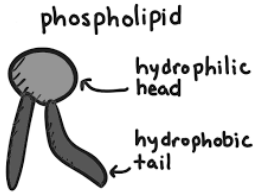
Cell Membrane & Transport

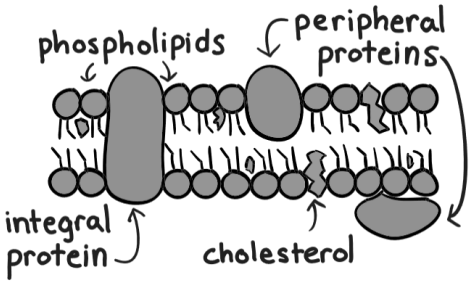
Osmosis & Diffusion Notes

Name: _____ Date: _____ Block: _____

The Phospholipid Bilayer:

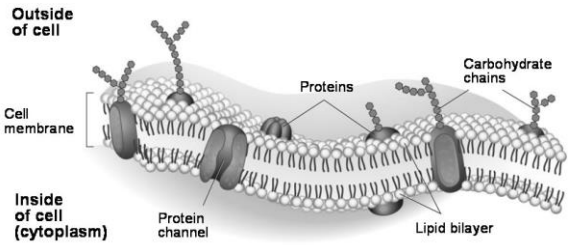


1. The **cell membrane** is composed of these, layered in two rows.
2. This is known as the what? _____ _____
3. The **heads** are _____ meaning: ***water loving***
4. The **tails** are _____ meaning: ***water fearing***



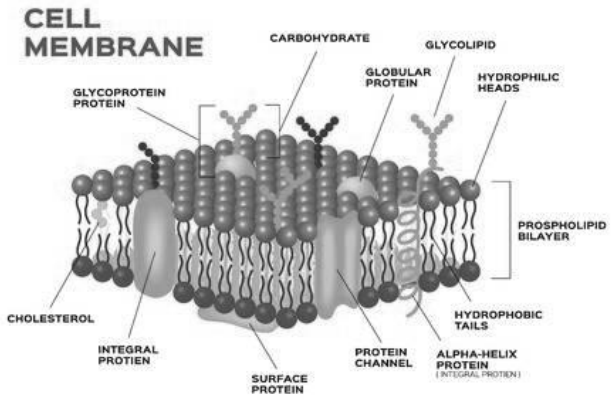
The Cell Membrane:

5. The **cell membrane** is the what of the cell?



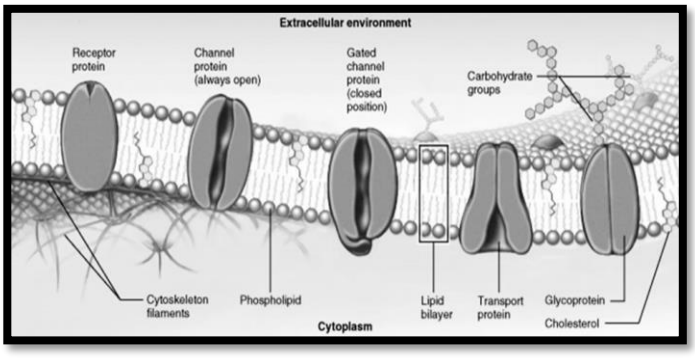
6. It _____ what **enters and leaves the cell.**
7. The membrane is thin and flexible, but provides what for the cell?

8. In addition to **<u>lipids,</u>** the cell membrane is composed of what two things in the bilayer?

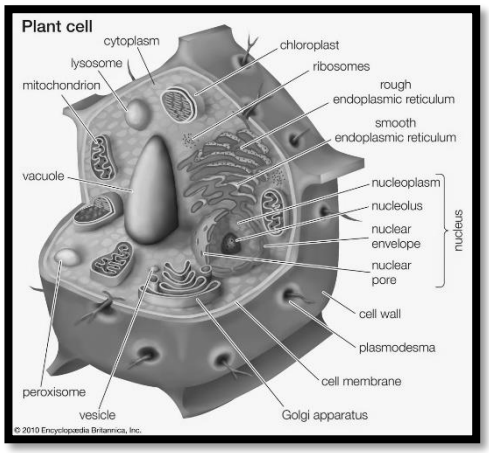


9. The **<u>carbohydrates</u>** act like **chemical identification cards** allowing the cell to do what?
10. What is **imbedded** in the lipid bilayer? _____
11. The proteins for what, that help **move material across the membrane?** _____ & _____

*Usually if material is **too big, too small, or charged***



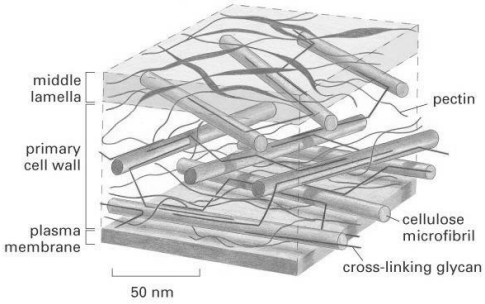
The Plant Cell Wall:



