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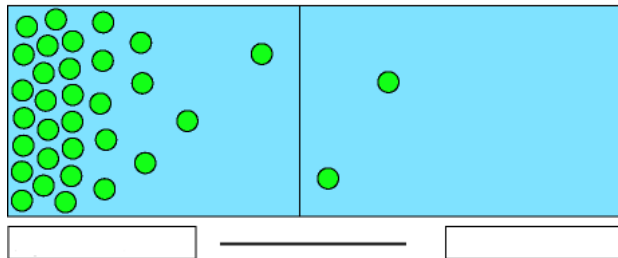
Date: \_\_\_\_\_

## Diffusion, Osmosis, & Cell Transport Worksheet

One the diagram below:

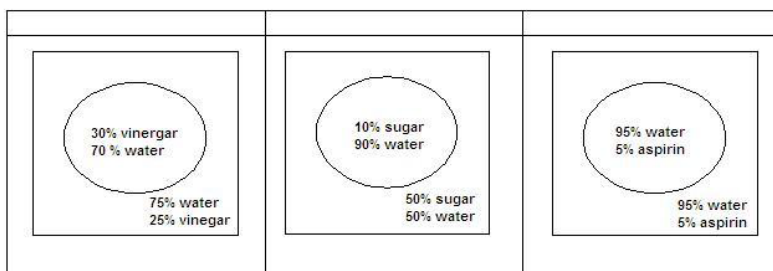
1. Write high concentration on the side that has a high concentration of solute and low concentration on the side that has a low concentration of solute.
2. Complete the line with an arrow to show which way the solute will move.

### Diffusion



● solute

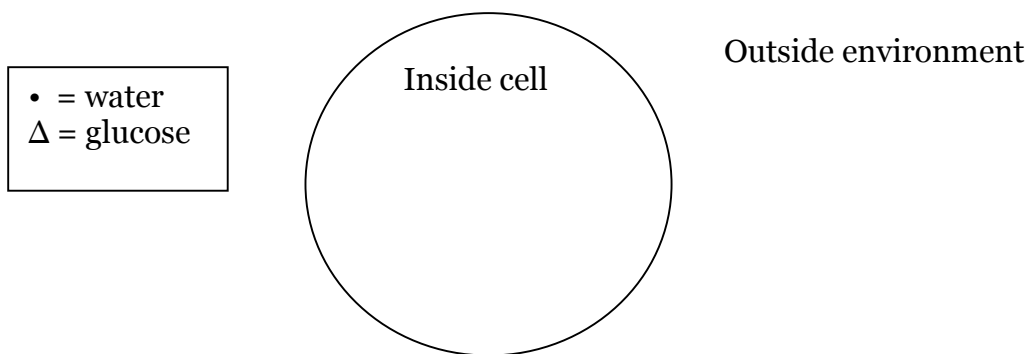
3. Define Diffusion
4. Define Osmosis
5. How is the cell membrane selectively permeable?
6. Describe what the cell membrane looks like.
7. Write hypo, hyper, or isotonic above the picture below. Indicate in what direction water will move.



8. **Y or N:** Is water always able to diffuse through a cell's selective permeable membrane?
9. **Y or N:** Are solutes (particles) always able to diffuse through a cell's selective permeable membrane?
10. What is the determining factor that will or will not allow solute (particle) diffusion?
11. During diffusion, how do the molecules physically get from one place to the other? (Helicopter? Winged monkeys?)
12. Consider the solution in the drawing below, with the two sides divided by a pierced membrane. In the blank drawing on the right, show how the solution would look once it has reached equilibrium.



13. Suppose that a cell membrane is permeable to water but impermeable to glucose (sugar). The inside of the cell is hypertonic for glucose, in comparison to the external environment. Using the diagram below, (1) draw what the concentrations of water and glucose would look like at the beginning of the experiment (NOTE the symbols for each molecule shown below), and (2) indicate the direction of movement that would occur during osmosis. Which molecule would move?



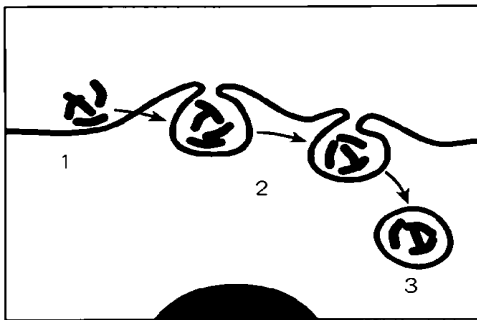
14. What are three examples of molecules that a cell would want to be able to move effectively across its cell membrane? (Be more specific than "food.")
  - a.
  - b.
  - c.

15. What general type of molecule is a phospholipid (*this is what the cell membrane is made of*)? What is an example of this general type of molecule that you could find at home?

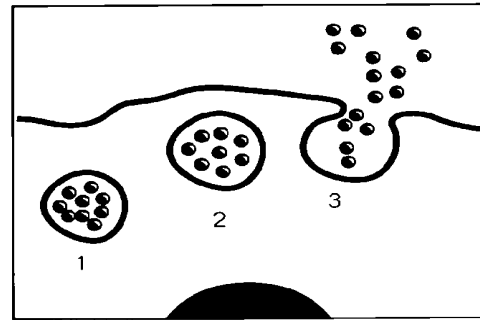
16. Hands on Question: Go into your kitchen and pour a *small* amount of vegetable oil in your hands. Now wash it off in the sink using **ONLY** water (*no soap!*). What happens? (Ok...now you can use soap.) What can you say about the interactions between oil and water? What general type of molecule is vegetable oil?

17. What process is shown in Figure A? \_\_\_\_\_

18. What process is shown in Figure B? \_\_\_\_\_



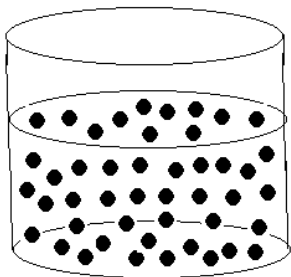
A



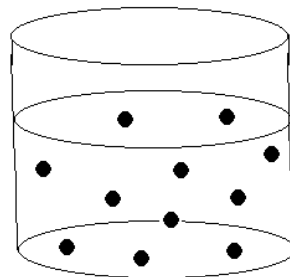
B

Examine the diagrams below. The black dots represent solute molecules dissolved in water

19.



A



B

In which beaker is the concentration of solute the greater?

A or B

20. What will happen to a houseplant if you water it with salt water (a hypertonic solution)?

21. On the inside of a cell, it is 75% water and 25% salt. On the outside of the cell it is 60% water, 40% salt. *Draw a picture if it helps.*

a. Will water move into or out of the cell?

b. Will the cell shrink or swell?

c. Is the solution outside of the cell hyper or hypotonic?

22. On the inside of a cell, it is 30% water and 70% sugar. On the outside of the cell it is 90% water, 10% sugar. *Draw a picture if it helps.*

a. Will water move into or out of the cell?

b. Will the cell shrink or swell?

c. Is the solution outside of the cell hyper or hypotonic?