Cells at the Pond

Trace how cell parts support different living things.

L.6.1.3 "Develop and use models to explain how specific cellular components (cell wall, cell membrane, nucleus, chloroplast, vacuole, and mitochondria) function together to support the life of prokaryotic and eukaryotic organisms to include plants..."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline three cell parts in the passage, circle the job of each part, and number the matching part-and-job pairs 1, 2, and 3.

Life Along the Pond

1 At the edge of a pond, a snail rests on a leaf while tiny organisms drift nearby. Each living thing is made of cells, but their cells do not all have the same parts. A leaf cell has a cell wall outside its cell membrane. The wall gives support, while the membrane controls what enters and leaves. Its large vacuole holds water and helps the cell stay firm. Chloroplasts capture light so the plant can make food. Mitochondria help the cell release energy from food for its activities.

2 The snail is an animal, so its cells have membranes but no cell walls or chloroplasts. A snail cell's nucleus holds instructions that guide its activities. Its mitochondria help release energy from food, and small vacuoles can store materials. A mushroom growing beside the pond is a fungus. Its cells also have nuclei, membranes, mitochondria, and vacuoles. Unlike snail cells, mushroom cells have walls, but they lack chloroplasts. The mushroom takes in food from its surroundings instead of making food using light. In each organism, cell parts work together to keep cells alive.

3 A green protist drifting in the pond is a eukaryote, like the plant, snail, and mushroom. Its cell has a nucleus, membrane, chloroplasts, vacuoles, and mitochondria. Some protists have cell walls, but others do not. Nearby bacteria are prokaryotes. A bacterium has a membrane and usually a wall, but no nucleus, chloroplasts, or mitochondria. Its instructions are inside the cell without a nucleus around them. The bacterium still carries out life activities. A model of any cell should show only the parts it has and how those parts support its life.

2 ANSWER WITH EVIDENCE

Use the passage

1. A leaf cell loses water from its vacuole. Why might its wall alone not keep the cell firm?

2. You are making models of a snail cell and a mushroom cell. Which model needs a wall? Name one part both models need to show how the cells get energy from food.

3. A green protist moves into darkness. Which part can no longer capture light there? Which part can still help the cell get energy from food?

4. A student puts a nucleus in a bacterium model because the cell has instructions. What should the student change? Name one part the bacterium and a leaf cell both have, and tell what it does.

3 YOUR TURN

Your own words

In two panels, draw labeled models of a sunlit garden seedling's leaf cell and a bread mold cell. Show at least four parts in each model, then write two sentences explaining how parts in the two cells work together to support life.

ANSWER KEY

Cells at the Pond

GRADE 6 · L.6.1.3

PART 1 · READ AND MARK

Underline three cell parts in the passage, circle the job of each part, and number the matching part-and-job pairs 1, 2, and 3. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	A leaf cell loses water from its vacuole. Why might its wall alone not keep the cell firm?	**The wall gives support, but water in the vacuole also helps keep the cell firm. With less water, the cell may lose firmness.**
2	You are making models of a snail cell and a mushroom cell. Which model needs a wall? Name one part both models need to show how the cells get energy from food.	**The mushroom cell needs a wall, but the snail cell does not. Both need mitochondria, which help release energy from food.**
3	A green protist moves into darkness. Which part can no longer capture light there? Which part can still help the cell get energy from food?	**Its chloroplasts cannot capture light in darkness. Its mitochondria can still help release energy from food.**
4	A student puts a nucleus in a bacterium model because the cell has instructions. What should the student change? Name one part the bacterium and a leaf cell both have, and tell what it does.	**Remove the nucleus because a bacterium's instructions are not inside one. Both cells have a membrane, which controls what enters and leaves.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Panel 1 shows a leaf cell with a wall outside its membrane and labels for a nucleus, large vacuole, chloroplasts, and mitochondria. Panel 2 shows a bread mold cell with a wall outside its membrane and labels for a nucleus, vacuole, and mitochondria, but no chloroplasts. In the leaf cell, the wall gives support while the water-filled vacuole helps the cell stay firm, and chloroplasts capture light so the plant can make food. In the bread mold cell, the membrane controls what enters and leaves while mitochondria help release energy from the food the mold takes in.

Accept models with correctly placed and labeled parts, including a wall in both cells and chloroplasts only in the leaf cell. Explanations should connect at least two parts or their jobs in each cell.