

Chapter 02 - Energy and Matter in the Atmosphere

Chapter 02
Energy and Matter in the Atmosphere

Multiple Choice Questions

1. The most common gas in the atmosphere is.
 - A. oxygen (O₂).
 - B. carbon dioxide (CO₂).
 - C. nitrogen (N₂).
 - D. methane (CH₄).

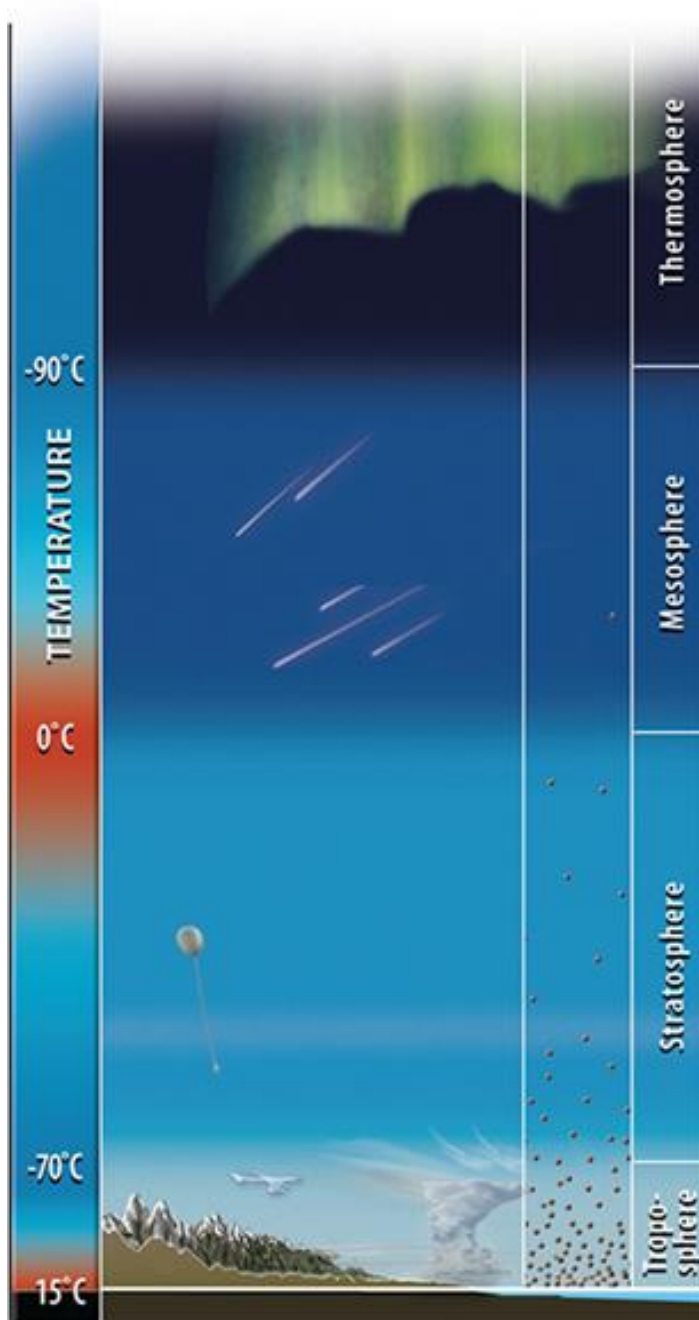
Bloom's: 1. Remember

Bloom's: 2. Understand

Gradable: automatic

Section: 02.01 What Is the Atmosphere?

2. What atmospheric layer is the home of weather, has the greatest density of gas molecules, and has a decrease in temperature with height?



- A. Thermosphere
- B. Mesosphere
- C. Stratosphere

D. Troposphere

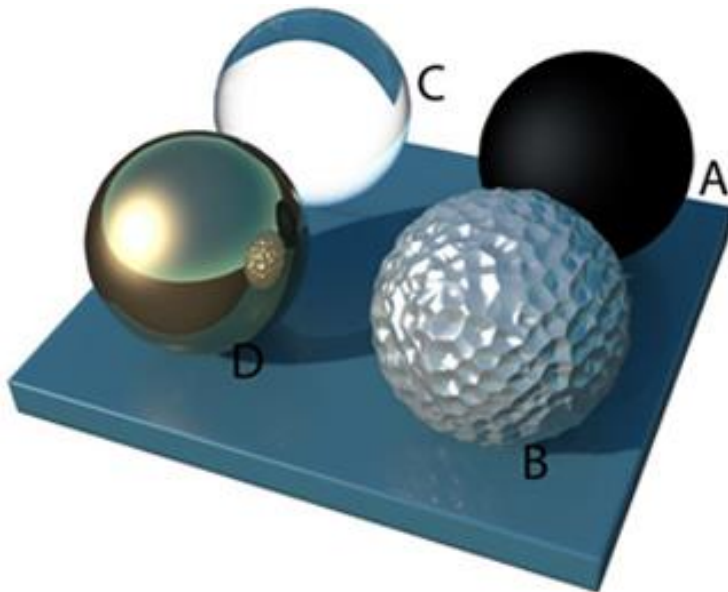
Bloom's: 3. Apply

Bloom's: 4. Analyze

Gradable: automatic

Section: 02.01 What Is the Atmosphere?

3. Which of the following objects is best at absorption of incoming light and the emission of heat?



- A.** A
- B. B
- C. C
- D. D

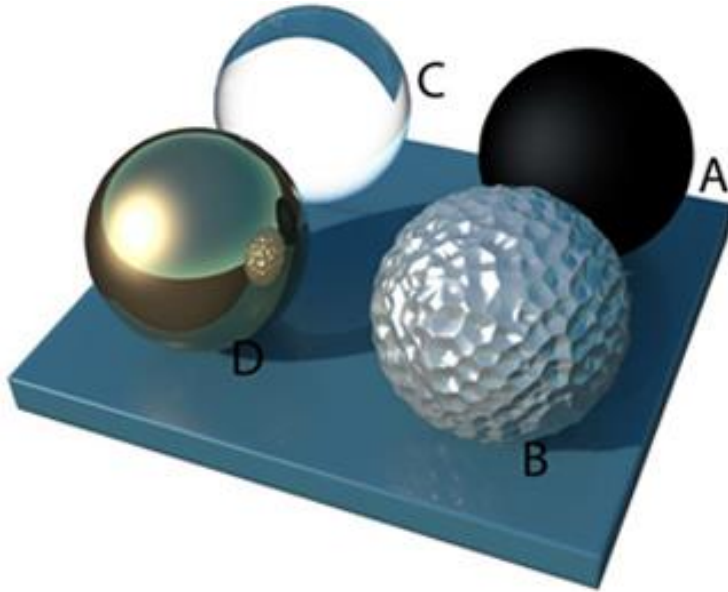
Bloom's: 3. Apply

Bloom's: 4. Analyze

Gradable: automatic

Section: 02.01 What Is the Atmosphere?

4. Which of the following objects would be best at scattering light?



- A. A
- B.** B
- C. C
- D. D

Bloom's: 3. Apply

Bloom's: 4. Analyze

Gradable: automatic

Section: 02.01 What Is the Atmosphere?

5. Potential energy would best be expressed when

- A. pulling or pushing an object.
- B. atoms moving at 200 km/hr.
- C. atoms moving at 500 km/hr.
- D.** changing a liquid to a gas.

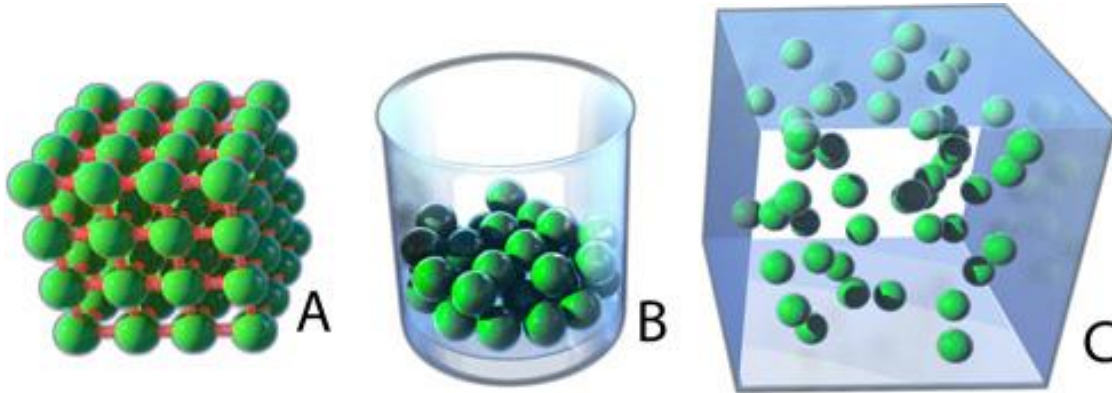
Bloom's: 1. Remember

Bloom's: 2. Understand

Gradable: automatic

Section: 02.02 What Is Energy and How Is It Transmitted?

