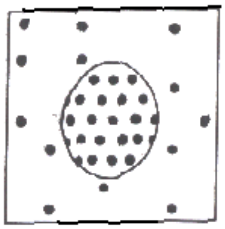
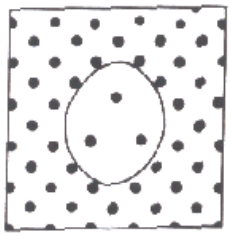
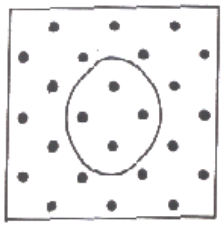
Cellular Transport Review

OSMOSIS

Label the pictures below (isotonic, hypertonic, or hypotonic environments)







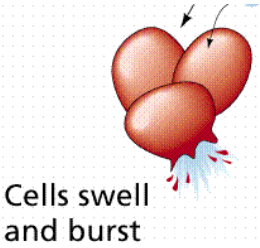
_____ _____ _____

_____tonic means there is a GREATER concentration of solute molecules OUTSIDE the cell than inside.

_____ tonic means there is a LOWER concentration of solute molecules OUTSIDE the cell than inside.

_____tonic means there is the SAME concentration of solute molecules outside the cell as inside.

The pressure inside a plant cell caused by water pushing against the cell wall is called _____ pressure.



The SWELLING AND BURSTING of animal cells when water enters is called _____.

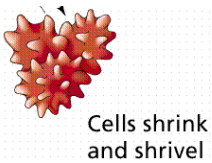
This happens when a cell is placed in a _____tonic solution.

Placing plant cells in a HYPOTONIC solution causes the osmotic pressure to _____.
increase decrease

The SHRINKING of plant cells when water leaves so the cell membrane pulls away from the cell wall is called _____.

It happens when a plant cell is placed into _____tonic solution.

When water leaves a plant cell, the osmotic pressure will _____.
increase decrease



The shrinking of ANIMAL cells that are placed in a HYPERTONIC solution is called _____.

Cells stay the same size when placed in an _____tonic solution because the amount of water leaving the cell is the same and the amount of water entering.

*** * * * * * * * * * * * * ***

<u>MULTIPLE CHOICE</u>: Circle the answer(s) that best completes the sentence.

The substance that dissolves to make a solution is called the _____

- **A. diffuser**
- **B. solvent**
- **C. solute**
- **D. concentrate**

During diffusion molecules tend to move _____

- **A. up the concentration gradient**
- **B. down the concentration gradient**
- **C. from an area of lower concentration to an area of higher concentration**
- **D. in a direction that doesn't depend on concentration**

When the concentration of a solute is the same throughout a system, the system has reached _____.

- **A. maximum concentration**
- **B. homeostasis**
- **C. osmotic pressure**
- **D. equilibrium**

The diffusion of water across a selectively permeable membrane is called _____.

- **A. active transport**
- **B. facilitated diffusion**
- **C. osmosis**
- **D. phagocytosis**

Phagocytosis, pinocytosis, and exocytosis are all kinds of _____ transport.

- **A. active**
- **B. passive**

Glucose enters cells most rapidly by _____

- **A. diffusion**
- **B. facilitated diffusion**
- **C. ion channels**
- **D. phagocytosis**

Energy for active transport comes from a cell's _____.

- **A. Golgi complex**
- **B. nucleus**
- **C. mitochondria**
- **D. lysosomes**

_____ transport requires energy from ATP to move substances across membranes.

- **A. Passive**
- **B. Active**

A cell must expend energy to transport substances using _____.

- **A. diffusion**
- **B. facilitated diffusion**
- **C. ion channels**
- **D. osmosis**
- **E. endocytosis**

White blood cells engulf, digest, and destroy invading bacteria using _____.

- **A. Facilitated diffusion**
- **B. pinocytosis**
- **C. phagocytosis**
- **D. osmosis**

The carrier proteins that help in facilitated diffusion are _____ proteins.

- **A. peripheral**
- **B. integral**

All of the following are kinds of passive transport EXCEPT _____

- **A. diffusion**
- **B. facilitated diffusion**
- **C. osmosis**
- **D. phagocytosis**
- **E. ion channels**

Endocytosis that brings in small dissolved molecules (solutes) and fluids is called _____.

- **A. pinocytosis**
- **B. phagocytosis**
- **C. facilitated diffusion**
- **D. osmosis**

Golgi bodies use _____ to transport molecules out of cells.

- **A. ion channels**
- **B. phagocytosis**
- **C. pinocytosis**
- **D. exocytosis**

The pressure exerted by water moving during osmosis is called _____ pressure.

- **A. tonic**
- **B. diffusion**
- **C. selectively permeable**
- **D. osmotic**

Placing an animal cell in a hypotonic solution will cause water to _____.

A. move into the cell
B. move out of the cell

When molecules move DOWN the concentration gradient it means they are moving from _____

A. an area of low concentration to an area of higher concentration
B. an area of high concentration to an area of lower concentration

Gases like oxygen and carbon dioxide move across cell membranes using _____

A. endocytosis
B. ion channels
C. diffusion
D. facilitated diffusion

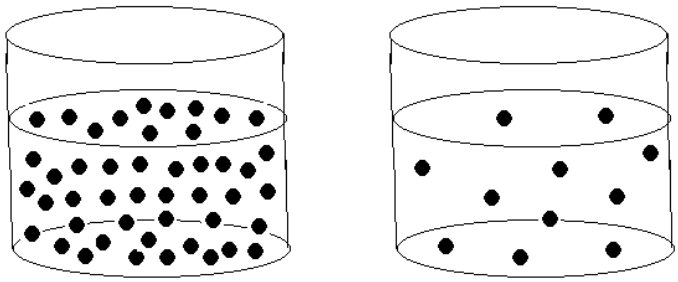
* * * * * * * * * * * * * * *

Complete the transport terms.

