Built for Water

Match aquatic organisms to the challenges they face

MAQ.4.2 "Recognize representative examples of plants and animals that would be specifically adapted to the aquatic ecosystems and identify adaptations necessary to survive."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline each named plant or animal, circle at least one feature that helps it survive, and draw an arrow from each circled feature to the challenge it helps meet.

Three Habitats, Three Sets of Challenges

1. At low tide, a coastal salt marsh looks like a field with muddy channels cut through it. The ground is soaked with seawater, so ordinary garden plants would struggle to take up water. Smooth cordgrass grows here because glands on its leaves release excess salt, while air spaces in its stems carry oxygen to roots buried in oxygen-poor mud. Fiddler crabs patrol the channels and retreat into burrows when the tide falls or predators approach. Burrowing keeps their gills moist enough to exchange gases. When water returns, the crabs emerge to sift tiny food particles from the mud.

2. Farther into the bay, a seagrass meadow stays submerged even at low tide. Eelgrass is a flowering plant, not seaweed. Its long, flexible blades bend with waves instead of snapping, and they capture sunlight in shallow water for photosynthesis. Roots and underground stems anchor it in soft sediment. Bay scallops live among the blades. They draw water across their gills, which trap suspended food, and their mottled shells make them harder for predators to spot against the meadow floor. Murky water can block sunlight, threatening the eelgrass and the shelter it provides.

3. Behind the dunes, a freshwater pond presents different challenges. Water lilies anchor their roots in bottom mud while broad leaves float at the surface, where light is stronger. Most of their stomata, tiny pores for gas exchange, sit on the upper leaf surface rather than underwater. A diving beetle carries a bubble of air beneath its wing covers when it dives. The bubble supplies oxygen for a limited time, so the beetle must return to the surface. Neither the beetle's air supply nor the lily's floating leaves would solve the marsh plant's salt problem.

2 ANSWER WITH EVIDENCE

Use the passage

1. Which two features help smooth cordgrass survive in salt-marsh mud? Explain the problem each feature addresses.

2. How do a fiddler crab's burrow and a diving beetle's air bubble solve different problems?

3. Compare how eelgrass and water lilies reach the light they need in their habitats.

4. Identify two features that help a bay scallop survive in a seagrass meadow. What does each feature do?

3 YOUR TURN

Your own words

Invent a plausible animal for a tidal lagoon with soft mud, changing salinity, and shallow water that sometimes drains away. In four sentences, explain two survival features not described in the passage, how each helps, and one trade-off.

Built for Water

PART 1 · READ AND MARK

Underline each named plant or animal, circle at least one feature that helps it survive, and draw an arrow from each circled feature to the challenge it helps meet. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Which two features help smooth cordgrass survive in salt-marsh mud? Explain the problem each feature addresses.	**Leaf glands release excess salt. Air spaces in the stems carry oxygen to roots in oxygen-poor mud.**
2	How do a fiddler crab's burrow and a diving beetle's air bubble solve different problems?	**A burrow keeps the crab's gills moist when the tide falls. An air bubble supplies the beetle with oxygen while it is underwater.**
3	Compare how eelgrass and water lilies reach the light they need in their habitats.	**Eelgrass uses long blades to capture light underwater in a shallow bay. Water lilies float their leaves at the pond's surface, where light is stronger.**
4	Identify two features that help a bay scallop survive in a seagrass meadow. What does each feature do?	**Its gills trap suspended food from the water. Its mottled shell makes it harder for predators to spot.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

My lagoon minnow has a moist, air-breathing mouth lining that lets it take in oxygen when it shelters in wet mud. Cells in its gills adjust salt uptake and release as the lagoon's salinity changes. These features help it survive when the water drains away and when salt levels shift. Maintaining specialized gill cells uses energy that could otherwise support growth.

Accept scientifically plausible features when the student connects each one to a stated lagoon challenge and gives a reasonable trade-off. The invented animal and its two features should not simply repeat organisms and features from the passage.