ANSWER KEY.

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Passive Transport

Biology | ANSWER KEY

Answer in complete sentences. Show your work for calculations.

1. Complete the table. Assume an animal cell contains about 0.9% solutes.

Solution around an animal cell (it contains about 0.9% solutes)	**Water moves**	**Result for the cell**
Distilled water	**Into the cell**	**Swells (may burst)**
0.9% solution (equal to the cell)	**No net movement**	**Stays the same**
10% solution (more solute)	**Out of the cell**	**Shrinks**

2. Potato cores were weighed, soaked for 24 hours, and weighed again. Find the percent change in mass of each core. Show your setup.

(a) Core 1: start 3.00 g, end 3.36 g

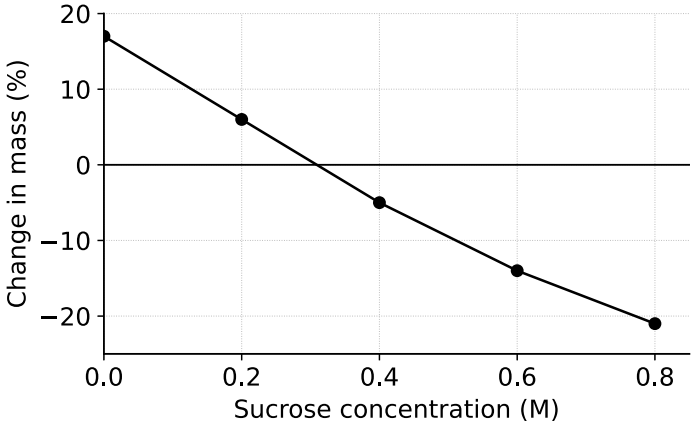
(b) Core 2: start 2.50 g, end 2.15 g

(a) (3.36 g - 3.00 g) / 3.00 g x 100 = **+12.0%**

(b) (2.15 g - 2.50 g) / 2.50 g x 100 = **-14.0%**

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3. Cores of equal mass were soaked in sucrose solutions of different concentrations (sample data).



(a) Estimate the concentration at which the mass would not change.

(b) Write a claim, evidence, and reasoning about what that concentration tells you.

(a) **About 0.3 M** (the line crosses 0% between 0.2 M and 0.4 M).

(b) **Claim:** the potato cells contain about 0.3 M solute. **Evidence:** cores gained mass (+6%) in 0.2 M and lost mass (-5%) in 0.4 M, so the mass change would be zero near 0.3 M. **Reasoning:** when the solution is isotonic, there is no net movement of water. Below that concentration water enters the cells and above it water leaves.

4. Explain why diffusion does not require energy from the cell.

Particles move randomly on their own, and more of them move from high to low concentration than the reverse. This net movement down the gradient happens without ATP.

5. A carrier protein moves glucose into a cell. There is more glucose outside than inside. Does the cell need ATP for this? Explain.

No. Glucose is moving from high to low concentration (down its gradient), so this is facilitated diffusion and needs no ATP.

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