

Geosystems: An Introduction to Physical Geography, 8e (Christopherson)

Chapter 2 Solar Energy to Earth and the Seasons

Multiple Choice Questions

- 1) Our planet and our lives are powered by
- A) energy derived from inside Earth.
 - B) radiant energy from the Sun.
 - C) utilities and oil companies.
 - D) shorter wavelengths of gamma rays, X-rays, and ultraviolet.

Answer: B

Diff: 2

Chapter/section: 2.1 The Solar System, Sun, and Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

- 2) Which of the following is true?
- A) The Sun is the largest star in the Milky Way Galaxy.
 - B) The Milky Way is part of our Solar System.
 - C) The Sun produces energy through fusion processes.
 - D) The Sun is also a planet.

Answer: C

Diff: 1

Chapter/section: 2.1 The Solar System, Sun, and Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

- 3) Which of the following is false?
- A) The planets orbit the Sun, and the Sun and Solar System are part of the Milky Way Galaxy.
 - B) The Sun produces energy through fusion.
 - C) The Sun is by far the largest star in the Milky Way Galaxy.
 - D) The Sun is average in color, temperature, and size when compared to other stars.

Answer: C

Diff: 2

Chapter/section: 2.1 The Solar System, Sun, and Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

- 4) Which of the following is true about the Milky Way galaxy in which we live?
- A) It is a spiral-shaped galaxy.
 - B) It is one of millions of galaxies in the universe.
 - C) It contains approximately 400 billion stars.
 - D) All of these answer choices are correct.

Answer: D

Diff: 2

Chapter/section: 2.1 The Solar System, Sun, and Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

- 5) Which of the following is not true of galaxies?
- A) They are made of billions of stars.
 - B) Their size is measured in tens of thousands of light years.
 - C) A typical galaxy, such as the Milky Way, is about 5 billion miles in diameter.
 - D) Great clouds of gas and dust known as nebula occur within galaxies.

Answer: C

Diff: 2

Chapter/section: 2.1 The Solar System, Sun, and Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

- 6) The planetesimal hypothesis pertains to the formation of the
- A) universe.
 - B) galaxy.
 - C) planets.
 - D) ocean basins.

Answer: C

Diff: 1

Chapter/section: 2.1 The Solar System, Sun, and Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

- 7) The planets in the solar system are believed to have formed as a result of a process known as _____ which is caused by _____.

- A) acceleration; centrifugal force
- B) fusion; gravity
- C) fission; gravity
- D) accretion; gravity
- E) accretion; centrifugal

Answer: D

Diff: 3

Chapter/section: 2.1 The Solar System, Sun, and Earth

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

- 8) The flattened structure of the Milky Way is revealed by
- A) the constellations of the Zodiac.
 - B) a narrow band of hazy light that stretches across the night sky.
 - C) the alignment of the planets in the solar system.
 - D) the plane of the ecliptic.

Answer: B

Diff: 2

Chapter/section: 2.1 The Solar System, Sun, and Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

9) Earth and the Sun formed specifically from

- A) the galaxy.
- B) unknown origins.
- C) a nebula of dust and gases.
- D) other planets.

Answer: C

Diff: 2

Chapter/section: 2.1 The Solar System, Sun, and Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

10) The basic idea behind the planetesimal hypothesis is that

- A) planets form as a direct result of the nuclear fusion of nebular gases and planetesimals.
- B) planets form from the remains of super-giant planetesimals that undergo nuclear fission and blow apart, thereby creating smaller objects than the planets.
- C) early in the solar system's history, a star passed near to the Sun and pulled off gases that eventually condensed to form planets.
- D) matter in a nebula experiences mutual gravitational attraction, and this results in the gradual accretion of larger and larger bodies than planetesimals.

Answer: D

Diff: 3

Chapter/section: 2.1 The Solar System, Sun, and Earth

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

11) Which of the following is not true of stars?

- A) They form in great clouds of gas and dust known as nebula.
- B) Very few violent physical phenomena occur in stars.
- C) New atoms are created inside stars.
- D) Nuclear fusion occurs inside stars.

Answer: B

Diff: 3

Chapter/section: 2.1 The Solar System, Sun, and Earth

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

12) Light travels at a speed of approximately

- A) 80,500 kilometers per hour (50,000 mph).
- B) 300,000 kilometers per hour (186,336 mph).
- C) 300,000 kilometers per second (186,333 miles per second).
- D) 1,000,000,000 kilometers per second (621,118,012 miles per second).