6. Which of the following images represents matter in the gaseous state, with the greatest kinetic energy?



- A. A
- B. B
- C. C

Bloom's: 3. Apply
Bloom's: 4. Analyze
Gradable: automatic
Section: 02.02 What Is Energy and How Is It Transmitted?

7. Getting the bottom of your feet burned when walking on hot beach sand is due to.
A. conduction.
B. convection.
C. radiation.
D. advection.

Bloom's: 1. Remember
Bloom's: 2. Understand
Gradable: automatic
Section: 02.02 What Is Energy and How Is It Transmitted?

8. When making macaroni and cheese you notice the noodles rising and falling in the boiling water. This is best explained through the process of.

- A. conduction.
- B. convection.**
- C. radiation.
- D. advection.

Bloom's: 1. Remember

Bloom's: 2. Understand

Gradable: automatic

Section: 02.02 What Is Energy and How Is It Transmitted?

9. The surface temperatures of a metal plate, piece of wood, and piece of plastic were measured with an infrared thermometer. Air

line above 20°C. Which object's surface recorded the lowest temperature?

- A. metal plate
- B. wood
- C. plastic
- D. all measured the same**

Bloom's: 3. Apply

Bloom's: 4. Analyze

Gradable: automatic

Section: 02.03 What Are Heat and Temperature?

10. The only temperature scale that relates changes in internal energy to the absolute amount of heat gained or lost by a system is the

- A. Fahrenheit scale.
- B. Celsius scale.
- C. Centigrade scale.
- D. Kelvin scale.**

Bloom's: 1. Remember

Bloom's: 2. Understand

Gradable: automatic

Section: 02.03 What Are Heat and Temperature?

11. Which of the following temperature combinations are correct for the freezing point of water, room temperature, and the boiling point of water?

- A. 32°, 77° 273
- B. 0°, 77° 373
- C. 32°, 298° 373
- D.** 273, 298, 373

Bloom's: 3. Apply

Bloom's: 4. Analyze

Gradable: automatic

Section: 02.03 What Are Heat and Temperature?

12. The mercury thermometer operates on the principle of

- A.** liquid expansion and contraction.
- B. energy emission from a surface.
- C. thermoelectric principles.

Bloom's: 1. Remember

Bloom's: 2. Understand

Gradable: automatic

Section: 02.03 What Are Heat and Temperature?

13. Which of the following involves energy storage in the water molecule in the form of latent heat?

- A.** melting, evaporation, sublimation
- B. freezing, condensation, deposition
- C. melting, freezing, condensation, deposition
- D. condensation, evaporation, deposition, sublimation

Bloom's: 1. Remember

Bloom's: 2. Understand

Gradable: automatic

Section: 02.04 What Is Latent Heat?

14. Which of the following involves the release of latent heat back into the environment?

- A. evaporation
- B.** deposition
- C. melting
- D. sublimation

Bloom's: 1. Remember

Bloom's: 2. Understand

Bloom's: 3. Apply

Bloom's: 4. Analyze

Gradable: automatic

Section: 02.04 What Is Latent Heat?

15. All of the following involve the input of energy EXCEPT:

- A. melting
- B. evaporation
- C.** freezing
- D. sublimation

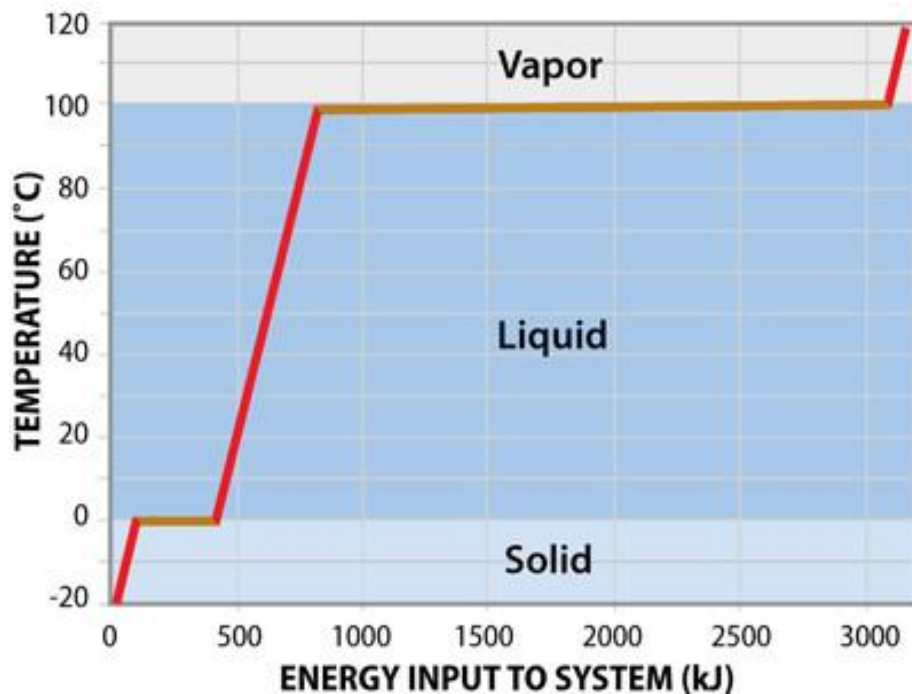
Bloom's: 1. Remember

Bloom's: 2. Understand

Gradable: automatic

Section: 02.04 What Is Latent Heat?

16. From this graph, one should conclude that



- A. most of the energy input into the system goes toward changing temperature not changing state.
- B. most of the energy input into the system goes toward a more ordered, rigid, molecular structure.
- C. none of these options are correct.
- D.** most of the energy input into the system goes toward changing state, not to change temperature.

Bloom's: 1. Remember

Bloom's: 2. Understand

Bloom's: 3. Apply

Bloom's: 4. Analyze

Gradable: automatic

Section: 02.04 What Is Latent Heat?

17. Which of the following is true regarding phase changes?
- A. Energy is released when going from higher to lower energy state.
 - B. Energy is required to go from a higher to lower energy state.
 - C. All phase changes involve the release of energy.
 - D. All phase changes require energy.

Bloom's: 1. Remember

Bloom's: 2. Understand

Bloom's: 3. Apply

Bloom's: 4. Analyze

Gradable: automatic

Section: 02.04 What Is Latent Heat?

18. All of the following will warm the local environment EXCEPT.
- A. deposition.
 - B. evaporation.
 - C. freezing.
 - D. condensation.

Bloom's: 1. Remember

Bloom's: 2. Understand

Bloom's: 3. Apply

Bloom's: 4. Analyze

Gradable: automatic

Section: 02.04 What Is Latent Heat?

19. Electromagnetic Radiation.
- A. is composed of interacting electrical and magnetic fields.
 - B. is visible in all its forms.
 - C. radiates out in confined planes or straight lines.
 - D. is composed entirely of waves.

Bloom's: 1. Remember

Bloom's: 2. Understand

Gradable: automatic

Section: 02.05 What Is Electromagnetic Radiation?

20. The speed with which an electromagnetic wave travels is its
- A. plane of magnetic component.
 - B. frequency.**
 - C. wavelength.
 - D. amplitude.

Bloom's: 1. Remember

Bloom's: 2. Understand

Gradable: automatic

Section: 02.05 What Is Electromagnetic Radiation?

21. The height of an electromagnetic wave is its
- A. plane of electrical component.
 - B. frequency.
 - C. amplitude.**
 - D. wavelength.

Bloom's: 1. Remember

Bloom's: 2. Understand

Gradable: automatic

Section: 02.05 What Is Electromagnetic Radiation?

