CELL PROCESSES - CHAPTER 3-3

metabolism - all the building up and breaking down _____ activities that occur in a living _____

ex: ingestion, _____, excretion, _____, manufacturing proteins, respiration

respiration = oxygen + food ⟶ carbon dioxide + water + energy

$$6O_2 + C_6H_{12}O_6 \xrightarrow[\mathcal{E}]{enzymes} 6CO_2 + 6H_2O + ATP$$

aerobic - releasing lots of _____ in the presence of oxygen

fermentation = food ⟶ ethyl alcohol + carbon dioxide + E

$$C_6H_{12}O_6 \xrightarrow[\mathcal{E}]{enz} 2C_2H_5OH + 2CO_2 + ATP$$

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food ⟶ acid + carbon dioxide + E

$$C_6H_{12}O_6 \xrightarrow[\mathcal{E}]{enz} 2CH_3CHOHCOOH + CO_2 + ATP$$

anaerobic - releasing a little _____ without using oxygen

muscles use anaerobic resp when _____ isn't available
you feel a burning sensation (lactic acid building up)

be careful canning (tomatoes) - be rid of organisms that can live without oxygen - heat to a high temp and for proper time

diffusion - movement of molecules from crowded area to _____

ex: _____

_____

permeable - allows materials to pass through

ex: window - _____
cheesecloth - _____
vegetable bag - mesh is permeable to _____
to keep veggies fresh

selectively permeable (semipermeable) - a cell membrane (alive) allows certain substances to pass through, but not others

ex: _____
(simple, small molecules)
so large molecules (fat, protein, starch) can't escape

osmosis - diffusion of **water** through a semipermeable membrane

ex: 1. cells of wilted plant vs cells of healthy plant - wilted = less water in cells

2. fresh water plant in salt water

greater concentration of water _____ cell moves out to try to create a balance of water

plant_____(shrivels and dehydrates)

3. salt water plant in fresh water

greater conc of water _____

swells to size of cell wall

wall stops cell from getting bigger

living membrane _____

4. marine animal in fresh water - see #3

greater conc of water _____

water moves into cell to create a balance

cells may _____

5. person drinks salt water - see #2 - dehydrates

6. soak swollen foot in Epsom salts and water

greater conc of water in _____

water under swollen skin moves _____

reduces swelling

7. person in bath tub

greater conc of water in_____

water moves _____

you gain water

become wrinkled and puffy

osmosis in plants - celery or carrot
potato or cucumber

in fresh water	**in 10% salt water**
rigid cells	limp cells
gain water	lose water

refreshen veggies to use in salads by soaking in water first to make crispy

active transport - when a cell uses _____ to move materials in and out of a cell

diffusion = like biking downhill - no energy, coasting
active transport = like biking uphill - requires_____ to pedal hard

mitosis - cell division in which nuclear material duplicates then forms 2 daughter cells from one _____

an organism grows by adding _____
cells only grow to a certain size, then duplicate (if they were too large, it would take too long for cell processes to happen and the cell would die)

Name _____ Class _____ Date _____

REVIEW and REINFORCEMENT

Cell Processes

Chapter 4

KEY CONCEPTS

▲ Life processes performed by cells include metabolism, respiration, diffusion, osmosis, and active transport.

Building Vocabulary Skills: Understanding Relationships

In your own words, use the second term in each pair to define the first term.

1. Diffusion, concentration _____

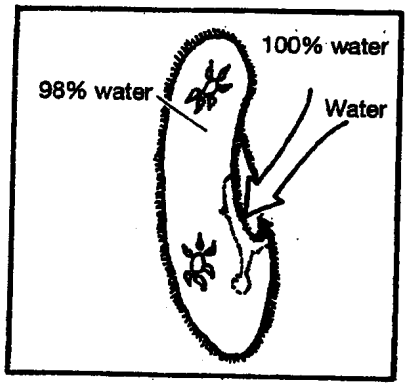
2. Selectively permeable, diffuse Semipermeable _____

3. Osmosis, diffusion _____

4. Active transport, energy _____

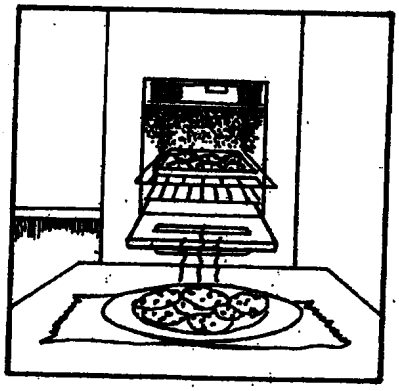
Comparing Processes: Using the Main Ideas

In the space provided, identify the process involved in moving materials in each of the following cases. Choices: diffusion, osmosis, active transport



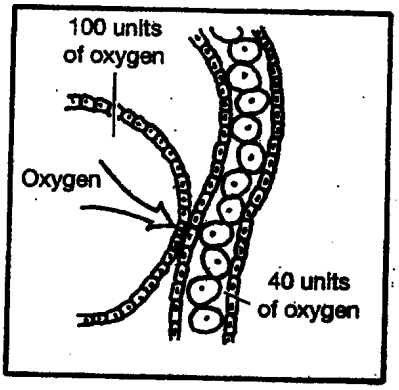
1. Fresh water moves into a single-celled organism.