Answer: C

Diff: 1

Chapter/section: 2.1 The Solar System, Sun, and Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

13) The plane of Earth's orbit about the Sun is called

- A) perihelion.
- B) aphelion.
- C) the plane of the ecliptic.
- D) a great circle.

Answer: C

Diff: 1

Chapter/section: 2.1 The Solar System, Sun, and Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

14) Which of the following accurately describes Earth's distance from the Sun?

- A) The Earth-Sun distance averages 150 million kilometers (93 million miles).
- B) It takes light an average of 8 minutes and 20 seconds to travel from the Sun to Earth.
- C) Earth is closer to the Sun in January (perihelion) and farther away in July (aphelion).
- D) All of these are correct.

Answer: D

Diff: 2

Chapter/section: 2.1 The Solar System, Sun, and Earth

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

15) Which of the following is true?

- A) It takes light about 100,000 years to cross our galaxy.
- B) If you could see the most distant parts of our universe, you would be looking at least ten billion years back in time.
- C) Because of the distances to the stars, it is impossible to see stars "in the present." Each is seen at a different point in time in the past.
- D) All of the above are true.
- E) None of the above are true.

Answer: D

Diff: 3

Chapter/section: 2.1 The Solar System, Sun, and Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

16) Which of the following statements is incorrect?

- A) A star and the planets that orbit it make up a solar system.
- B) It takes light about 100,000 years to cross our galaxy.
- C) A galaxy consists of billions of solar systems.
- D) There are more galaxies than stars in the universe.
- E) When we look at the stars in the night sky, we are looking back in time.

Answer: D

Diff: 3

Chapter/section: 2.1 The Solar System, Sun, and Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

17) Which of the following is true of Earth's orbit about the Sun?

- A) It is perfectly circular.
- B) It is elliptical.
- C) It takes approximately the same time for Earth to orbit the Sun as it does for the rest of the planets in the solar system to orbit the Sun.
- D) The orbit does not vary over millions of years.

Answer: B

Diff: 2

Chapter/section: 2.1 The Solar System, Sun, and Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

18) Earth's diameter is

- A) about 10,000 km (6,000 mi.).
- B) about 20,000 km (12,000 mi.).
- C) about 40,000 km (24,000 mi.).
- D) about 50,000 km (30,000 mi.).

Answer: C

Diff: 1

Chapter/section: 2.1 The Solar System, Sun, and Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

19) Of all the matter in the Solar System,

- A) the Sun captured over 99 percent.
- B) the bulk remains with all the planets and their satellites.
- C) most resides in the planet Jupiter, the largest planet in the solar system.
- D) most is scattered about the solar system as individual atoms and molecules.

Answer: A

Diff: 2

Chapter/section: 2.1 The Solar System, Sun, and Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

20) The Sun produces which of the following?

- A) mainly visible light and infrared energy
- B) mainly ultraviolet and X-rays
- C) only solar wind
- D) only radiant energy that is beneficial to life

Answer: A

Diff: 2

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

21) During the process by which energy is produced inside of stars,

- A) hydrogen is fused together to form helium.
- B) helium is fused together to form hydrogen.
- C) hydrogen splits to form helium.
- D) helium splits to form hydrogen.

Answer: A

Diff: 2

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

22) Stars give off electromagnetic radiation because

- A) matter is converted into energy.
- B) matter and energy totally annihilate one another in matter-antimatter reactions.
- C) energy is converted into matter.
- D) kinetic energy is converted into potential energy.

Answer: A

Diff: 2

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

23) The solar wind consists principally of

- A) neutral hydrogen and helium atoms.
- B) planetesimals.
- C) free neutrons.
- D) positively charged hydrogen nuclei and free electrons.

Answer: D

Diff: 2

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

24) Which of the following is not true of sunspots?

- A) They can be several times larger than Earth.
- B) They can produce flares and prominences.
- C) They are brighter than the rest of the Sun's surface.
- D) Their origin and dynamics are not fully understood.

Answer: C

Diff: 2

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

25) A magnetic disturbance on the Sun's surface is called

- A) the electromagnetic spectrum.
- B) the solar wind.
- C) a sunspot.
- D) a magnetospheric cyclone.