22. Electromagnetic radiation is generated from all of the following EXCEPT.
- A. the joining together of protons and neutrons through fusion.
 - B. molecules' electrons and bonds that vibrate.
 - C. changes in the energy level of the electron.
 - D. unconfined waves that radiate out in all directions.**

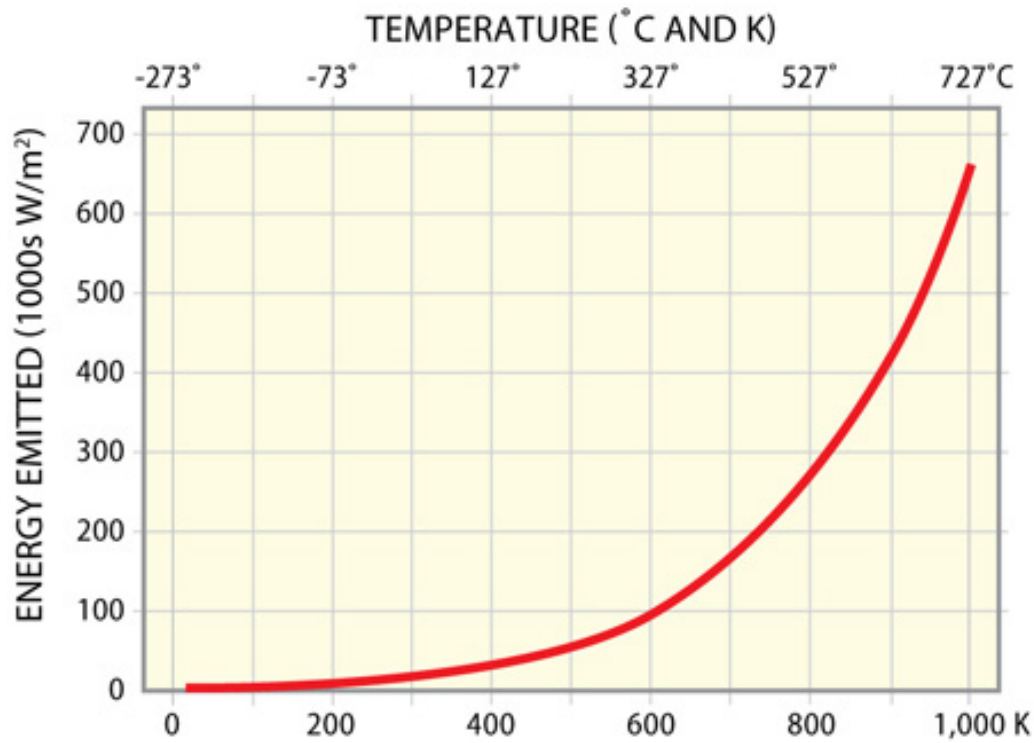
Bloom's: 1. Remember

Bloom's: 2. Understand

Gradable: automatic

Section: 02.05 What Is Electromagnetic Radiation?

23. Compare the amount of energy emitted as a function of temperature (K). The amount of energy emitted from 200 to 600 K is _____ while the amount of energy emitted from 600 to 1000 K is _____.



- A. 0 w/m²; 650 w/m²
- B. 73 w/m²; 727 w/m²
- C. 100 w/m²; 550 w/m²**
- D. 200 w/m²; 600 w/m²

Bloom's: 1. Remember

Bloom's: 2. Understand

Bloom's: 3. Apply

Bloom's: 4. Analyze

Gradable: automatic

Section: 02.05 What Is Electromagnetic Radiation?

24. An object emits a range of electromagnetic energy wave lengths because
- A. not all molecules vibrate at the same speed.
 - B. relativity theory states that objects attain varying terminal velocities.
 - C. lowest and highest vibration rates are cancelled.
 - D. all molecules vibrate at the same rate.

Bloom's: 1. Remember

Bloom's: 2. Understand

Gradable: automatic

Section: 02.06 What Controls Wavelengths of Radiation?

25. Which of the following is true regarding the relationship between molecular motion, wavelength, and temperature?
- A. as temperature decreases, molecular motion increases, wavelength increases
 - B. as temperature increases, molecular motion increases, wavelength decreases
 - C. as temperature decreases, molecular motion decreases, wavelength decreases
 - D. as temperature increases, molecular motion decreases, wavelength decreases

Bloom's: 1. Remember

Bloom's: 2. Understand

Bloom's: 3. Apply

Bloom's: 4. Analyze

Gradable: automatic

Section: 02.06 What Controls Wavelengths of Radiation?

26. Which color portion of the visible spectrum emits the lowest amount of energy?
- A. red
 - B. yellow
 - C. green
 - D. blue

Bloom's: 3. Apply

Bloom's: 4. Analyze

Gradable: automatic

Section: 02.06 What Controls Wavelengths of Radiation?

27. Which of the following types of electromagnetic radiation are arranged in the proper decreasing order of energy?

- A. an infrared, xrays, AM radio
- B. microwaves, ultraviolet, green light
- C. radio waves, gamma rays, ultraviolet
- D. blue light, infrared, AM radio**

Bloom's: 3. Apply

Bloom's: 4. Analyze

Gradable: automatic

Section: 02.06 What Controls Wavelengths of Radiation?

28. The solar constant is

- A. consistent amount of energy received at the top of the atmosphere.**
- B. the same for a sphere or for a circle.
- C. only about a quarter of all energy emitted by the sun.
- D. the same value for all planets, even Neptune.

Bloom's: 1. Remember

Bloom's: 2. Understand

Gradable: automatic

Section: 02.07 What Causes Changes in Insolation?

29. North America is closest to the sun, during

- A. perihelion, which occurs in early July.
- B. perihelion, which occurs in early January.**
- C. aphelion, which occurs in early July.
- D. aphelion, which occurs in early January.

Bloom's: 1. Remember

Bloom's: 2. Understand

Gradable: automatic

Section: 02.07 What Causes Changes in Insolation?

30. North America is farthest from the sun during
- A. perihelion, which occurs in early July.
 - B. perihelion, which occurs in early January.
 - C. aphelion, which occurs in early July.
 - D. aphelion, which occurs in early January.

Bloom's: 1. Remember

Bloom's: 2. Understand

Gradable: automatic

Section: 02.07 What Causes Changes in Insolation?

31. All of the following are true regarding sunspot activity EXCEPT
- A. Solar flares are more common with maximum sunspot activity.
 - B. The Little Ice Age occurred when there was a minimum of sunspot activity.
 - C. There is, on average, an 11 year cycle for sunspot cycles.
 - D. More sunspot activity means less overall energy emitted from the sun.

Bloom's: 1. Remember

Bloom's: 2. Understand

Gradable: automatic

Section: 02.07 What Causes Changes in Insolation?

32. As one approaches the equator, the angle of incidence ____ and the atmosphere attenuation ____.
- A. increases; increases
 - B. decreases; decreases
 - C. increases; decreases
 - D. decreases; increases

Bloom's: 1. Remember

Bloom's: 2. Understand

Gradable: automatic

Section: 02.07 What Causes Changes in Insolation?

33. As one approaches the poles, the angle of incidence _____ and atmosphere attenuation _____.

- A. increases; increases
- B. decreases; decreases
- C. increases; decreases
- D. decreases; increases**

Bloom's: 1. Remember

Bloom's: 2. Understand

Bloom's: 3. Apply

Bloom's: 4. Analyze

Gradable: automatic

Section: 02.08 Why Does Insolation Vary from Place to Place?

34. As the zenith angle _____ the amount of energy reaching the surface _____.

- A. increases, increases
- B. decreases, decreases
- C. increases, decreases**
- D. increases or decreases, remains constant

Bloom's: 1. Remember

Bloom's: 2. Understand

Bloom's: 3. Apply

Bloom's: 4. Analyze

Gradable: automatic

Section: 02.08 Why Does Insolation Vary from Place to Place?

