Biomes in Motion

Model how physical conditions shape plants and animals on land and in water

FB.6.4 "Develop and use models to discuss the climate, flora, and fauna of the terrestrial and aquatic biomes of the world."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline physical conditions, circle plants and other producers, and box animals. Number the links in two cause-and-effect chains, one on land and one in water, to show how conditions shape life.

From Tundra to Tidewater

1. Imagine traveling from the equator toward the poles with a notebook for a model. In a tropical rain forest, frequent rain and year-round warmth support tall, broad-leaved trees. Their layered crowns capture sunlight and produce fruit; insects find shelter, and fruit-eating birds feed there. In a hot desert, rare rain and rapid evaporation leave little available water. Cacti store water, while many small mammals avoid daytime heat by sheltering underground. Farther north, Arctic tundra stays cold, and frozen ground limits how deeply roots can grow. Low shrubs and mosses survive; grazing caribou eat short plants during the brief growing season.

2. Water biomes also have physical conditions that shape life, but their boundaries are not set by air temperature and rainfall alone. In a freshwater stream, moving water carries oxygen and nutrients. Algae grow where light reaches shallow surfaces, and aquatic insect larvae graze on algae; fish may eat the larvae. Where a river meets the sea, an estuary mixes freshwater with saltwater. Marsh grasses tolerate changing salinity, and their stems shelter young fish. Offshore, sunlight reaches only the upper layers of the ocean. Floating phytoplankton use that light; tiny drifting animals eat them, and fish eat the drifting animals.

3. A useful biome model links a physical condition to plants and then to animals, rather than listing names alone. For example, a drought in a forest can slow tree growth and reduce fruit, changing the food available to birds. On land, rainfall and temperature influence which plants can grow; in water, salinity, light, movement, and dissolved oxygen also matter. Connections can cross the shoreline. Trees along a stream shade the water, keeping it cooler; cooler water generally holds more dissolved oxygen than warmer water. If trees disappear, some fish may lose suitable conditions even when they never leave the stream.

2 ANSWER WITH EVIDENCE

Use the passage

1. Build a cause-and-effect chain from the rain forest's climate to food for fruit-eating birds.

2. How does frozen ground shape both the plants and the caribou in Arctic tundra? Show the links in order.

3. Make a food-and-energy chain for a sunlit freshwater stream, starting with light and ending with fish.

4. Model how changing salinity in an estuary can affect young fish through a plant.

3 YOUR TURN

Your own words

A road project diverts water from a clear forest stream, leaving less water for nearby trees and making the stream shallower. Write two arrow chains predicting effects on a land plant and animal and a freshwater producer and animal, then use two sentences to explain one uncertain outcome.

ANSWER KEY

Biomes in Motion

PART 1 · READ AND MARK

Underline physical conditions, circle plants and other producers, and box animals. Number the links in two cause-and-effect chains, one on land and one in water, to show how conditions shape life. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Build a cause-and-effect chain from the rain forest's climate to food for fruit-eating birds.	**Frequent rain and year-round warmth support tall, broad-leaved trees; the trees produce fruit that birds eat.**
2	How does frozen ground shape both the plants and the caribou in Arctic tundra? Show the links in order.	**Frozen ground limits root depth, so low shrubs and mosses survive; caribou graze on the short plants during the brief growing season.**
3	Make a food-and-energy chain for a sunlit freshwater stream, starting with light and ending with fish.	**Light supports algae → aquatic insect larvae graze on algae → fish eat the larvae.**
4	Model how changing salinity in an estuary can affect young fish through a plant.	**Marsh grasses tolerate changing salinity, so they can grow in the estuary; their stems shelter young fish.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Less water for trees → slower tree growth → less fruit → less food for fruit-eating birds.
Shallower clear stream → more light reaches algae → more algae → more food for grazing insect larvae.
The larvae might increase if they have enough water and oxygen to survive. If the shallow stream warms too much, that increase might not happen.

Accept other cause-and-effect models supported by the passage. For the open task, look for both land and freshwater chains and an uncertainty that could change a predicted outcome.