12. What type of organism have **cell walls** in addition to a **cell membrane?**

13. Where are cell walls located? _____

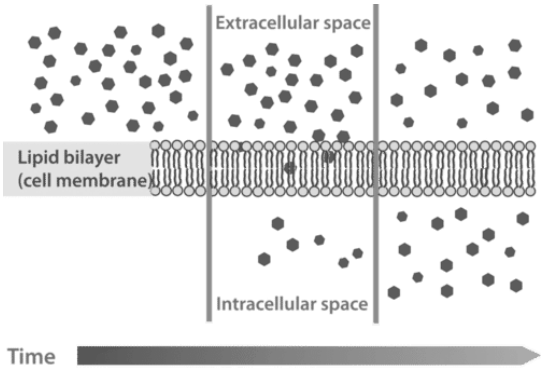
14. What is the main function of a **cell wall**?



15. Plant cell walls are made of what, which is a tough carbohydrate fiber? _____

16. **Cellulose** is the main component of what?

Across the Membrane:



17. Every cell exists in a what?

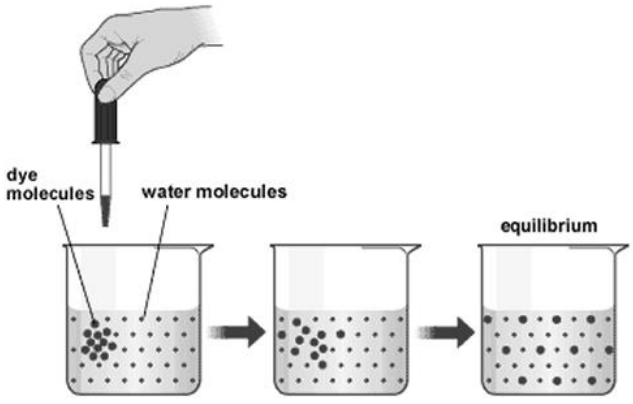
18. The membrane regulates what **goes in and out** and therefore **regulates** the movement of what from one side to the other?

DIFFUSION:

- The **cytoplasm** of a cell contains a **solution** of many different substances in water.

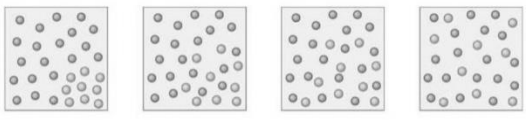
19. A _____ is a mixture of two or more substances.

20. In a solution, the particles are doing what?

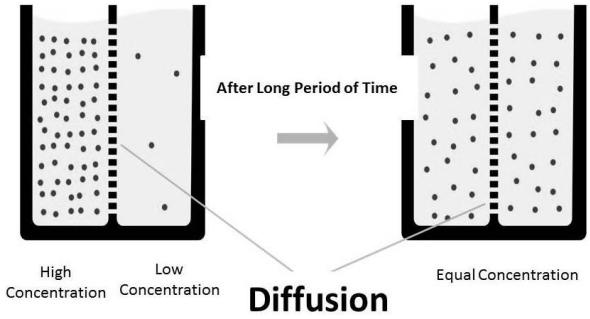


21. As a result of this movement, particles move from an area of _____ **concentration** to an area of _____ **concentration.**

22. This is called what? _____



23. When the concentration of the substance is the same throughout, it is said to be in what?



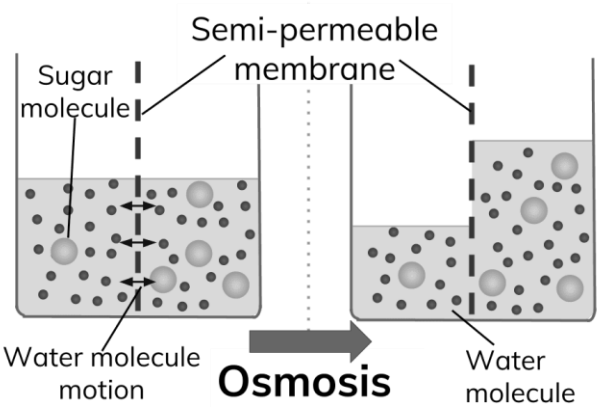
24. Because diffusion depends on the **random movement of particles**, substances diffuse across the membrane **without requiring what?** _____

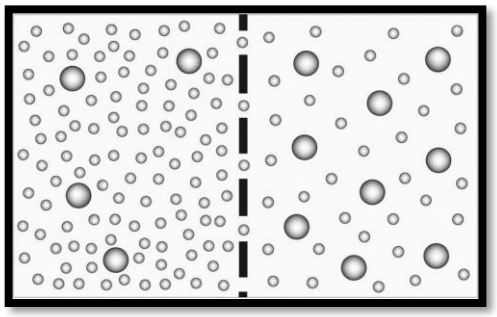
*OSMOSIS and How it Works:

- Although many substances can diffuse across the membrane, some are **too large** or **too strongly charged** to cross the lipid bilayer.

