Where Water Leads

Compare living things and physical conditions across aquatic ecosystems.

MAQ.4.1 "Compare and contrast the unique biotic and abiotic characteristics of the following selected aquatic ecosystems: intertidal zone, wetlands/estuaries, coral reef, barrier islands, continental slope/shelf, abyss, rivers/streams/watersheds..."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline physical conditions and circle the living things connected to them. Number two pairs of ecosystems whose physical conditions contrast.

From Rainfall to the Deep Sea

1. Follow a drop of rain across a watershed, the land that drains into a common waterway. In a river or stream, moving freshwater carries oxygen and sweeps insects and fish past rocky bottoms. A lake or pond holds slower water, so floating plants may grow near its sunny surface while deeper water gets less light. Along low ground, a wetland's waterlogged soil supports reeds and other plants that shelter frogs. Where river water meets the sea, an estuary mixes fresh and salt water. Its shifting salinity challenges animals, but nutrient-rich mud feeds worms and young fish.

2. At the ocean's edge, the intertidal zone alternates between air and seawater as tides rise and fall. Barnacles cling to rocks, tolerating waves and periods of drying. A barrier island is a sandy island offshore; its dunes face wind and spray, while grasses trap shifting sand. Behind some barrier islands, sheltered marshes form. Farther out in warm, clear, shallow water, a coral reef grows as coral animals build hard skeletons. Tiny algae inside many corals need sunlight, so muddy water can limit reef growth. Both reefs and barrier islands weaken waves, but one is built by animals and the other by moving sand.

3. Beyond many coasts, the continental shelf is a broad, relatively shallow seafloor where sunlight can reach some bottom habitats. Seaweeds grow on suitable hard surfaces, and fish feed in the water above. Past the shelf edge, the continental slope drops steeply into deeper, darker water; fewer plants can grow as light fades. In the abyss, thousands of meters down, sunlight never reaches the seafloor. Cold water and enormous pressure surround sea cucumbers, which eat bits of organic matter that sink from above. Unlike coral reefs, the abyss has no sunlight-driven algae producing food locally; its animals rely largely on food arriving from elsewhere.

2 ANSWER WITH EVIDENCE

Use the passage

1. How does moving water in a river or stream differ from water in a lake or pond, and what living things does the passage associate with each?

2. Compare a wetland and an estuary. Give one physical condition and one living thing described for each.

3. How do changing physical conditions affect barnacles in the intertidal zone and grasses on a barrier island?

4. Compare light on the continental shelf, continental slope, and abyss. How do these differences relate to the living things or food sources described?

3 YOUR TURN

Your own words

Compare a coral reef and the abyss in four sentences. Name an organism and a physical condition in each, then predict how several unusually cloudy days near the ocean surface might affect the organisms differently and explain why.

ANSWER KEY

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HIGH SCHOOL · MAQ.4.1

PART 1 · READ AND MARK

Underline physical conditions and circle the living things connected to them. Number two pairs of ecosystems whose physical conditions contrast. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	How does moving water in a river or stream differ from water in a lake or pond, and what living things does the passage associate with each?	**River or stream water moves and carries oxygen past insects and fish. Lake or pond water is slower, allowing floating plants to grow near the sunny surface.**
2	Compare a wetland and an estuary. Give one physical condition and one living thing described for each.	**A wetland has waterlogged soil that supports reeds, which shelter frogs. An estuary has mixed fresh and salt water and nutrient-rich mud that feeds worms and young fish.**
3	How do changing physical conditions affect barnacles in the intertidal zone and grasses on a barrier island?	**Intertidal barnacles cling to rocks through waves and periods of drying as tides change. Barrier island grasses trap sand that shifts in wind and spray.**
4	Compare light on the continental shelf, continental slope, and abyss. How do these differences relate to the living things or food sources described?	**Sunlight reaches some shelf bottom habitats, where seaweeds can grow. Light fades down the slope, so fewer plants can grow. The abyss receives no sunlight, and sea cucumbers eat organic matter that sinks from above.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Coral reefs have shallow water with sunlight, while the abyss has no sunlight and is cold under great pressure. Corals house algae that use light, but abyssal sea cucumbers eat sinking organic matter. If surface waters stayed cloudy for several days, the algae inside corals would get less light and could make less food. Sea cucumbers would not lose a direct source of sunlight because their food already arrives as sinking material.

Accept equivalent comparisons grounded in the passage. For the open task, the prediction should distinguish reduced light for reef algae from the abyss's lack of direct sunlight.