_____



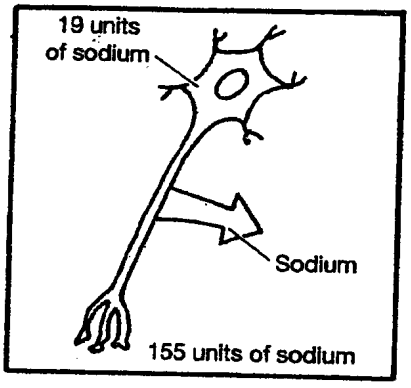
2. You smell the delicious odor of baking cookies even before you enter the kitchen.

_____



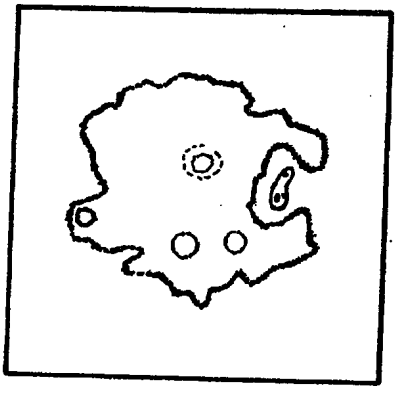
3. Oxygen moves from the lungs into the bloodstream.

_____



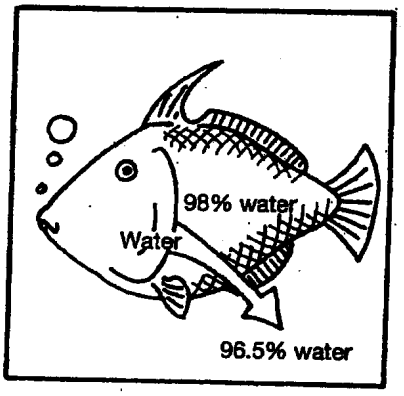
4. Sodium (Na^+) is pumped out of a nerve cell.

_____



5. A bloblike, one-celled ameba surrounds a particle of food.

_____



6. Water moves out of the body cells of a salt-water fish and into the environment.

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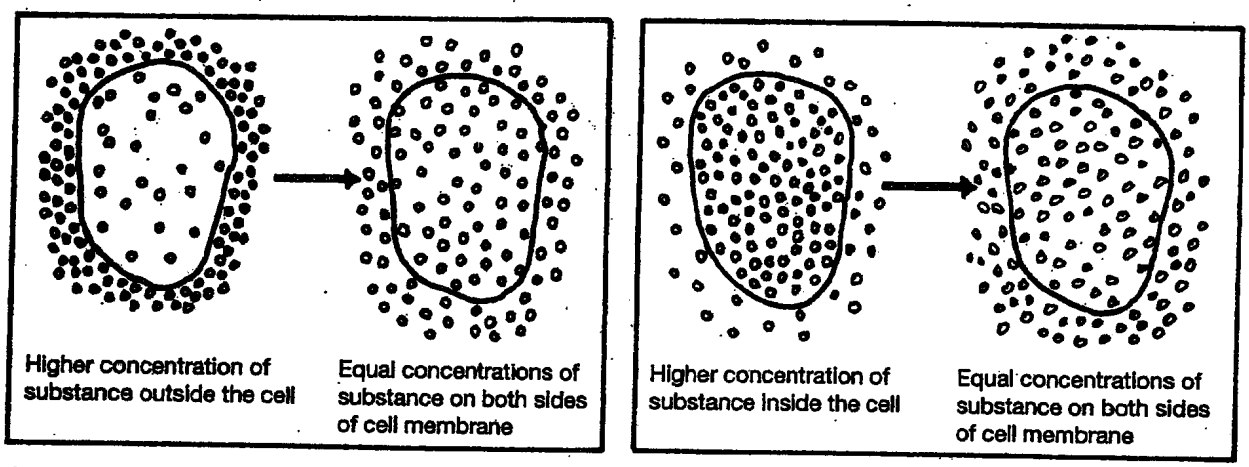
Name _____ Class _____ Date _____

Interpreting Diagrams: Understanding the Main Ideas

Study the diagram carefully, then answer the questions that follow.



1. What process is shown in the diagram? _____

2. Describe what happens during this process. _____

3. Why is the direction of movement different in the cell to the left than it is in the cell to the right? _____

4. What would the process in the diagrams be called if the substance being moved was water? _____