

Membrane Movement

Track how diffusion and osmosis help cells stay balanced.

LS.2.e "cellular transport (osmosis and diffusion) is important for life processes."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline each sentence that describes particles or water moving across a membrane. Circle the words that tell which way the movement goes or why it happens.

Cells on the Move

- ① Cells stay alive by exchanging materials with their surroundings. Their cell membranes are selectively permeable, meaning some substances can cross more easily than others. Diffusion moves particles from an area where they are more crowded to an area where they are less crowded. This movement does not require a cell to use energy. Oxygen diffuses from the air in the lungs into nearby blood, where oxygen is less concentrated. Carbon dioxide can diffuse in the opposite direction and later leave the body.
- ② Water also crosses membranes. Osmosis is the diffusion of water across a selectively permeable membrane. Water moves toward the side with more dissolved particles, because that side has a lower concentration of free water. Plant roots absorb water from damp soil by osmosis. The water helps keep plant cells firm and carries dissolved minerals through the plant. If soil becomes very salty, water may move out of root cells instead, making it harder for the plant to take in enough water.
- ③ Diffusion and osmosis help cells maintain conditions needed for life. In a freshwater pond, the water outside a fish's cells has fewer dissolved particles than the fluid inside the cells. Water tends to move into those cells by osmosis. Fish use body systems to prevent too much water from building up. In a salty ocean, the direction changes, and water tends to move out of cells. Without controls on water and dissolved particles, cells could swell, shrink, or fail to work properly.

2 ANSWER WITH EVIDENCE Use the passage

1 How does diffusion move particles, and does it require cell energy?

2 What is osmosis, and how do plant roots use it in damp soil?

3 According to the passage, what may happen when soil becomes very salty, and why can this harm a plant?

4 Compare osmosis in a freshwater pond and a salty ocean. Which direction does water tend to move in each place?

3 YOUR TURN Your own words

A wilted celery stalk is placed in fresh water. Write 2 or 3 sentences predicting how water will move by osmosis and explaining why the stalk becomes firmer. Use the words dissolved particles and membrane.

PART 1 • READ AND MARK

Underline each sentence that describes particles or water moving across a membrane. Circle the words that tell which way the movement goes or why it happens. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	How does diffusion move particles, and does it require cell energy?	Diffusion moves particles from a more crowded area to a less crowded area. It does not require the cell to use energy.
2	What is osmosis, and how do plant roots use it in damp soil?	Osmosis is the diffusion of water across a selectively permeable membrane. Roots absorb water from damp soil by osmosis.
3	According to the passage, what may happen when soil becomes very salty, and why can this harm a plant?	Water may move out of root cells. This makes it harder for the plant to take in enough water.
4	Compare osmosis in a freshwater pond and a salty ocean. Which direction does water tend to move in each place?	In freshwater, water tends to move into fish cells. In a salty ocean, water tends to move out of cells.

PART 3 • YOUR TURN (SAMPLE ANSWER)

The celery cells have more dissolved particles than the fresh water outside their membranes, so water moves into the cells by osmosis. The added water makes the cells firm, so the stalk becomes firmer.

Accept responses that state water moves into the celery cells across membranes because the cells have more dissolved particles than the fresh water. The explanation should connect incoming water to firmer cells or a firmer stalk.