Pond Life Patterns

Trace how cell organization, structures, and shared traits reveal living things.

LS.3 "The student will investigate and understand that there are levels of structural organization in living things. Key ideas include patterns of cellular organization support life processes..."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline phrases that show how cells are organized to support life processes, circle structures used by either organism, and number the sentences that give classification evidence.

A Drop of Pond Water

1 At the edge of a pond, Maya collects a drop of water and a thin piece of waterweed. Under a microscope, she finds that both samples are made of cells. In the waterweed, many specialized cells work together in tissues. Tissues combine to form organs such as leaves and stems, and organs work in an organ system to move water and sugars. This cellular organization helps the plant carry out life processes such as transport and photosynthesis.

2 The pond drop also contains a paramecium, a unicellular organism. Its one cell has cilia that sweep it through water and guide food into an oral groove. A contractile vacuole removes extra water. Because it has only one cell, that cell must perform all life processes. Waterweed is multicellular. Its cells have rigid cell walls, chloroplasts that capture light energy, and large vacuoles. Different waterweed cells can specialize, then cooperate in tissues and organs. The two organisms share cells, yet their structures fit different levels of organization.

3 Scientists use similar characteristics to classify organisms into groups. They compare observable traits, such as cell number, cell walls, movement, and how an organism obtains food. They also use genetic evidence. Waterweed belongs to the plant group because it is multicellular, has cell walls and chloroplasts, and makes food using light energy. A paramecium is placed with protists, a diverse group of mostly single-celled organisms. Its cilia and oral groove help identify it, but one trait alone is not enough. Scientists look for a pattern of shared characteristics before making a classification.

2 ANSWER WITH EVIDENCE

Use the passage

1. How does the organization of waterweed cells help the plant move materials through its body?

2. Compare one structure of a paramecium with one structure of waterweed. How does each structure support a life process?

3. Why must a paramecium's one cell perform all of its life processes?

4. Which shared characteristics support classifying waterweed as a plant?

3 YOUR TURN

Your own words

Choose one unicellular organism and one multicellular organism that are not named in the passage. Complete both rows to compare their cellular organization and a structure that supports a life process, then classify each organism using evidence.

ORGANISM	CELLULAR ORGANIZATION	STRUCTURE AND LIFE-PROCESS JOB	CLASSIFICATION AND EVIDENCE

ANSWER KEY

Pond Life Patterns

GRADE 7 · LS.3

PART 1 · READ AND MARK

Underline phrases that show how cells are organized to support life processes, circle structures used by either organism, and number the sentences that give classification evidence. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	How does the organization of waterweed cells help the plant move materials through its body?	**Specialized cells work together in tissues. Tissues form organs such as leaves and stems, and organs work in an organ system that moves water and sugars.**
2	Compare one structure of a paramecium with one structure of waterweed. How does each structure support a life process?	**A paramecium has cilia that move it through water and guide food into its oral groove. Waterweed has chloroplasts that capture light energy for photosynthesis. Other accurate passage-based structure and function comparisons are acceptable.**
3	Why must a paramecium's one cell perform all of its life processes?	**A paramecium is unicellular, so it has only one cell and no tissues or organs to divide the work.**
4	Which shared characteristics support classifying waterweed as a plant?	**Waterweed is multicellular, has cell walls and chloroplasts, and makes food using light energy.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

ORGANISM	CELLULAR ORGANIZATION	STRUCTURE AND LIFE-PROCESS JOB	CLASSIFICATION AND EVIDENCE
Amoeba	Unicellular, one cell performs all life processes	Pseudopods help it move and take in food.	Protist, it is a single-celled organism that moves with pseudopods.
Earthworm	Multicellular, specialized cells form tissues and organs	Its digestive system, including the intestine, absorbs nutrients.	Animal, it is multicellular and obtains food by eating other organisms or organic matter.

Accept any accurate unicellular and multicellular organisms not named in the passage. Each row should include a correct organization description, a structure linked to a life process, and a classification supported by at least one relevant characteristic.