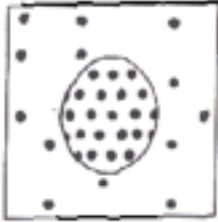


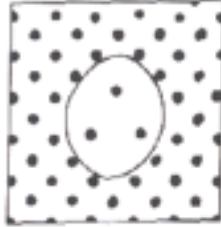
## Cellular Transport Worksheet **KEY**

### OSMOSIS

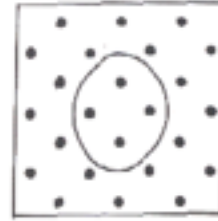
Copy the pictures below, and write the correct type of solution underneath (isotonic, hypertonic, or hypotonic)



Hypotonic



Hypertonic



Isotonic

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

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

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



Cells swell and burst

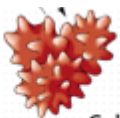
The **SWELLING AND BURSTING** of animal cells when water enters is called cytolysis.

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



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

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



Cells shrink and shrivel

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

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

**MULTIPLE CHOICE:** Circle and/or fill-in 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 inside and outside a cell is the same, the cell 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

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

In the iodine-starch experiment what did the plastic bag represent? **A cell**

Which substance was able to pass through the plastic bag? \_\_\_\_\_ **A. Iodine** B. Starch

Why is it able to pass through the plastic bag? **Iodine molecules are small enough to diffuse through the bag**

All of the following are kinds of passive transport EXCEPT \_\_\_\_\_

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

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**

The pressure exerted by water moving during osmosis is called \_\_\_\_\_ pressure.

- A. tonic
- B. diffusion
- C. **osmotic**

Gases like oxygen and carbon dioxide move across cell membranes using

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

Complete the transport terms. Some of the letters have been filled in!

1. Active transport requires **ENERGY** to move molecules across membranes.
2. **ATP** is the molecule that provides the energy for active transport.
3. **DIFFUSION** moves oxygen and carbon dioxide molecules from a high concentration to a low concentration across membranes.
4. The cell organelles that burns glucose and provides ATP for active transport are the **MITOCHONDRIA**.
5. Water moves across membranes by **OSMOSIS**.
6. A small membrane sac used to transport substances during exocytosis & endocytosis = **VESICLE**
7. **PASSIVE** transport does NOT REQUIRE energy.
8. A cell placed in an **ISOTONIC** solution neither swells or shrinks because the concentration of molecules outside the cell is the same as inside.

9. A solution in which there is a **HIGHER** concentration of molecules **OUTSIDE** the cell than inside

= **HYPERTONIC**

10. A **CONCENTRATION GRADIENT** forms whenever there is a difference in concentration between one place and another.

11. A solution in which the concentration of molecules outside the cell is **LOWER** than inside

= **HYPOTONIC**

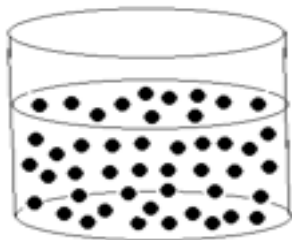
12. When molecules move from high to low along a concentration gradient we say they are moving

“**DOWN**” the gradient.

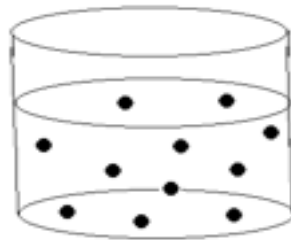
13. **OSMOTIC** pressure is caused by water inside a plant cell pushing against the cell wall.

14. The shrinking of a plant cell membrane away from the cell wall when placed in a hypertonic solution is called **PLASMOLYSIS**.

15. The swelling and bursting of animal cells when placed in a hypotonic solution is called **CRENATION**.



A

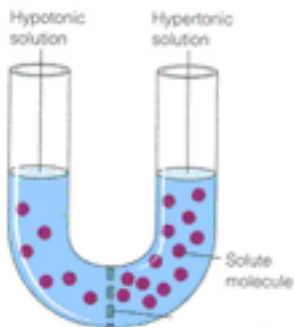


B

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

**In which beaker is the concentration of solute the greatest?**

**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**

*Match the description with the solution type:*