25. _____passes easily across the membrane, but many other molecules **cannot!**

26. _____ is the diffusion of **WATER** through a what?





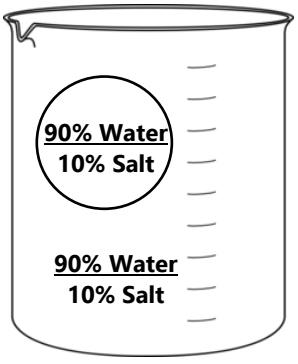
27. Looking at the beaker to the **left,** which molecule **IS NOT** allowed to pass through? _____

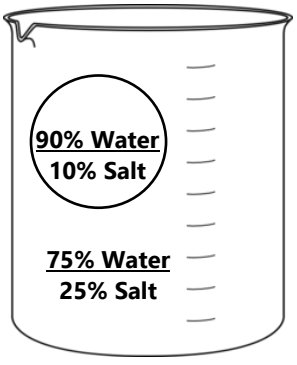
28. **Osmosis** also moves from an area of _____**concentration** to an area of _____**concentration.**

29. Does osmosis require **energy?** _____

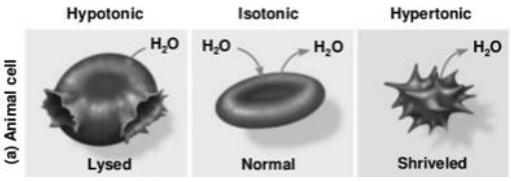
Osmosis & Tonicity: Always pay attention to the movement of WATER!

30. This means that the concentration of **water** and sugar/salt is the **SAME** on both sides of the membrane? **Draw the arrows showing the movement of water.**





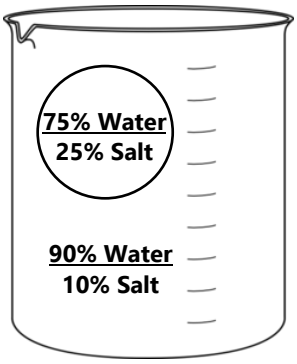
31. This means there is **more water** on the **INSIDE** of the cell than on the outside…water rushes **OUTSIDE** of the cell. **Draw the arrows showing the movement of water.**

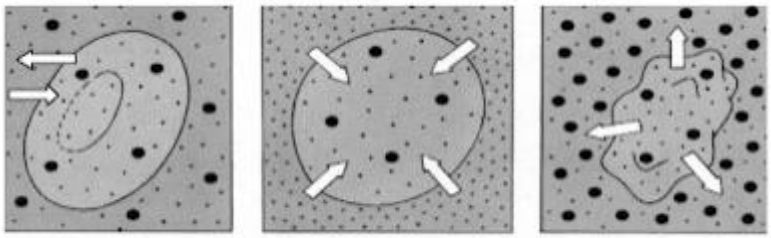


REMEMBER:

HIGH ➡ LOW

32. This means there is **less water** on the **INSIDE** of the cell than on the outside…water rushes **INTO** the cell. **Draw the arrows showing the movement of water.**



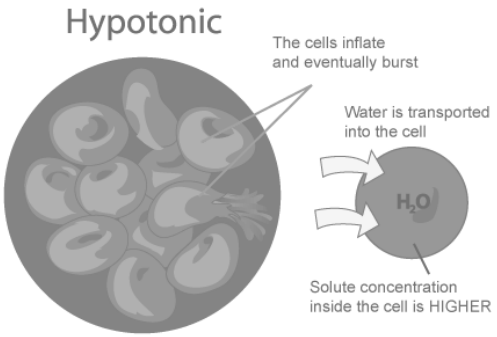


Osmotic Pressure:

- For organisms to survive, they must have a way to balance the loss and intake of water.

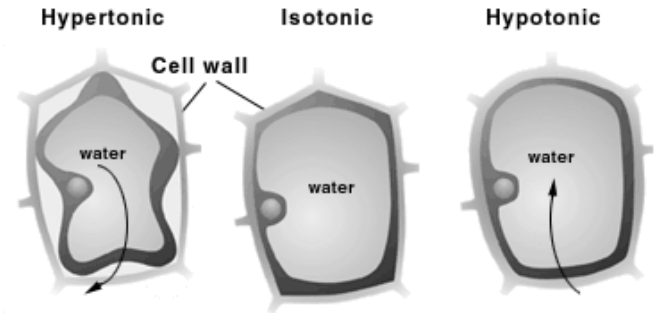
33. _____ can cause serious problems for a cell.

34. What would happen if we placed a **Red Blood Cell** in **pure fresh water?**



35. Cells are bathed in a fluid, like blood, that is what?

36. **Plants** and **bacteria** DO come in contact with water, but fortunately they have what to protect them from bursting? _____



Osmosis in the "Real World":

37. _____ was the first antibiotic that works by osmosis. **It inhibits an enzyme used in the formation of the cell walls of bacteria.**
    - Without this enzyme, the **cell walls** of bacteria cannot stand the osmotic pressure and the bacteria burst!