35. Polar regions receive.

- A. minimum variation in solar isolation and low zenith angles.
- B. maximum variation in solar isolation and low zenith angles.
- C. minimal variation in solar isolation and high zenith angles.
- D. maximum variation in solar isolation and high zenith angles.**

Bloom's: 1. Remember

Bloom's: 2. Understand

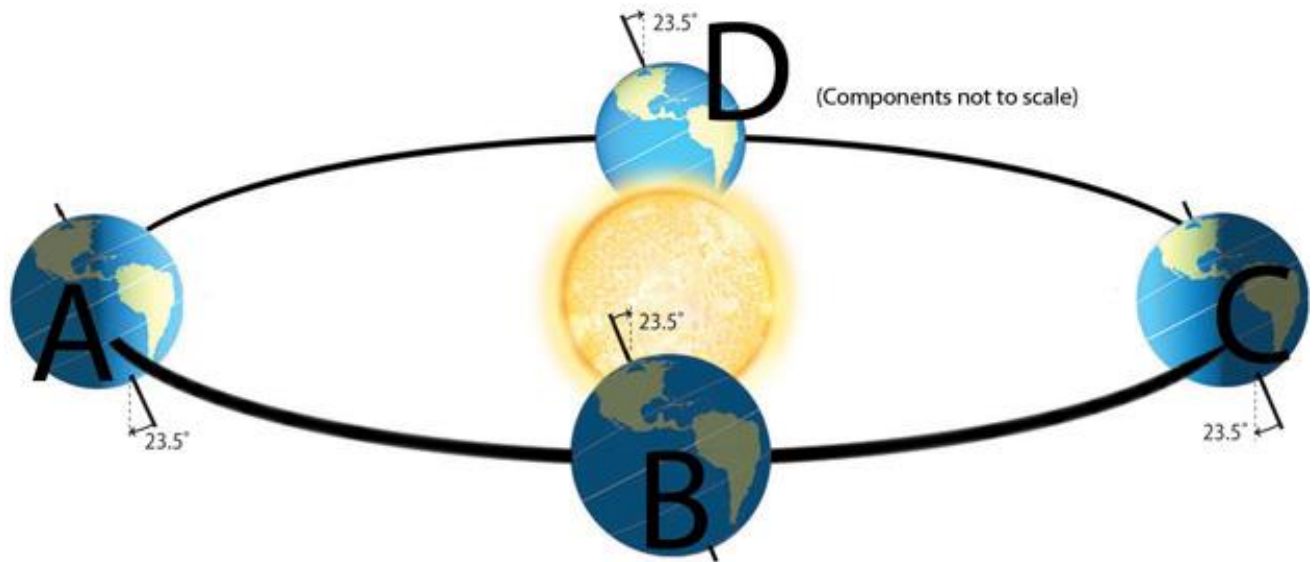
Bloom's: 3. Apply

Bloom's: 4. Analyze

Gradable: automatic

Section: 02.08 Why Does Insolation Vary from Place to Place?

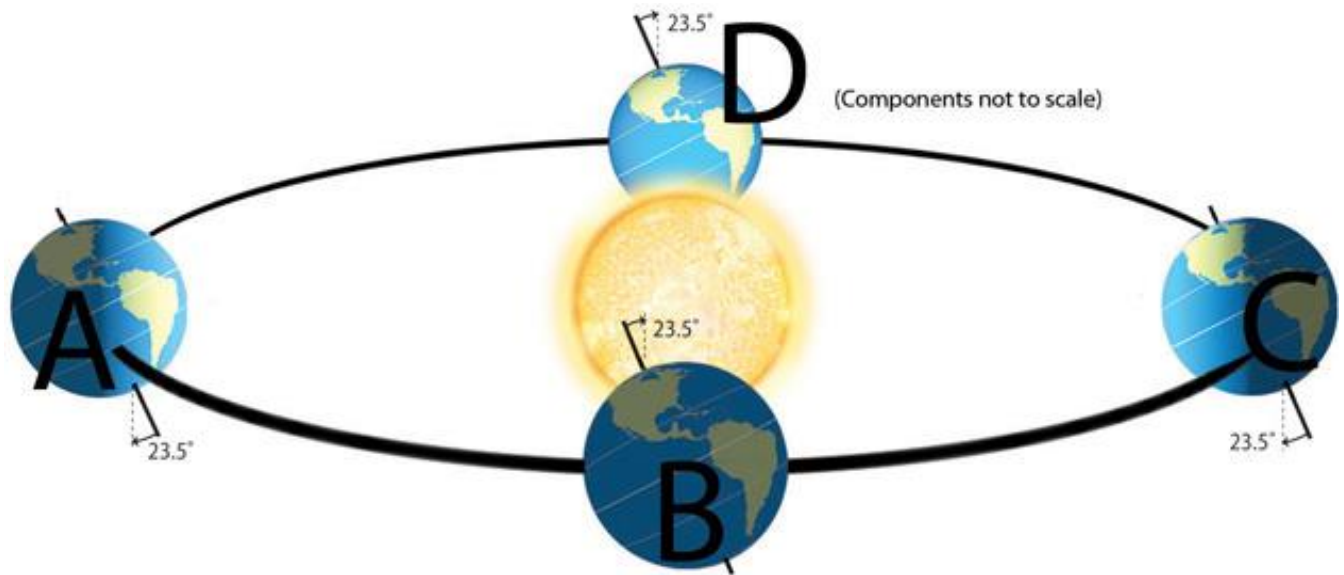
36. Which of the letters represents the summer solstice for the Northern Hemisphere?



- A. A
- B. B
- C. C
- D. D

Bloom's: 3. Apply
Bloom's: 4. Analyze
Gradable: automatic
Section: 02.09 Why Do We Have Seasons?

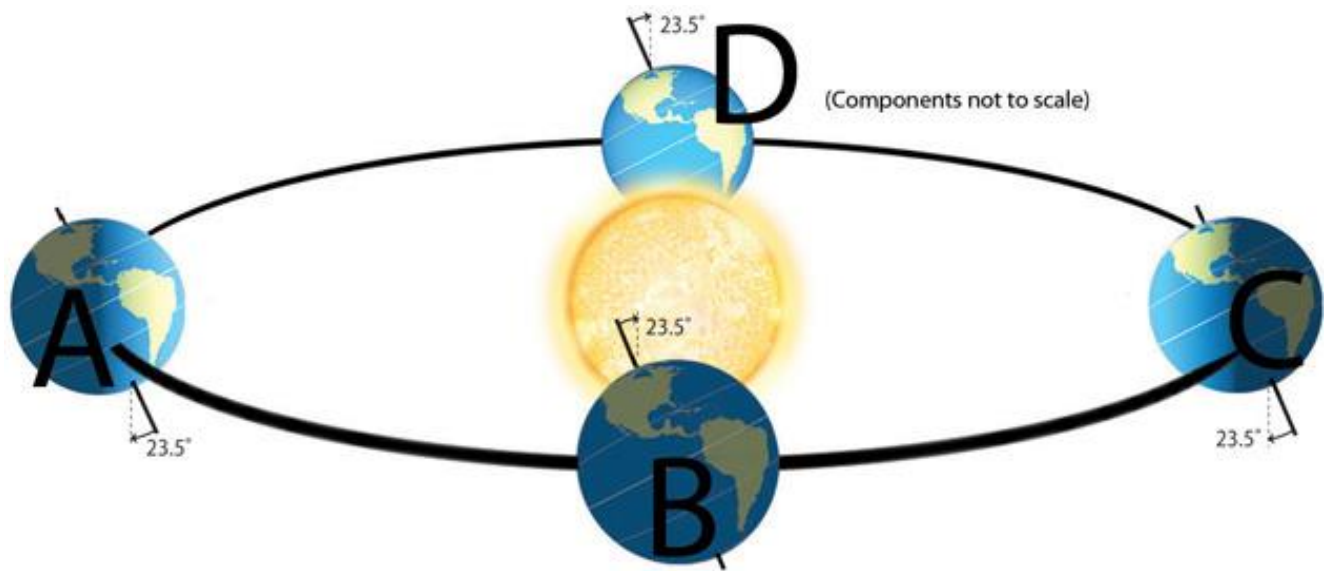
37. On March 21 the sun will be directly overhead at



- A. A.
- B. B.
- C. C.
- D.** D.

Bloom's: 3. Apply
Bloom's: 4. Analyze
Gradable: automatic
Section: 02.09 Why Do We Have Seasons?

38. Which of the following letters represents when the sun is directly overhead at the Tropic of Capricorn?



- A. A
- B. B
- C. C
- D. D

Bloom's: 3. Apply
Bloom's: 4. Analyze
Gradable: automatic
Section: 02.09 Why Do We Have Seasons?

39. On June 21st which location will be receiving 24 hrs of daylight?
- A. Antarctic Circle
 - B. Tropic of Cancer
 - C. Tropic of Capricorn
 - D. Arctic Circle**

Bloom's: 1. Remember

Bloom's: 2. Understand

Bloom's: 3. Apply

Bloom's: 4. Analyze

Gradable: automatic

Section: 02.09 Why Do We Have Seasons?

40. During the June solstice, the circle of illumination completely shades out.
- A. points south of the Antarctic Circle but completely illuminates points north of the Arctic Circle.**
 - B. points north of the Arctic Circle but completely illuminates points south of the Antarctic Circle.
 - C. points south of the Arctic Circle but completely illuminates points north of the Antarctic Circle.
 - D. points north of the Antarctic Circle but completely illuminates points south of the Arctic Circle.

Bloom's: 1. Remember

Bloom's: 2. Understand

Gradable: automatic

Section: 02.10 What Controls When and Where the Sun Rises and Sets?

