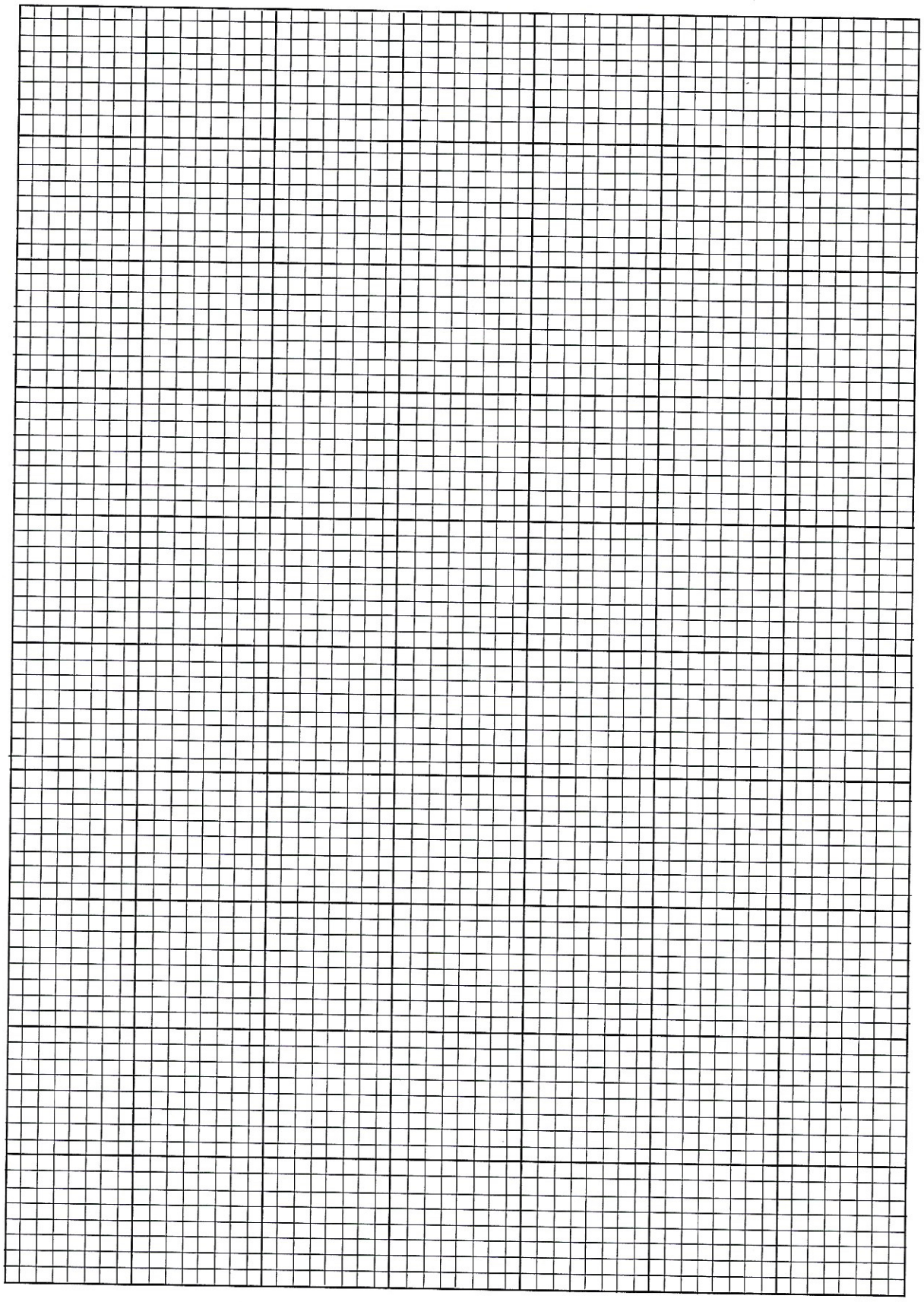
Bag 1: 

Bag 2: 

Bag 3: 

Bag 4: 

Bag 5: 



Below, indicate whether your results were as you expected or not. If your result were not what you expected, identify the possible reason for such a deviation.