Name:_____

Period:_____

Diffusion and Osmosis Worksheet

Despite their difference in size and shape, all cells are enclosed by a cell membrane that consists of a double layer of phospholipids interspersed with proteins. Its unique structure is described as selectively permeable because it permits some substances to cross it rapidly, while others are unable to cross it, or cross it slowly. Thus, the cell membrane regulates the substances entering and leaving the cell. There are three methods for passive transport of molecules through a cell membrane. ***Passive transport*** processes are ones that do not require cellular energy to proceed. A cell membrane that allows the passage of certain substances is said to be ***semi-permeable.*** For example, a semi-permeable cell membrane might not be permeable to certain large molecules, but might be permeable to oxygen and carbon dioxide, which means these molecules can pass freely across the membrane.

The force that propels oxygen, carbon dioxide, and other molecules across the membrane of the cell is called diffusion. ***Diffusion*** is defined as the movement of molecules from an area that is more concentrated (crowded) to an area that is less concentrated. The movement of water molecules across a membrane is a special kind of diffusion called ***osmosis***. Osmosis typically occurs to balance the amount of salt found in the cell of the outside environment. When a red blood cell is placed in a very salty solution, water molecules will begin to flow out of the cell, causing the cell to shrink. ***Facilitated diffusion*** is the movement of molecules across the membrane with the aid of a transport protein from the cell membrane. Passive transport typically occurs until the number of molecules on either side of the membrane is equal.

1. What does it mean to be selectively or semi-permeable?

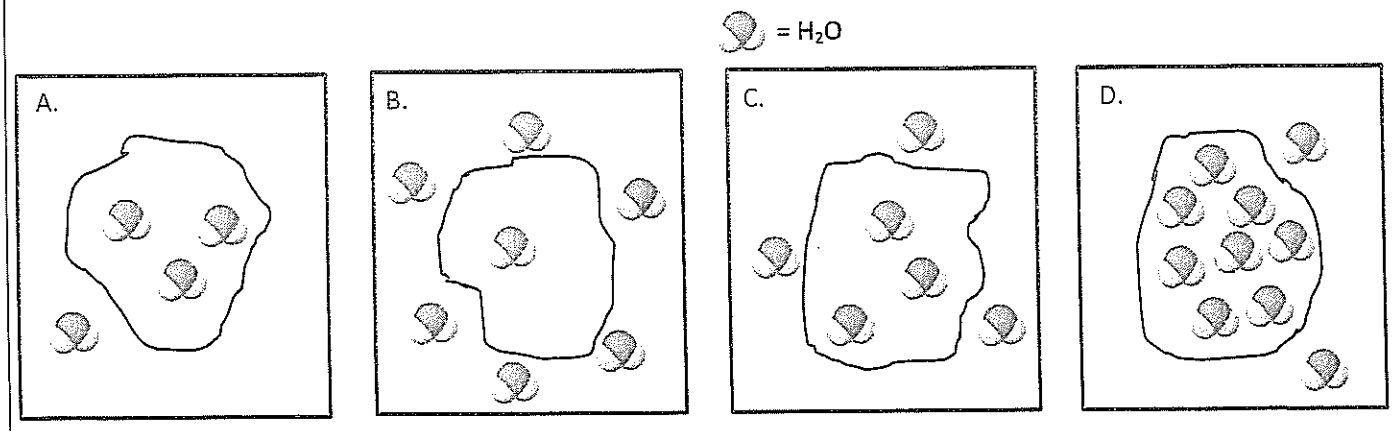
2. What is passive transport?

3. What are three types of passive transport that occur in the body?

4. What is facilitated diffusion? What structure assists with this process?

5. What is the overall goal of diffusion, osmosis, and facilitated diffusion?

<u>Given the diagrams below (A-D) answer questions 6-10:</u>



6. Which diagram(s) show that the cell will shrink? _____

7. Which diagram(s) show that the cell will swell? _____