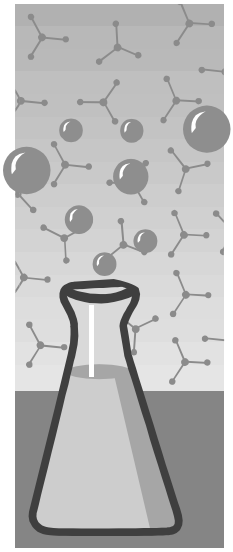
Name _____



More Osmosis

Background Information: Movement is a characteristic of matter. All matter is made of molecules. All molecules are always in motion. We cannot always tell that molecules are moving, but they are.

Diffusion is the movement of molecules from a place where there are many, many molecules to a place where there are not so many molecules. In science books you will see this stated as an area of high concentration to an area of low concentration. ***Osmosis*** is the diffusion of water across a selectively permeable membrane. This means that water can go through membranes from areas where there are a lot of water molecules to areas where there are not so many water molecules.

To perform their functions, cells must keep an internal ***steady state*** even when the environment outside of the cell is changing. This steady state is called ***homeostasis***. Homeostasis maintained in part by controlling the movement of materials into and out of the cell. To achieve this control, cells are surrounded by a membrane that can tell different substances apart, and can slow down or stop the movement of some substances while allowing others to pass through freely. Because not all substances can go through the cell membrane equally well, the membrane is said to be ***differentially***, or ***selectively permeable***.

Selectively permeable membranes are those that have openings called ***pores*** that let water, oxygen, carbon dioxide and certain other small molecules go through the membrane.

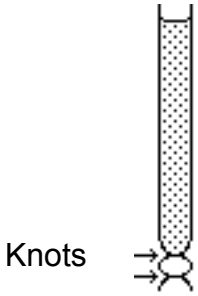
Cells in the human body need a constant supply of oxygen and water. They are also making carbon dioxide as a waste, and this needs to be removed from the cell. These substances can move into and out of a selectively permeable membrane around a cell through the process of ***osmosis***.

Materials:

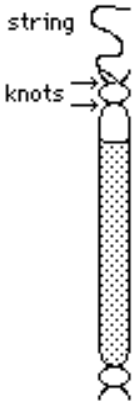
All Groups:	***Groups 1 & 2:***	***Groups 3 & 4:***	***Groups 5 & 6:***
Beaker	Cornstarch	Phenolphthalein	Vinegar
Dialysis Tubing	Lugol's Solution	Ammonia	Universal Indicator solution
Dental floss			
Graduated cylinder			
Triple beam balance			

Procedure:

1. ***All Groups:*** Take the dialysis tubing; rub it gently between your fingers to open it. Use a piece of dental floss to tie of the end:



2. ***Groups 1 & 2***: Fill the dialysis tubing bag ½ full of cornstarch.
   Groups 3 & 4: Fill the dialysis tubing bag ½ full of phenolphthalein.
   Groups 5 & 6: Fill the dialysis tubing bag ½ full of Universal Indicator Solution.
3. ***All Groups***: Tie off the open end of the dialysis tubing.



4. ***All Groups***: Carefully rinse off the outside of the tube to remove anything that may have spilled on it. Gently pat it dry with a paper towel.
5. ***All Groups***: Find the mass of the filled dialysis tube. Record this information.
6. ***Groups 1 & 2***: Put 100 ml of water in the beaker. Add 5 drops of Lugol's solution to the water.
7. ***Groups 3 & 4***: Put 75 ml of water in the beaker. Add 25 ml of ammonia to the water.
8. ***Groups 5 & 6***: Put 75 ml of water in the beaker. Add 25 ml of vinegar to the water.
9. ***All Groups***: Observe and record results.
10. ***All Groups***: Remove the dialysis tubing bag, gently pat it dry & record the mass. Record this data.
11. ***All Groups***: Compare your data with the groups that tested different substances. Record the results.

Data: Create a chart or table to record your data:

Data Analysis:

1. Sketch the tubes showing the movement of the particles.

2. How do you know which way the particles moved?

3. How is this like particle movement in cells?

Conclusion:

Describe osmosis. Use ***evidence*** from all parts of this lab to back up what you say. ***Discussions that do not include evidence will be considered not answered***.