National End-of-Course Practice

Chapter 3

Directions

For multiple choice questions, write the letter that best answers the question or completes the statement on the line provided. For other question types, follow the directions provided.
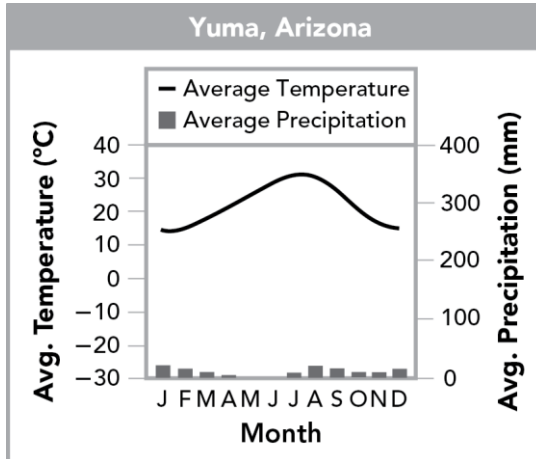
1. Kara uses a model that shows slight changes to Earth's motion through space over many thousands of years. This model helps her explain long-term climate change due to what variable?
    (A) volcanic activity
    (B) meteor or asteroid strikes
    (C) ocean circulation
    (D) carbon dioxide levels in the atmosphere
    (E) input of solar energy

2. Lionel uses a model that includes the atmosphere and sunlight to predict Earth's temperatures. In this model, why does increasing the levels of carbon dioxide in the atmosphere cause temperatures to increase?
    (A) Sunlight passes through carbon dioxide.
    (B) Sunlight is absorbed by carbon dioxide.
    (C) Heat is trapped by carbon dioxide.
    (D) Carbon dioxide generates heat.
    (E) Carbon dioxide reacts with water to release heat.

3. Scientists have concluded that human activities are affecting the atmosphere and causing rapid climate change on a global scale. Which statement provides the strongest evidence that these changes to global climate are NOT the result of natural causes, such as variations in Earth's orbit?
    (A) Until recently, Earth's climate had remained relatively constant.
    (B) Variations in Earth's orbit cannot be measured precisely.
    (C) Variations in Earth's orbit would affect climate only minimally.
    (D) Earth's climate depends mostly on the output of the sun.
    (E) Variations in Earth's orbit occur gradually over 100,000 years.

For questions 4 and 5, refer to the following paragraph.

This climate diagram shows the average temperature (line graph) and precipitation (bar graph) during each month of the year.

4. Plants that thrive in this type of climate are MOST LIKELY adapted to which of these conditions?
   (A) seasonal variations in temperature
   (B) seasonal variations in precipitation
   (C) year-long cold temperatures
   (D) dense, competitive growth
   (E) rich, fertile soil

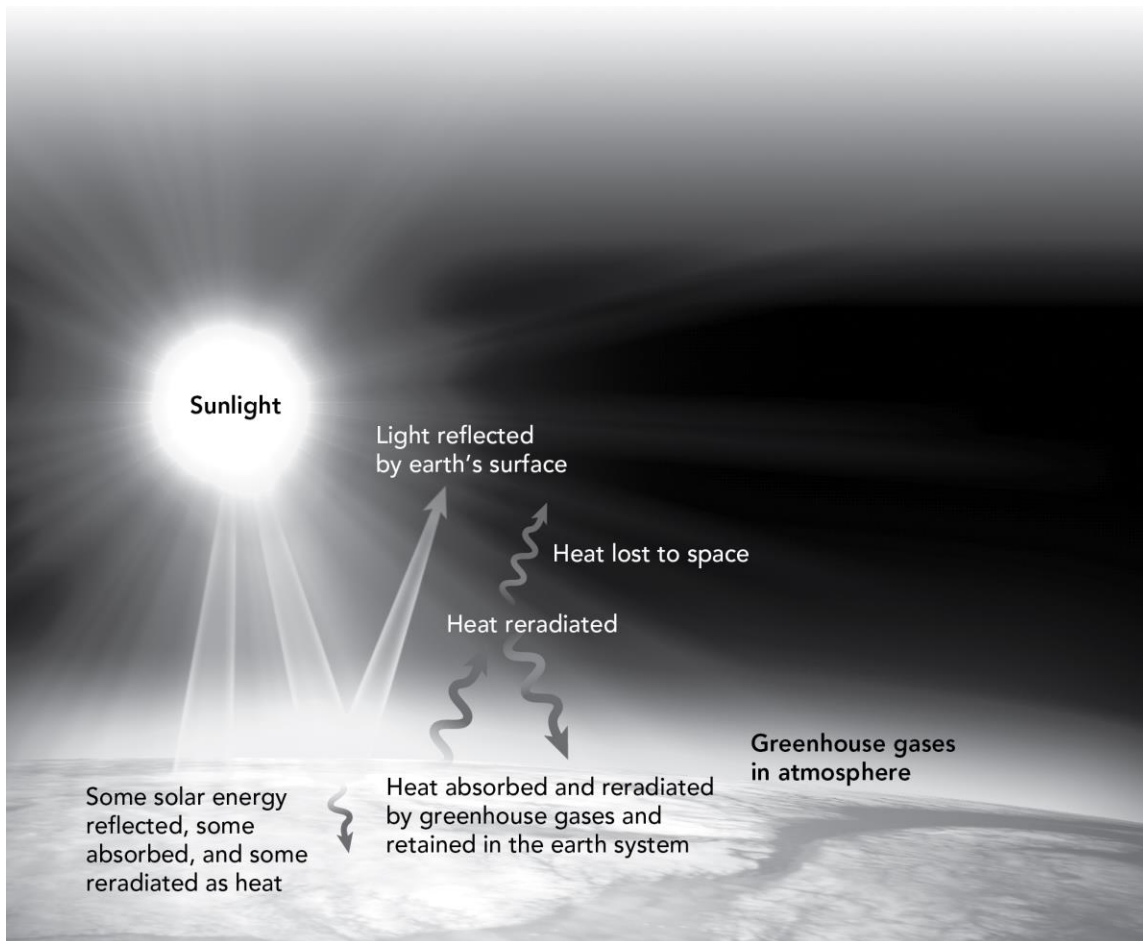5. Which plant feature would MOST LIKELY be common in this type of climate?
   (A) leaves with waxy coverings
   (B) tall, woody trunks
   (C) broad, flat leaves
   (D) watery fruits
   (E) roots that dangle in the air

