

Living Supply Chain

Trace how body levels work together to meet an organism's needs.

S7L2 "Obtain, evaluate, and communicate information to describe how cell structures, cells, tissues, organs, and organ systems interact to maintain the basic needs of organisms."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline each word or phrase that names a cell structure, cell, tissue, organ, or organ system. Number the levels 1 through 5 where they appear, from smallest to largest, to trace how they work together.

A Lizard's Working Body

- ① On a warm rock, a lizard needs oxygen, water, nutrients, stable body conditions, and a way to remove wastes. No single part can meet all of these needs. Its body is organized in levels. Cell structures perform jobs inside each cell. Similar cells form tissues, tissues build organs, and organs work together in organ systems. This organization lets the lizard move materials, release energy from food, respond to its surroundings, and stay alive during changing weather.
- ② Inside many lizard cells, mitochondria use oxygen and nutrients to release usable energy. The cell membrane controls which materials enter or leave, helping cells receive water and nutrients and send out wastes. Muscle cells, packed with mitochondria, form muscle tissue. Muscle tissue is part of organs such as the heart. The heart's muscle cells contract in a coordinated pattern, pushing blood through vessels to deliver oxygen and nutrients to body cells throughout the lizard's body each minute.
- ③ The respiratory, digestive, circulatory, and excretory systems depend on one another. The respiratory system brings oxygen into the body. The digestive system breaks food into nutrients that can enter the blood. The circulatory system carries oxygen and nutrients to cells and carries carbon dioxide and other wastes away. The excretory system removes certain wastes from the blood as urine. If blood flow stopped, cells would not receive needed materials, and every system would soon be affected.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 How do mitochondria and the cell membrane help a lizard cell meet its needs?

2 Trace nutrients from food to a body cell. Name the two organ systems involved.

3 Explain how heart muscle tissue helps the circulatory system meet body cells' needs.

4 What would happen if blood flow stopped, and why would this affect more than one organ system?

3 YOUR TURN _____ Your own words

Write 4 or 5 sentences explaining how a flowering plant gets water from soil to leaf cells. Include a cell structure, a specialized cell, a tissue, an organ, and the root and shoot systems.

PART 1 • READ AND MARK

Underline each word or phrase that names a cell structure, cell, tissue, organ, or organ system. Number the levels 1 through 5 where they appear, from smallest to largest, to trace how they work together. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	How do mitochondria and the cell membrane help a lizard cell meet its needs?	Mitochondria use oxygen and nutrients to release usable energy. The cell membrane controls materials entering and leaving, so the cell can receive needed materials and send out wastes.
2	Trace nutrients from food to a body cell. Name the two organ systems involved.	The digestive system breaks food into nutrients that enter the blood. The circulatory system carries the nutrients in blood to body cells.
3	Explain how heart muscle tissue helps the circulatory system meet body cells' needs.	Heart muscle tissue contracts in a coordinated pattern to push blood through vessels. The blood delivers oxygen and nutrients to body cells.
4	What would happen if blood flow stopped, and why would this affect more than one organ system?	Cells would not receive needed oxygen and nutrients or have wastes carried away. Because organ systems depend on the circulatory system to move these materials, every system would soon be affected.

PART 3 • YOUR TURN (SAMPLE ANSWER)

A root hair cell uses its cell membrane to take in water from the soil. Many root hair cells are part of epidermal tissue in a root. The root is an organ in the root system, and vascular tissue moves water toward the shoot system. Water reaches leaves, where cells use it in photosynthesis.

Accept accurate explanations that connect each required level of organization and show water moving from roots to leaves. Students may use equivalent accurate plant structures, such as xylem for vascular tissue.