41. On equinox.
- A. points north of the Arctic Circle receive 24 hrs of daylight
 - B. tilt is neither inclined toward or away from the sun**
 - C. points south of the Antarctic receive 24 hrs of daylight
 - D. points north of the Arctic Circle and Antarctic Circle receive 24 hrs of darkness

Bloom's: 1. Remember

Bloom's: 2. Understand

Bloom's: 3. Apply

Bloom's: 4. Analyze

Gradable: automatic

Section: 02.10 What Controls When and Where the Sun Rises and Sets?

42. During December solstice the
- A. entire area poleward of the Antarctic Circle remains out of sunlight.
 - B. entire area poleward of the Tropic of Capricorn remains out of sunlight.
 - C. entire area poleward of the Arctic Circle remains out of sunlight.
 - D. entire area poleward of the Tropic of Cancer remains out of sunlight.

Bloom's: 3. Apply

Bloom's: 4. Analyze

Gradable: automatic

Section: 02.10 What Controls When and Where the Sun Rises and Sets?

43. On what day does the sun have its lowest zenith angle and sets/rises farthest north?
- A. winter solstice
 - B. spring equinox
 - C. fall equinox
 - D. summer equinox

Bloom's: 1. Remember

Bloom's: 2. Understand

Gradable: automatic

Section: 02.10 What Controls When and Where the Sun Rises and Sets?

44. The most common component of the atmosphere is
- A. nitrogen.
 - B. carbon dioxide.
 - C. particulates.
 - D. aerosols.

Bloom's: 1. Remember

Bloom's: 2. Understand

Bloom's: 3. Apply

Bloom's: 4. Analyze

Gradable: automatic

Section: 02.11 How Does Insolation Interact with the Atmosphere?

45. Which of the following processes is primarily responsible for the sky's blue color?

- A. absorption
- B. scattering**
- C. reflection
- D. filtering

Bloom's: 1. Remember

Bloom's: 2. Understand

Bloom's: 3. Apply

Bloom's: 4. Analyze

Gradable: automatic

Section: 02.11 How Does Insolation Interact with the Atmosphere?

46. Which 2 layers of the atmosphere experience temperature inversion?

- A. troposphere and stratosphere
- B. stratosphere and mesosphere
- C. thermosphere and stratosphere**
- D. thermosphere and mesosphere

Bloom's: 1. Remember

Bloom's: 2. Understand

Gradable: automatic

Section: 02.11 How Does Insolation Interact with the Atmosphere?

47. The _____ experiences a temperature _____ primarily due to the absorption of _____.

- A. troposphere; decrease; ultraviolet rays
- B. ozone; increase; gamma rays and x rays
- C. stratosphere; decrease; ultraviolet rays
- D. thermosphere; increase; gamma rays and x rays**

Bloom's: 1. Remember

Bloom's: 2. Understand

Gradable: automatic

Section: 02.11 How Does Insolation Interact with the Atmosphere?

48. Ozone consists of _____ molecules of oxygen, is found primarily in the _____ and protects us from _____.

- A. 3; stratosphere; ultraviolet rays
- B. 2; troposphere; cosmic rays
- C. 2; stratosphere; x rays and gamma rays
- D. 2; troposphere; meteors

Bloom's: 1. Remember

Bloom's: 2. Understand

Bloom's: 3. Apply

Bloom's: 4. Analyze

Gradable: automatic

Section: 02.12 What Is Ozone and Why Is It So Important?

49. Ozone can be created by all of the following processes EXCEPT

- A. sunlight acting on hydrocarbons.
- B. scattering by UVB and UVC radiation.
- C. lightning during thunderstorms.
- D. UV-C radiation in stratosphere.

Bloom's: 1. Remember

Bloom's: 2. Understand

Bloom's: 3. Apply

Bloom's: 4. Analyze

Gradable: automatic

Section: 02.12 What Is Ozone and Why Is It So Important?

50. Ozone.

- A. is formed mainly in the troposphere where it diffuses to the stratosphere.
- B. is only formed through natural processes.
- C. is destroyed by halogens in chlorofluorocarbons.
- D. is only destroyed through natural processes.

Bloom's: 1. Remember

Bloom's: 2. Understand

Gradable: automatic

Section: 02.12 What Is Ozone and Why Is It So Important?

51. Ozone thinning is.
- A. greatest in the Northern Hemisphere in October.
 - B. greatest in the Southern Hemisphere in April.
 - C. evenly distributed for most of the year.
 - D.** more pronounced in Antarctica than the Arctic.

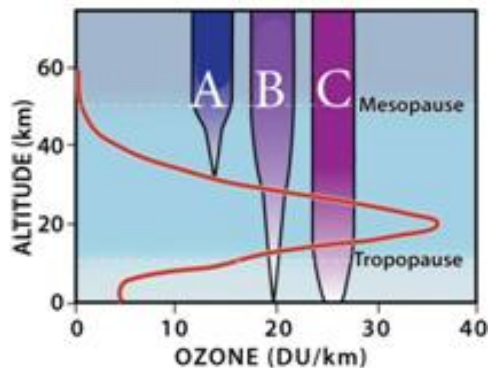
Bloom's: 1. Remember

Bloom's: 2. Understand

Gradable: automatic

Section: 02.12 What Is Ozone and Why Is It So Important?

52. The atmosphere is mainly transparent to this form of ultraviolet radiation?



- A.** A - UV-a
- B. B - UV-b
- C. C - UV-c
- D. The atmosphere is equally transparent to UV-a, UV-b, and UV-c radiation.

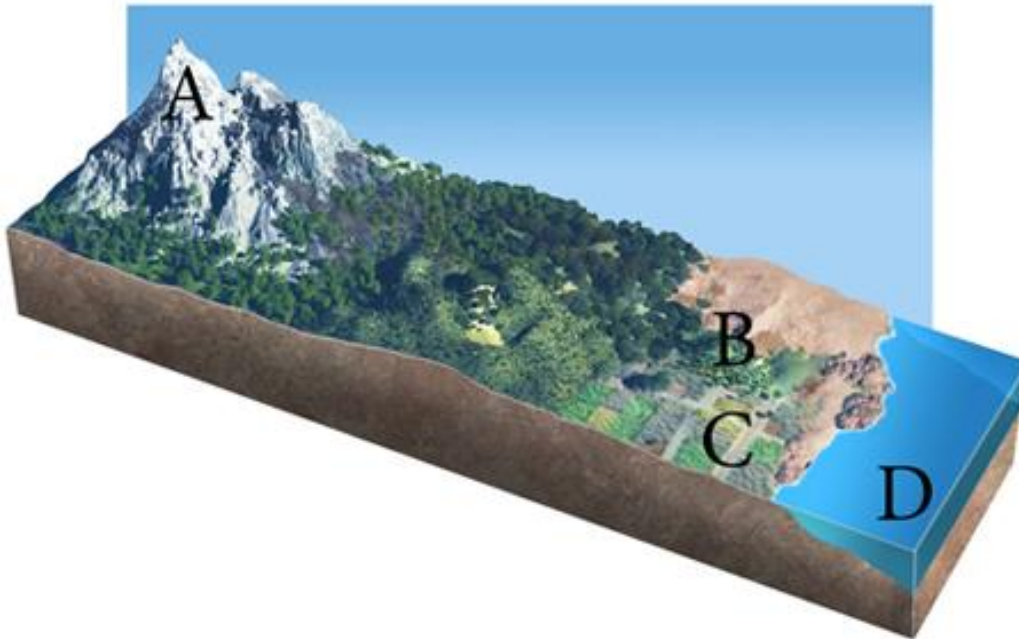
Bloom's: 3. Apply

Bloom's: 4. Analyze

Gradable: automatic

Section: 02.13 How Much Insolation Reaches the Surface?

53. Which of the following surfaces has the lowest albedo?



- A. A – fresh snow
- B. B – forests
- C. C – orchards
- D.** D – water with a large zenith

Bloom's: 3. Apply

Bloom's: 4. Analyze

Gradable: automatic

Section: 02.13 How Much Insolation Reaches the Surface?

54. Approximately percentage of insolation arriving at the top of the atmosphere is eventually absorbed by the ground?

- A. 20%
- B. 40%
- C. 50%**
- D. 70%

Bloom's: 1. Remember

Bloom's: 2. Understand

Gradable: automatic

Section: 02.13 How Much Insolation Reaches the Surface?