Answer: C

Diff: 2

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

26) On its way to Earth, the solar wind first encounters

- A) the atmosphere.
- B) the magnetosphere.
- C) Earth's surface.
- D) the lower atmosphere.

Answer: B

Diff: 2

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

27) Earth's magnetosphere is generated by

- A) nuclear fusion in Earth's core.
- B) nuclear fission in Earth's core.
- C) dynamo-like motions in Earth's interior.
- D) gravitational accretion.

Answer: C

Diff: 2

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

28) The auroras in the upper atmosphere are caused by

- A) the interaction of electromagnetic energy with atmospheric gases.
- B) AM radio broadcasts.
- C) various weather phenomena.
- D) the interaction of the solar wind and atmospheric gases.

Answer: D

Diff: 2

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

29) Which of the following is not a consequence of the solar wind?

- A) auroras
- B) disruption of radio communications
- C) overloads of electrical systems
- D) creation of Earth's magnetosphere

Answer: D

Diff: 2

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

30) Which of the following is true of the relationship between sunspots and certain cyclic weather effects?

- A) The connection between sunspot cycles and weather is well established.
- B) The correlation between the two phenomena is interesting, but a direct link remains unconfirmed.
- C) The existence of a sunspot cycle has yet to be confirmed.
- D) There is no record of sunspot activity prior to this century.

Answer: B

Diff: 2

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

31) Which of the following have been correlated with sunspot cycles?

- A) abnormally wet years
- B) droughts
- C) both abnormally wet years and droughts
- D) none of the above

Answer: C

Diff: 2

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

32) Experiments involving pieces of aluminum foil placed on the lunar surface by the Apollo XI astronauts proved that

- A) sunspots actually occur.
- B) sunspots exhibit a cycle.
- C) the solar wind consists of charged particles.
- D) nuclear fission occurs in the Sun's interior.

Answer: C

Diff: 2

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

- 33) Astronauts deployed a solar wind measuring experiment on the Moon because
- A) the lunar surface is protected by an atmosphere.
 - B) there is no electromagnetic energy arriving there.
 - C) the experiment would not work if deployed at Earth's surface due to protective aspects of Earth's atmosphere.
 - D) there is no solar wind arriving at the lunar surface.

Answer: C

Diff: 2

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

- 34) Radio waves have a _____ wavelength than visible light and are therefore _____ energetic.

- A) longer; less
- B) longer; more
- C) shorter; less
- D) shorter; more

Answer: A

Diff: 3

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

- 35) Which of the following is true of the Sun's electromagnetic spectrum?
- A) It consists exclusively of radiant energy made of gamma ray, X-ray, and ultraviolet wavelengths.
 - B) It consists exclusively of streams of charged particles.
 - C) It is capable of sustaining life on Earth even though some portions of the spectrum are actually harmful to living organisms.
 - D) It consists exclusively of visible light and infrared energy.

Answer: C

Diff: 2

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

- 36) The two main portions of the solar spectrum which enter the atmosphere are

- A) X-rays and visible light.
- B) visible and infrared energy.
- C) infrared and gamma rays.
- D) ultraviolet and visible light.

Answer: B

Diff: 2

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

37) The dominant wavelength of energy emitted by the Sun is

- A) shorter than that emitted by Earth.
- B) longer than that emitted by Earth.
- C) the same length as that emitted by Earth.

Answer: A

Diff: 1

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

38) Which of the following is not true of electromagnetic energy?

- A) It can travel through empty space.
- B) All wavelengths of electromagnetic energy travel at the same speed.
- C) The visible portion of the spectrum comprises only a small part of the total range of electromagnetic energy.
- D) The wavelength generated is directly proportional to the temperature of the emitter; i.e., as temperature of the emitting object increases, the wavelength also increases.
- E) The hotter an object, the more energy it emits at all wavelengths.

Answer: D

Diff: 3

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

39) The _____ emits mainly _____ which is also called _____.

- A) Sun ☞ longwave radiation ☞ infrared
- B) Sun ☞ shortwave radiation ☞ radio waves
- C) Earth ☞ longwave radiation ☞ infrared
- D) Earth ☞ shortwave radiation ☞ infrared
- E) Earth ☞ longwave radiation ☞ ultraviolet

Answer: C

Diff: 3

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

40) The dominant wavelength emitted by Earth is

- A) gamma radiation.
- B) X-ray radiation.
- C) visible light.
- D) infrared.

