Name_____

Period_____

Diffusion/Osmosis Activity

Overview;

Diffusion is the process by which molecules (other than water) and ions tend to scatter themselves throughout available space. All molecules possess kinetic energy so they can move around randomly at high speeds, collide into other molecules and change directions. Primarily they will move from a higher molecular concentration to a lower molecular concentration. This is known as moving down their concentration gradient.

A substance dissolved in water is known as the **solute**. The liquid that the solute is dissolved in is called the **solvent**.

Simple Diffusion is the unassisted diffusion of solutes through the plasma membrane or any selectively permeable membrane. **Osmosis is** diffusion of water through a selectively permeable membrane (Marieb, 2000).

Dialysis tubing is a form of a selectively permeable membrane and it will allow a molecules of a specific size to pass through it.

Procedure;

1. Obtain 2 pieces of dialysis tubing. Open the tubing by rubbing fingers together over the bag.
2. In one of the pieces of tubing tie a knot at one end, add distilled water to it then tie the other end.
3. Weigh the sac and record the weight in grams, place this dialysis bag into beaker A
4. In the other piece of tubing add salt solution, it is colored red, be sure to tie good strong knots in the tubing so the solutions don't leak out,
5. Weigh the sac and record the weight in grams, place this sac into beaker B.
6. Fill Beaker A with distilled water. Then submerge the dialysis tubing with salt solution
7. Fill Beaker B with salt water (red color). Then submerge the dialysis tubing with the distilled water in it.
8. Allow the experiment to run for 25 minutes
   Work on the questions below while you are waiting.

Pre Lab Questions;

1. Define Diffusion _____
   _____
   _____
   _____
2. Define Osmosis _____
   _____
   _____
   _____
3. What is a solute?_____
4. What is the solute in this demonstration?_____

5. What is a solvent?_____
6. What is the solvent in this demonstration?_____
7. What does the dialysis tubing represent? _____
8. Which **beaker** contains the higher concentration of solute? Beaker A or B? _____
9. Which **dialysis tubing** contains a solute? What color and in What Beaker?_____
10. Based on what you know about diffusion and osmosis, write a hypothesis for what will happen to each bag in each beaker (Think about passive transport)
    a. Beaker A (contains pure water and a dialysis tube with salt water in it);

       _____

       _____

       _____

    b. Beaker B (contains salt water and a dialysis tube with pure water);

       _____

       _____

       _____

Results (to be completed at the end of the experiment)

11. Describe your observation of the tube in **Beaker A**. How does it look different than it did at the beginning of the experiment?_____

    _____

12. Describe your observation of the tube in **Beaker B**. How does it look different than it did at the beginning of the experiment?

    _____

    _____

    _____

    _____

13. How much did the weight (in grams) of the dialysis tube in Beaker A change ?

    _____

14. How much did the weight (in grams) of the dialysis tube in Beaker B change?

    _____

15. In which beaker (A or B) did osmosis of water move from the **Beaker** to inside the **dialysis tubing**? _____
    a. What evidence do you have that osmosis occurred in this direction?

       _____

       _____

       _____

    b. Explain why osmosis occurred like this._____

       _____

16. In which beaker (A or B) did osmosis of water move from the **tubing** to the **beaker**?

    _____

a. What evidence do you have that osmosis occurred in this direction?

_____

_____

_____

_____

b. Explain why osmosis occurred in this direction?

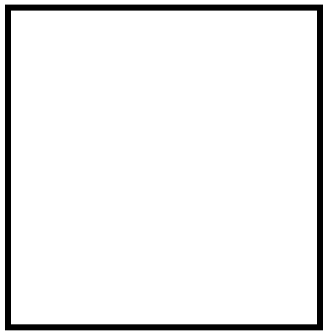
_____

_____

<u>Observations</u>: Draw your observations below. Draw what the dialysis tube bag looks like in each beaker at the beginning of the experiment and at the end.

Start of Experiment

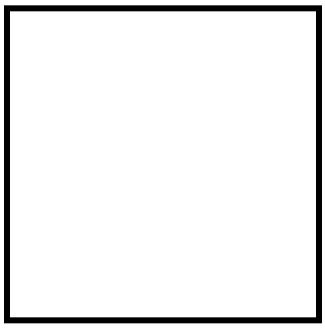
Beaker A



Weight of tube_____g

End of Experiment

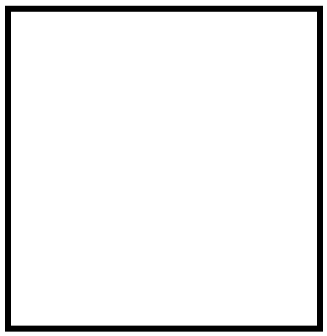
Beaker A



Weight of tube_____g

Start of Experiment

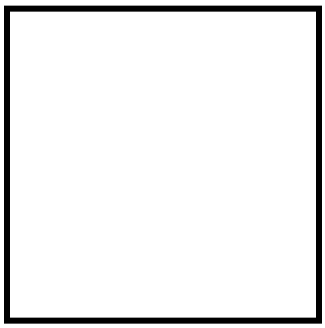
Beaker B



Weight _____g

End of Experiment

Beaker B



Weight _____ g

<u>Exit Pass:</u>

When your lab is complete and your station is cleaned up call me over to approve your exit pass!

- Rinse and dry all supplies
- Put trash in the garbage can

Wipe down work area

_____teacher initial