6. Professor Juneau is developing a model of Earth's climate. Her goal is to describe a natural, long-term cycle of climate change, as well as to explain and predict short-term changes to climate.

What property applies to all of the events that should be represented in the model?

(A) They alter the flow of energy into or out of Earth's systems.
(B) They alter the position of Earth in space.
(C) They alter the concentrations of gases in Earth's atmosphere.
(D) They alter the amount of energy that Earth receives from the sun.
(E) They alter the cycle of matter within the atmosphere.

7. What generally is the effect of ocean currents on the climate of coastal regions?
(A) They carry away heat, making the area colder all the time.
(B) They carry away moisture, making the area drier.
(C) They reverse the effects of altitude, making mountainous regions warmer.
(D) They absorb moisture, making storms milder and with less precipitation.
(E) They add or carry away heat, making temperatures more moderate.

8. Eleanor is evaluating a computer model of climate change in her hometown of Union City. The model predicts that the average temperatures in Union City will increase by 1.5°C over the next 20 years. Eleanor also notices that on February 19th of this year, the high temperature for Union City was 15°C cooler than the typical high temperature for that date.

Based on this information, Eleanor argues that the evidence shows that Union City is becoming significantly colder, not warmer, and so the computer model is faulty.

Which statement is the strongest evaluation of Eleanor's argument?

(A) The argument is reasonable because the weather data contradicts the computer model.
(B) The argument is reasonable, even though the weather data neither supports nor contradicts the computer model.
(C) The argument is not reasonable because the weather data supports the computer model.
(D) The argument is not reasonable because weather data from one date is not enough to evaluate climate.
(E) The argument is reasonable because computer models cannot be used to predict weather and climate.

9. The diagram shows a model of the greenhouse effect.

Sunlight

Light reflected by earth's surface

Heat lost to space

Heat reradiated

Greenhouse gases in atmosphere

Some solar energy reflected, some absorbed, and some reradiated as heat

Heat absorbed and reradiated by greenhouse gases and retained in the earth system

As explained by the model, which of the following changes would cause an increase in Earth's average temperatures?

(A) a decrease in the solar radiation that strikes the atmosphere

(B) an increase in the amount of light that is reflected by Earth's surface

(C) an increase in the amount of light that the atmosphere reflects into space

(D) an increase in the concentration of greenhouse gases in the atmosphere

(E) an increase in the concentration of oxygen, which is not a greenhouse gas, in the atmosphere

10. A boat carries two teams of scuba divers to the middle of the Atlantic Ocean, where they remain for the day. One team of divers stays close to the surface. They explore the surface waters within a distance of 1000 meters from the boat. The second team of divers descends to a depth of 1000 meters below the surface.

Which team will be able to observe the greater variety of living things in the waters they visit? Explain your answer.

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