ANSWER KEY.

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Terrestrial Biomes

Biology | ANSWER KEY

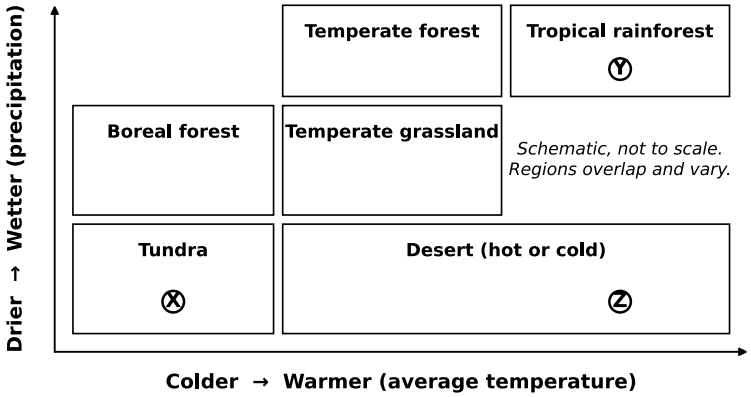
Answer in complete sentences where asked. Show your work for calculations and use the data as evidence.

1. Name the biome that fits each description. Choose from: tundra, temperate grassland, tropical rainforest, desert.

Description	Biome
(a) Cold all year, very few trees, frozen soil below the surface	
(b) Warm and wet all year, tall trees, very many species	
(c) Distinct seasons, many grasses, few trees, shaped by fire and grazing	

(a) **Tundra** (permafrost, cold) (b) **Tropical rainforest** (c) **Temperate grassland**

2. The grid shows where three sites (X, Y, and Z) fall for temperature and precipitation.



(a) Name the biome that best fits each site: X, Y, and Z.

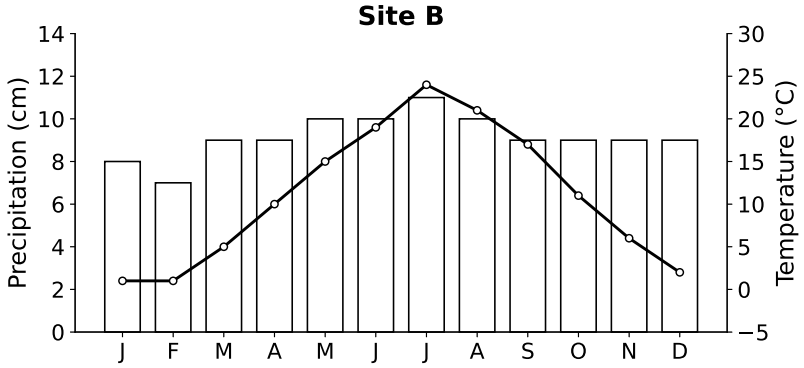
(b) Site Y's average temperature stays the same, but its precipitation falls a great deal. Which of the three sites would its climate now be most like? Explain.

(a) **X: tundra; Y: tropical rainforest; Z: desert**. X is cold and dry, Y is warm and very wet, and Z is warm and dry.

(b) **Site Z (desert).** Less precipitation at the same temperature moves Y down the grid into the warm, dry part, where Z is.

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3. Climograph for Site B (sample data). Bars: precipitation. Line: temperature.



Sample data. Bars: precipitation. Line: temperature.

(a) Find the average yearly temperature. Show your setup.

(b) Find the yearly precipitation. Show your setup.

(c) Use the biome cards to name the best-fit biome. Write a claim, evidence, and reasoning.

(a) (1 + 1 + 5 + 10 + 15 + 19 + 24 + 21 + 17 + 11 + 6 + 2) ÷ 12 = 132 ÷ 12 = **11.0 °C**

(b) 8 + 7 + 9 + 9 + 10 + 10 + 11 + 10 + 9 + 9 + 9 + 9 = **110 cm**

(c) **Model answer: Site B best fits temperate forest. The average temperature is 11.0 °C and the yearly precipitation is 110 cm. Both are inside the temperate forest ranges (6 to 20 °C and 75 to 250 cm), and 110 cm is well above the grassland range of 25 to 75 cm.**

A correct answer must include: a claim naming temperate forest; both numbers with units (11.0 °C and 110 cm); a comparison with the ranges that rules out at least one other biome, such as grassland (too little precipitation) or tundra (too cold).

4. In a tropical rainforest, the trees are tall and the forest is dense, yet the soil often holds few nutrients.

(a) Explain how a rainforest can grow so much while its soil is nutrient-poor. Include decomposition in your answer.

(b) Name one adaptation of a desert plant and explain how it helps the plant survive.

(a) **Model answer: In the warm, wet climate, dead leaves decompose quickly and the plants take up the released nutrients right away. Much of the nutrient supply is therefore stored in the living plants and not in the soil, so the forest can grow a lot even though the soil holds few nutrients.** (Must include fast decomposition and that nutrients are stored in plants.)

(b) **Examples: a cactus stores water in its stem, so it can survive long dry periods; a waxy coating reduces water loss; small or no leaves reduce water loss.**

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