55. Which of the following correctly tallies the earth's shortwave-radiation balance?

- A. planetary albedo – 4%, atmospheric absorption – 31%, surface absorption – 65%
- B. planetary albedo – 10 %, atmospheric absorption – 20%, surface absorption – 70%
- C. planetary albedo – 31%, atmospheric absorption – 20%, surface absorption – 49%**
- D. planetary albedo – 70%, atmospheric absorption – 20%, surface absorption – 10%

Bloom's: 1. Remember

Bloom's: 2. Understand

Gradable: automatic

Section: 02.13 How Much Insolation Reaches the Surface?

56. All of the following is true regarding shortwave radiation that reaches the earth's surface EXCEPT.

- A. the earth's atmosphere can be heated by latent heat released through condensation, freezing, and deposition.
- B. heating of the atmosphere by insolation is more effective than heating of the atmosphere by land and water.**
- C. some shortwave radiation is converted absorbed by ozone molecules in the stratosphere and converted to sensible heat.
- D. shortwave radiation is absorbed by the surface and then radiated as longwave radiation where it can later be directed downward by counterradiation.

Bloom's: 1. Remember

Bloom's: 2. Understand

Gradable: automatic

Section: 02.14 What Happens to Insolation that Reaches the Surface?

57. Which ranges for incoming light and UV radiation would be absorbed and scattered the most?

- A. 0.2-0.3 microns
- B. 0.3-0.4 microns
- C. 0.4-0.5 microns
- D. 0.5-0.7 microns

Bloom's: 1. Remember

Bloom's: 2. Understand

Gradable: automatic

Section: 02.14 What Happens to Insolation that Reaches the Surface?

58. Most energy entering the earth's atmosphere is between ____ and ____ microns while most of the thermal infrared energy emitted from the earth is between ____ and ____ microns

- A. 20 and 40; 40 and 60
- B. 8 and 13; 20 and 40
- C. 0.1 and 0.4; 8 and 13
- D. 0.4 and 0.7; 8 and 20

Bloom's: 1. Remember

Bloom's: 2. Understand

Gradable: automatic

Section: 02.14 What Happens to Insolation that Reaches the Surface?

59. The most important greenhouse gas for retaining a variety of outgoing longwave radiation is

- A. CH₄.
- B. N₂O.
- C. H₂O.
- D. CO₂.

Bloom's: 3. Apply

Bloom's: 4. Analyze

Gradable: automatic

Section: 02.14 What Happens to Insolation that Reaches the Surface?

60. In regard to the shortwave energy entering the earth's atmosphere, most is.
- A. used to heat either the atmosphere or the ground surface.
 - B. lost into space by scattering and reflection.
 - C. used for sensible heat flux.
 - D. used for latent heat flux.

Bloom's: 1. Remember

Bloom's: 2. Understand

Gradable: automatic

Section: 02.15 How Does Earth Maintain an Energy Balance?

61. All of the following is true regarding the earth's radiation balance EXCEPT.
- A. the sun heats the earth's surface more than it does the atmosphere.
 - B. sensible heat flux is the predominant process for the loss of outgoing longwave radiation.
 - C. almost half the energy received by the earth's surface is returned to the atmosphere through latent heat flux.
 - D. sensible and latent heat flux together carry most of the energy stored at the surface into the atmosphere.

Bloom's: 1. Remember

Bloom's: 2. Understand

Gradable: automatic

Section: 02.15 How Does Earth Maintain an Energy Balance?

62. The earth's radiation balance involves.
- A. conduction and convection emitting energy directly into space.
 - B. most energy emitted directly into space with no interaction with the atmosphere.
 - C. most energy leaving the earth in the form of longwave radiation.
 - D. energy being radiated only upward into space.

Bloom's: 1. Remember

Bloom's: 2. Understand

Gradable: automatic

Section: 02.15 How Does Earth Maintain an Energy Balance?

Chapter 02 - Energy and Matter in the Atmosphere

63. Without greenhouse gases, earth's temperature would be

- A. 68°C.
- B. 15°C.
- C. 0°C.
- D.** -18°C.

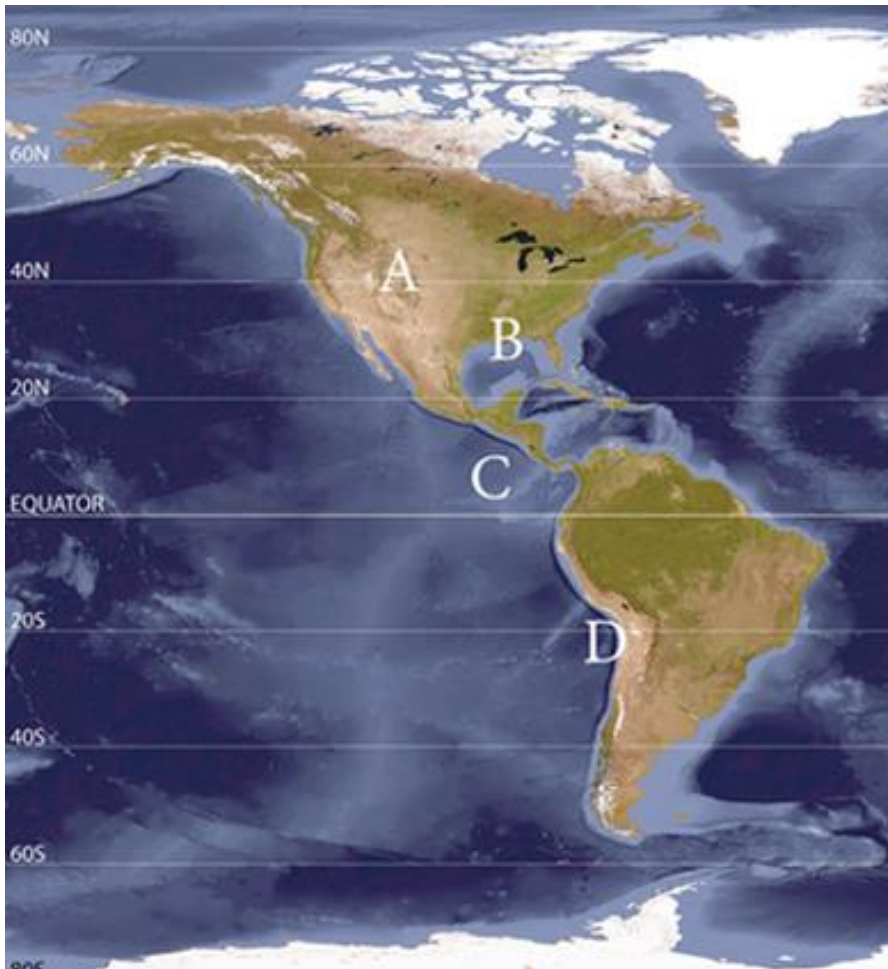
Bloom's: 1. Remember

Bloom's: 2. Understand

Gradable: automatic

Section: 02.15 How Does Earth Maintain an Energy Balance?

