

4.1 Climate

Weather and Climate

1. How is weather different from climate?

2. What causes microclimates to form?

3. In the Northern Hemisphere, why are the south-facing sides of buildings often warmer and drier than the north-facing sides?

For Questions 6–9, write the letter of the correct answer on the line at the left.

_____ 6. What effect do carbon dioxide and methane have on Earth's temperature?

- A. They trap heat in the atmosphere.
- B. They release heat from the atmosphere.
- C. They block heat from entering the ocean.
- D. They block heat from reaching Earth's surface.

_____ 7. How would the temperature on Earth change without the greenhouse effect?

- A. The temperature at the equator would be warmer.
- B. The temperature would stay the same.
- C. It would be 30°C warmer.
- D. It would be 30°C cooler.

_____ 8. What causes solar radiation to strike different parts of Earth's surface at an angle that varies throughout the year?

- A. Earth's tilted axis
- B. Earth's erratic orbit
- C. the moon's orbit around Earth
- D. solar flares on the sun's surface

_____ 9. In which location is the sun almost directly overhead at noon all year?

- A. the equator
- B. the South Pole
- C. the North Pole
- D. North America

For Questions 11–14, write True if the statement is true. If the statement is false, change the underlined word or words to make the statement true.

_____ 11. Patterns of heating and cooling result in ocean currents.

_____ 12. Warm air is less dense than cool air.

_____ 13. Surface water moved by winds results in ocean currents.

_____ 14. Deep ocean currents are caused by the sinking of warm water near the poles.

4.2 The Niche

1. What is a niche?

3. Three different warbler species live in the same tree. One species feeds at the top of the tree, the second species feeds in the middle part of the tree, and the third species feeds at the bottom of the tree. Do all three species occupy the same niche? Explain.

Competition

For Questions 4–8, write *True* if the statement is true. If the statement is false, change the underlined word or words to make the statement true.

- _____ 4. Competition occurs when organisms attempt to use the same resources.
- _____ 5. Competition between members of the same species is known as interspecific competition.
- _____ 6. The competitive exclusion principle states that no two organisms can occupy exactly the same niche in exactly the same habitat at exactly the same time.
- _____ 7. If two species of bacteria are grown in the same culture, one species will always outcompete the other.
- _____ 8. Members of the same species tend to divide resources instead of competing over them.

Predation, Herbivory, and Keystone Species

Write the letter of the correct answer on the line at the left.

- _____ 9. A lion eating a zebra is an example of
A. herbivory. C. predation.
B. habitat destruction. D. a keystone species.
- _____ 10. A cow eating grass is an example of
A. herbivory. C. habitat destruction.
B. predation. D. a keystone species.
- _____ 11. A keystone species is one that
A. eats a mixture of plants and animals.
B. is introduced into a community after a major disturbance.
C. causes the amount of diversity in a community to decrease.
D. helps to stabilize the populations of other species in the community.

Match the example with the type of relationship. A relationship type may be used more than once.

Example

Type of Relationship

- _____ 13. a tick living on the body of a deer A. mutualism
- _____ 14. a bee eating a flower's nectar and picking up the flower's pollen B. commensalism
C. parasitism
- _____ 15. a barnacle living on a whale's skin
- _____ 16. a tapeworm living in a person's intestines
- _____ 17. an aphid providing food to an ant in exchange for protection