1. Active transport requires _E_ __ __ __ __ __ to move molecules across membranes.
2. _A_ __ __ is the molecule that provides the energy for active transport.
3. Golgi bodies use _E_ __ __ __ __ __ __ __ __ __ to release molecules outside the cell.
4. _D_ __ __ __ __ __ __ __ __moves oxygen and carbon dioxide molecules from a high concentration to a low concentration across membranes.
5. The cell organelles that burns glucose and provides ATP for active transport are the _M_ __ __ __ __ __ __ __ __ __ __ __,
6. Water moves across membranes by _O_ __ __ __ __ __ __.
7. A small membrane sac used to transport substances during exocytosis & endocytosis = _V_ __ __ __ __ __ __
8. Kind of endocytosis that takes in small dissolved molecules (solutes) or fluids = _P_ __ __ __ __ __ __ __ __ __ __
9. _P_ __ __ __ __ __ __ transport does NOT REQUIRE energy.
10. During _F_ __ __ __ __ __ __ __ __ __ __ diffusion carrier proteins grab glucose molecules, change shape, and flip to the other side of the membrane, like a revolving door.
11. A _C_ __ __ __ __ __ __ protein is an integral membrane protein that helps move molecules across a cell membrane.
12. A cell placed in an _I_ __ __ __ __ __ __ __ solution neither swells or shrinks because the concentration of molecules outside the cell is the same as inside.
13. A solution in which there is a HIGHER concentration of molecules OUTSIDE the cell than inside = _H_ __ __ __ __ __ __ __ __ __.
14. A CONCENTRATION _G_ __ __ __ __ __ __ __ forms whenever there is a difference in concentration between one place and another.
15. Pinocytosis, phagocytosis, and Na^+-K^+ pumps are all kinds of _A_ __ __ __ __ __ transport because they use energy to move substances across membranes.
16. A solution in which the concentration of molecules outside the cell is LOWER than inside = _H_ __ __ __ __ __ __ __ __.
17. A _S_ __ __ __ __ __-_P_ __ __ __ __ __ __ __ __ _P_ __ __ __ uses ATP to move three Na^+ ions out of a cell while it moves two K^+ ions in.
18. Pinocytosis & phagocytosis are both kinds of _E_ __ __ __ __ __ __ __ __ __ __.

19. When molecules move from high to low along a concentration gradient we say they are moving "_D_ __ __ __" the gradient.
20. _O_ __ __ __ __ __ __ pressure is caused by water inside a plant cell pushing against the cell wall.
21. The shrinking of a plant cell membrane away from the cell wall when placed in a hypertonic solution is called _P_ __ __ __ __ __ __ __ __ __ __.
22. White blood cells use _P_ __ __ __ __ __ __ __ __ __ __ __ __ to engulf and destroy bacteria that the glycoproteins recognize as "not self".
23. The swelling and bursting of animal cells when placed in a hypotonic solution is called _C_ __ __ __ __ __ __ __ __.
24. Proteins (like carrier proteins) that stick INTO the cell membrane either part way or all the way through are called _I_ __ __ __ __ __ __ __ proteins.
25. Ca^{++}, H^{+}, Na^{+}, and K^{+} move across membranes by going through passageways called _I_ __ __ _C_ __ __ __ __ __ __ __.

LOOK AT THE DIAGRAMS. The black dots represent solute molecules dissolved in water

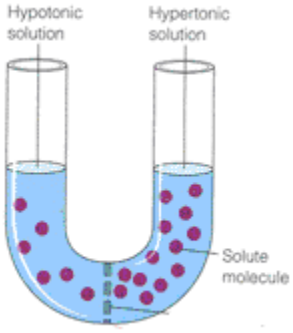


A B

In which beaker is the concentration of solute the greater?

A or B

* * * * * * * * * * * * * * *



If the solute (dots) in this diagram is unable to pass through the dividing membrane, what will happen?

A. the water level will rise on the right side of the tube
B. the water level will rise on the left side of the tube
C. the water level will stay equal on the two sides

* * * * * * * * * * * * * * *

COMPARE/CONTRAST the kinds of transport	Active (ATP) or Passive (KINETIC ENERGY)	*What does it use to help:* Membrane proteins? Vesicles? Needs no help (phospholipids)?	Example of substance(s) that use this kind of transport in cells
DIFFUSION			
FACILITATED DIFFUSION			
OSMOSIS			
FACILITATED DIFFUSION (ION CHANNELS)			
SODIUM-POTASSIUM (NA+ -K^+) PUMP (ANIMALS)			
ENDOCYTOSIS (PHAGOCYTOSIS)			
ENDOCYTOSIS (PINOCYTOSIS)			
EXOCYTOSIS			
RECEPTOR-MEDIATED ENDOCYTOSIS			
PROTON PUMP (PLANTS)			

Modified from: http://brookings.k12.sd.us/biology/other_units.htm