64. Where do the highest amounts of insolation reach the surface based on more absorption, and less scattering?



- A. A
- B. B
- C. C
- D.** D

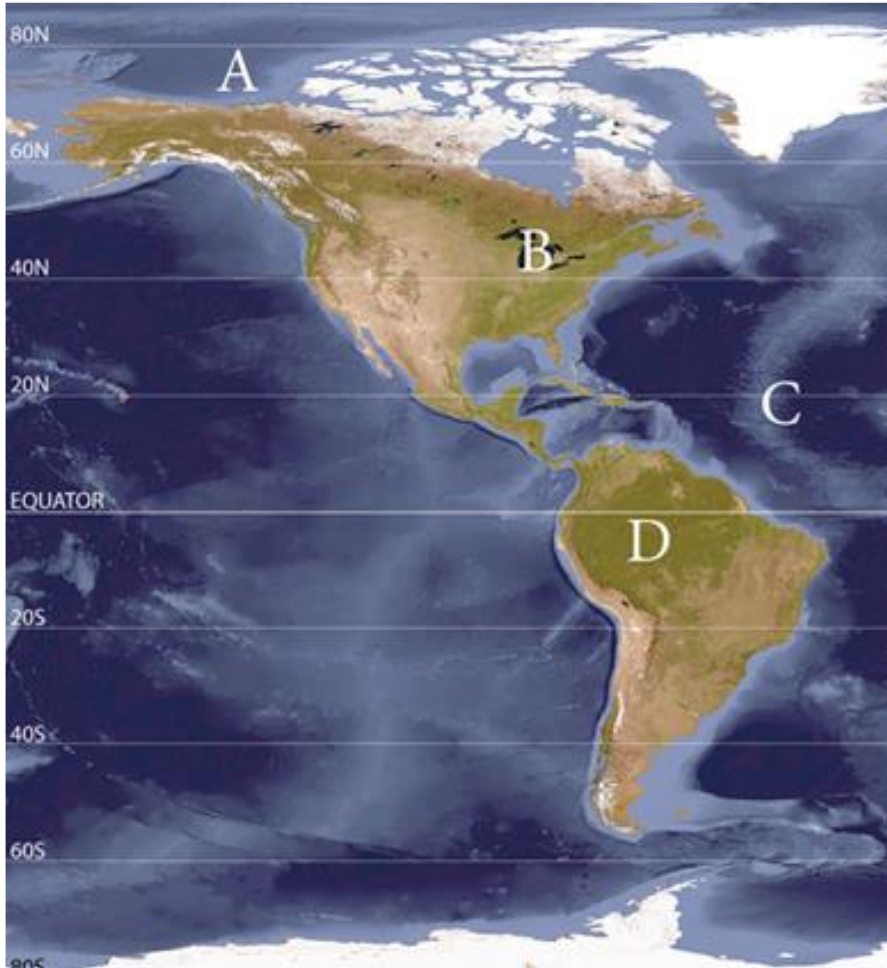
Bloom's: 3. Apply

Bloom's: 4. Analyze

Gradable: automatic

Section: 02.16 How Do Insolation and Outgoing Radiation Vary Spatially?

65. Where is the least and greatest amount of outgoing longwave radiation (OLR) located?



- A. A & B
- B.** A & C
- C. A & D
- D. C & D

Bloom's: 3. Apply

Bloom's: 4. Analyze

Gradable: automatic

Section: 02.16 How Do Insolation and Outgoing Radiation Vary Spatially?

66. All of the following is true in regard to the earth's radiation balance EXCEPT.
- A. at around 35°, incoming insolation is roughly balanced with outgoing longwave radiation.
 - B. poleward of 35° regions emit more outgoing longwave radiation than they receive as insolation.
 - C. outgoing longwave radiation increases poleward in regular increments, peaking at the poles.
 - D. equator, tropics, and subtropics receive more insolation than what they emit as outgoing longwave radiation.

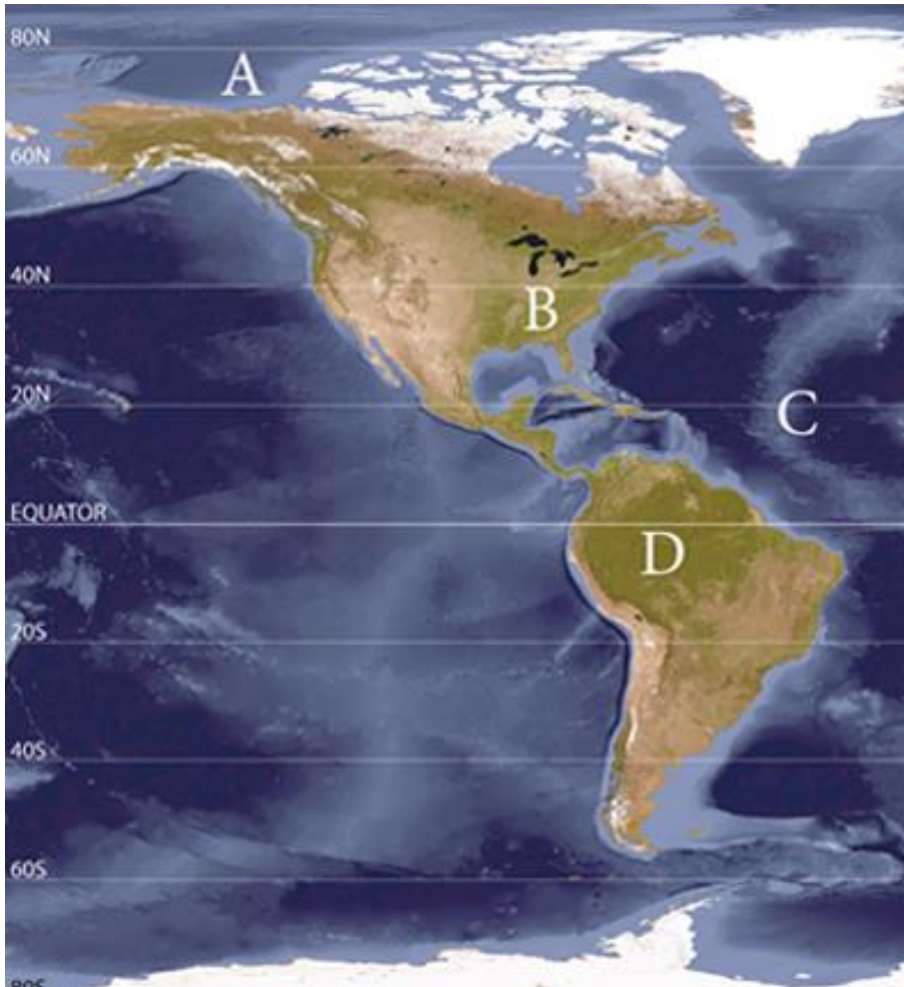
Bloom's: 1. Remember

Bloom's: 2. Understand

Gradable: automatic

Section: 02.16 How Do Insolation and Outgoing Radiation Vary Spatially?

67. Which of the following locations would experience a slight radiative energy deficit?



- A. A
- B. B**
- C. C
- D. D

Bloom's: 3. Apply

Bloom's: 4. Analyze

Gradable: automatic

Section: 02.16 How Do Insolation and Outgoing Radiation Vary Spatially?

68. Land heats and cools more rapidly than the ocean because of its
- A. lower specific heat when compared to the ocean.
 - B. ability for land to retain heat better than the ocean.
 - C. strong mixing through soil horizons on land.
 - D. great potential for latent heat on land through evaporation.

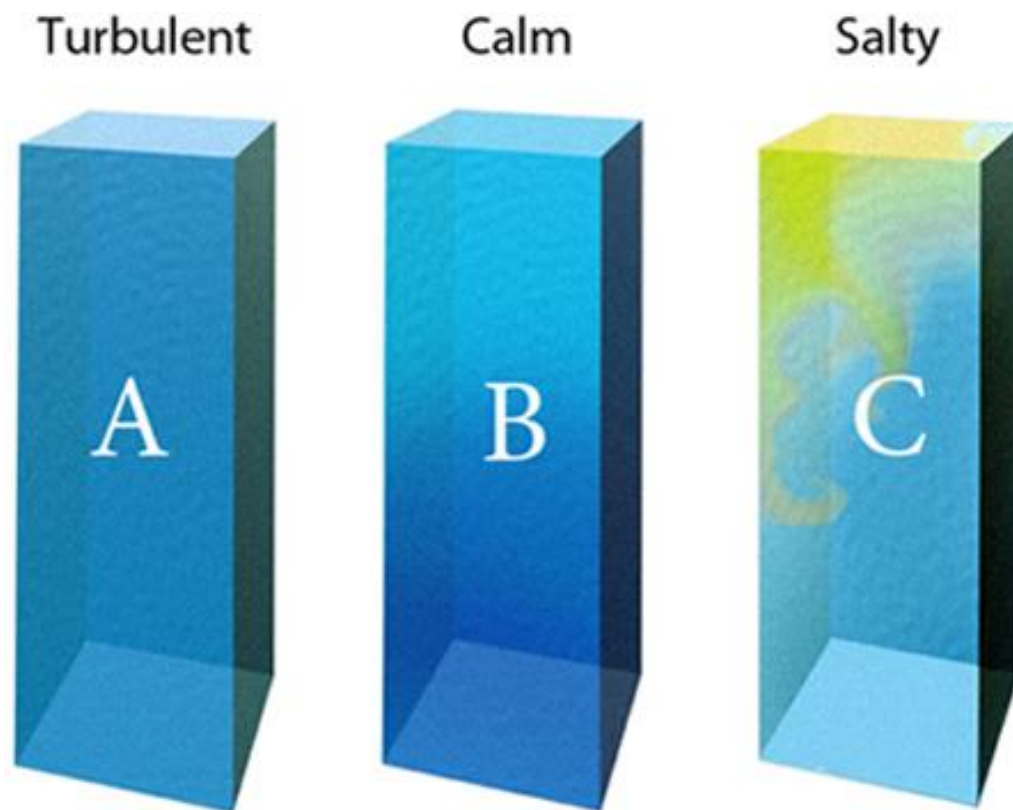
Bloom's: 1. Remember

Bloom's: 2. Understand

Gradable: automatic

Section: 02.17 Why Do Temperatures Vary Between Oceans and Continents?

