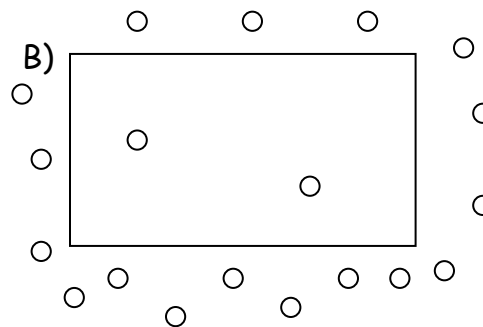
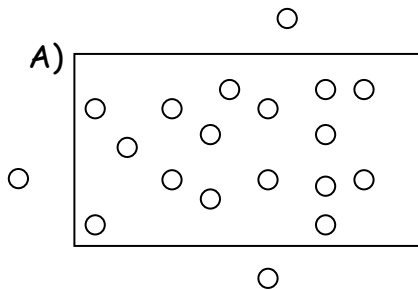


Diffusion and Osmosis Worksheet

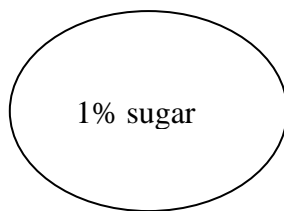
How are the molecules moving in the examples below (1-9)? Write **OSMOSIS** or **DIFFUSION**.

1. The student sitting next to you just came from gym class and forgot to shower and you can tell. _____
2. After sitting in the bathtub for hours, your fingers start to look like prunes. _____
3. The girl sitting two rows ahead of you put on too much perfume this morning. _____
4. One way to get rid of slugs in your garden is to sprinkle salt on them, so they shrivel up. _____
5. Yum! Something smells good. The neighbors are cooking on the grill! _____
6. Gargling with salt water when you have a sore throat causes your swollen throat cells to shrink and feel better. _____
7. Oxygen molecules move from the air sacs in the lungs across the cell membranes into the blood _____
8. Robert sprays water on the veggies in the produce section to "plump them up". _____
9. You put raisins in a glass of water and they plump up. _____

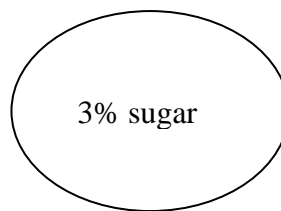
10. Use arrows to indicate the direction of diffusion in each case: ○ is a molecule that can pass through the cell membrane. □ is a cell membrane.



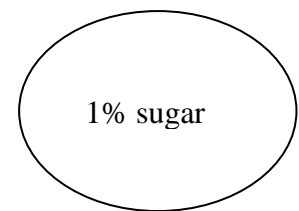
11. For each of the situations below use an arrow to indicate the net movement **of sugar** into or out of the cell. (Assume that the sugar molecules can pass through the cell membrane in each case.)



5% sugar



1% sugar

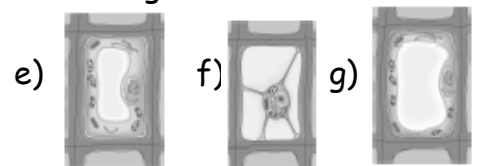


1% sugar

12. The cell membrane is made of a p_____ b_____.
13. The cell membrane is _____ permeable. This means that _____
14. Diffusion always causes particles to move from a region of _____ concentration to a region of _____ concentration.
15. Does a cell use energy when molecules diffuse in or out of the cell down the concentration gradient? _____
16. _____ requires energy (ATP) to transport molecules against a concentration gradient.
17. In _____ and _____ no energy is used. Which one needs a helper to get things across? _____

Match each term on the left with the best descriptor on the right. Use each only once.

- | | <u>Descriptor</u> |
|----------------------------------------------------------|---------------------------------------------|
| 18. Concentration _____ | a) Moves particles like oxygen into cells |
| 19. Diffusion _____ | b) Amount of a substance in a certain place |
| 20. Equal amount of water inside a cell as outside _____ | c) Moves water into and out of cells |
| 21. More water outside a cell than inside _____ | d) Allows some substances through |
| 22. Osmosis _____ | |
| 23. More water inside a cell than outside _____ | |
| 24. Selectively permeable membrane _____ | |



25. You have just bought a tropical fish for your freshwater aquarium. Unfortunately, you do not realize it is a saltwater fish. Using your knowledge of osmosis, **explain** why this fish will not survive in your aquarium. _____
- _____
- _____

Fill in this table. Write whether solutes and water move *INSIDE* the cell or *OUTSIDE* the cell.

- Hint: With diffusion, solutes move from an area of high concentration to an area of low concentration.
- Hint: With Osmosis, wherever more salt is, water follows! Or, water also goes from an area of high amount of water to an area of low amount of water.

DIFFUSION	OSMOSIS		
<i>Does the <u>SOLUTE</u> move inside or outside the cell?</i>	<i>Does <u>WATER</u> move inside or outside the cell?</i>	<i>intracellular fluid (inside the cell)</i>	<i>extracellular fluid (outside of the cell)</i>
26.	27.	5% salt	10% salt
28.	29.	10% salt	10% salt
30.	31.	3% glucose	1% glucose
32.	33.	2% protein	1% protein
34.	35.	9% salt	9% salt
36.	37.	13% water	25% water
38.	39.	59% water	45% water
40.	41.	90% water	92% water
42.	43.	74% glucose	87% glucose

44. Draw the cell membrane. Include the following:

- Phospholipid bilayer-Draw the hydrophilic heads (color red) and hydrophobic tails (draw in blue).
- Proteins-Draw the embedded proteins (color orange)
- Label which side is the *INSIDE* of the cell and which side is the *OUTSIDE* of the cell.