69. Which of the water columns would experience the greatest temperature differences with depth?



- A. A
- B.** B
- C. C

Bloom's: 3. Apply

Bloom's: 4. Analyze

Gradable: automatic

Section: 02.17 Why Do Temperatures Vary Between Oceans and Continents?

70. Oceans heat and cool more slowly than land because of
- A. oceans' lack of transparency dampen temperature changes.
 - B. great amounts of latent heat available to directly warm ocean water.
 - C.** oceans' high specific heat dampen temperature changes.
 - D. lack of mixing through the water column.

Bloom's: 1. Remember

Bloom's: 2. Understand

Gradable: automatic

Section: 02.17 Why Do Temperatures Vary Between Oceans and Continents?

71. Land heats and cools more rapidly than oceans because of
- A. land's great transparency encourages temperature changes.
 - B. abundance of latent heat available to directly warm land.
 - C. land's high specific heat encourages temperature changes.
 - D.** lack of mixing in soil or rock layers.

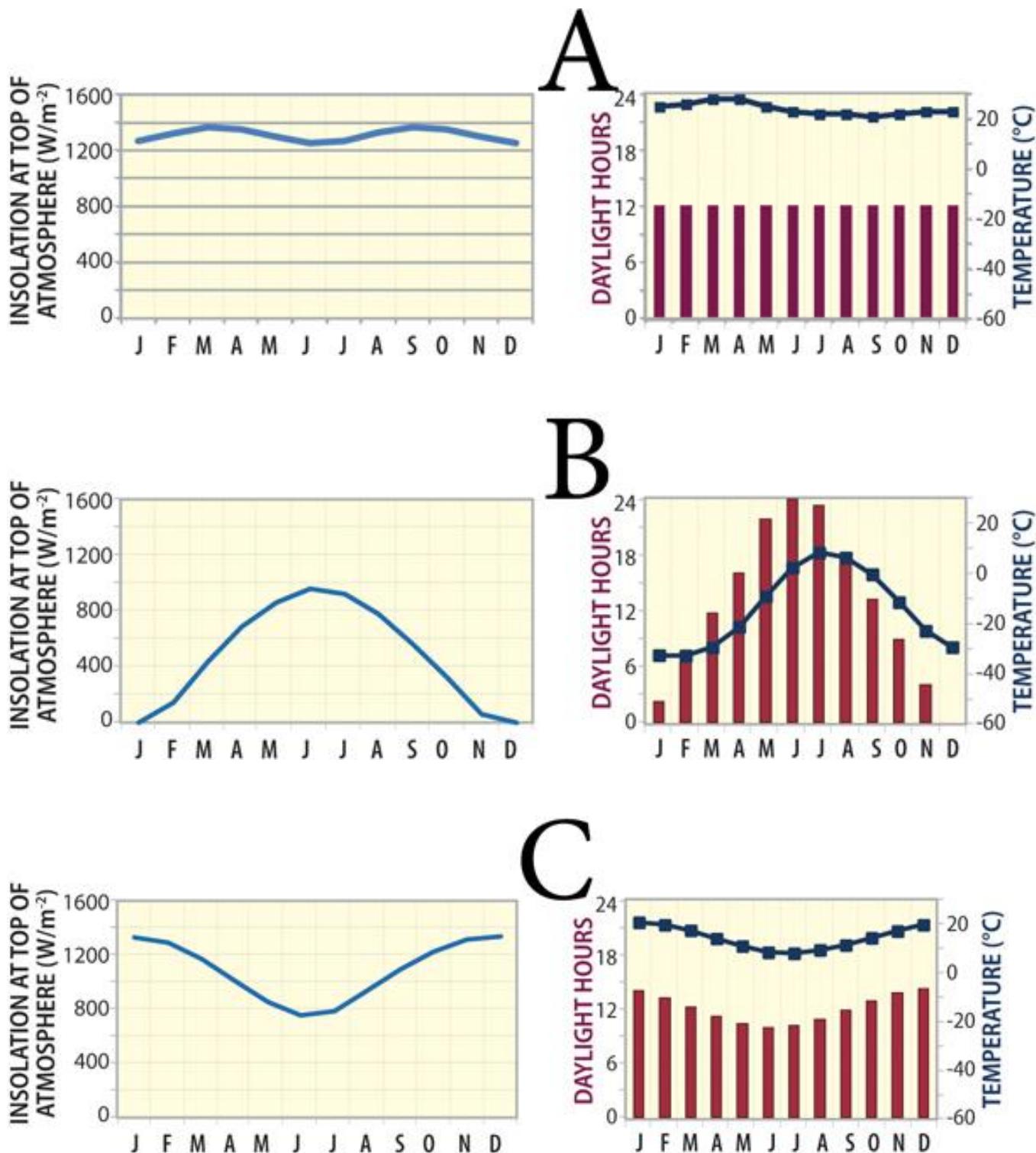
Bloom's: 3. Apply

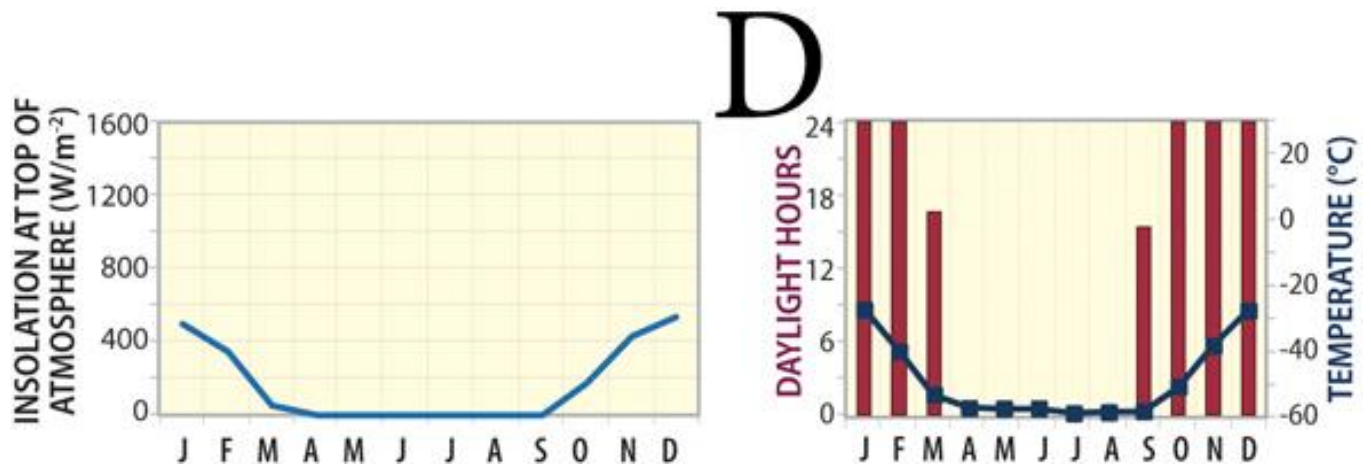
Bloom's: 4. Analyze

Gradable: automatic

Section: 02.17 Why Do Temperatures Vary Between Oceans and Continents?

Base on the following climographs and insolation graphs. Letters represent a location where the climograph and insolation graph were recorded





72. Which location is found at the highest latitude?

- A. A
- B. B
- C. C
- D. D

Bloom's: 3. Apply

Bloom's: 4. Analyze

Gradable: automatic

Section: 02.18 CONNECTIONS: How Are Variations in Insolation Expressed between the North and South Poles?

73. Which location is found at the lowest latitude?

- A. A
- B. B
- C. C
- D. D

Bloom's: 3. Apply

Bloom's: 4. Analyze

Gradable: automatic

Section: 02.18 CONNECTIONS: How Are Variations in Insolation Expressed between the North and South Poles?

Chapter 02 - Energy and Matter in the Atmosphere

74. Which location is found in the mid-latitudes?

- A. A
- B. B
- C.** C
- D. D

Bloom's: 3. Apply

Bloom's: 4. Analyze

Gradable: automatic

Section: 02.18 CONNECTIONS: How Are Variations in Insolation Expressed between the North and South Poles?

75. Which location has the longest period of continuous darkness?

- A. A
- B. B
- C. C
- D.** D

Bloom's: 3. Apply

Bloom's: 4. Analyze

Gradable: automatic

Section: 02.18 CONNECTIONS: How Are Variations in Insolation Expressed between the North and South Poles?