Answer: D

Diff: 2

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

41) Which of the following sequences is arranged in order from shorter wavelength to longer wavelength?

- A) infrared, visible, ultraviolet, X-rays
- B) X-rays, ultraviolet, visible, infrared
- C) gamma rays, microwaves, visible, X-rays
- D) radio waves, light, heat, X-rays

Answer: B

Diff: 2

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

42) The thermopause refers to

- A) Earth's magnetic field.
- B) the solar atmosphere that extends into space.
- C) the top of Earth's atmosphere.
- D) the Sun's surface.

Answer: C

Diff: 2

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

43) Intercepted solar radiation is called

- A) solar wind.
- B) thermosphere.
- C) solar constant.
- D) insolation.

Answer: D

Diff: 2

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

44) 1372 watts per square meter (2 calories per cm^2 per minute) refers to the

- A) solar constant.
- B) solar wind input to the atmosphere.
- C) average energy receipt at Earth's surface.
- D) amount of energy absorbed by the atmosphere.

Answer: A

Diff: 2

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

45) The solar constant is measured at

- A) the Sun's surface.
- B) the edge of the Sun's atmosphere.
- C) the tropopause.
- D) sea level.

Answer: C

Diff: 2

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

46) Which of the following is true relative to net radiation at the thermopause?

- A) Net radiation is evenly distributed with little change by latitude.
- B) Positive values in lower latitudes and negative values toward the poles.
- C) Negative values along the equator and positive values toward the poles.
- D) Net radiation is composed of shortwave energy only.

Answer: B

Diff: 3

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

47) The solar constant is the value obtained

- A) for Earth's average distance from the Sun.
- B) when Earth is closest to the Sun.
- C) when Earth is furthest from the Sun.
- D) none of the above

Answer: A

Diff: 2

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

48) A langley is

- A) an expression of the amount of energy received per unit area (cal/cm^2).
- B) another name for the visible light spectrum.
- C) solar wind input to the atmosphere.
- D) the average energy receipt at Earth's surface.

Answer: A

Diff: 2

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

49) The uneven distribution of insolation by latitude is primarily a result of

- A) variability in the Sun's output.
- B) the changing distance of Earth from the Sun.
- C) variation in the value of a watt.
- D) Earth's sphericity, which presents varied angles to parallel solar rays.

Answer: D

Diff: 2

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

50) High latitudes receive less energy than the equatorial regions because

- A) the orientation of Earth's surface relative to the Sun's rays diminishes the intensity of solar radiation at high latitudes.
- B) the Sun's rays must pass through more atmosphere at higher latitudes.
- C) the orientation of Earth's surface relative to the Sun's rays diminishes the intensity of solar radiation at high latitudes and because the Sun's rays must pass through more atmosphere at higher latitudes.
- D) none of the above; each latitude receives the same amount of energy at the surface.

Answer: C

Diff: 3

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

51) What is the name of the location on the surface of Earth that receives insolation when the Sun is directly overhead? (When this occurs, the Sun's rays are perpendicular to this surface.)

- A) solar point
- B) zenith
- C) subsolar point
- D) North Polar point

Answer: C

Diff: 1

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

52) Which of the following is correct relative to insolation at the thermopause?

- A) In June, the North Pole receives over 500 watts per m^2 per day.
- B) In June, the South Pole receives over 550 watts per m^2 per day.
- C) Throughout the year, the equatorial receipt varies between 100 and 400 watts per m^2 per day.
- D) It receives an average amount of insolation equal to 100 watts per m^2 per day.

Answer: A

Diff: 3

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

53) On the northern hemisphere's summer solstice, the north polar region receives _____ daily insolation than areas nearer the equator because _____.

- A) more; the Sun does not set
- B) more; the Sun is higher in the sky
- C) less; the Sun does not rise
- D) less; the Sun does not rise

Answer: A

Diff: 3

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

54) The term "net radiation" refers to

- A) the total amount of energy received by Earth.
- B) the total amount of energy radiated by Earth.
- C) the difference in amount of incoming and outgoing radiation.
- D) radiation emitted by satellite networks.

Answer: C

Diff: 2

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

55) The amount of energy received above the South Pole during the southern hemisphere's summer solstice is _____ than that received above the North Pole during the northern hemisphere's summer solstice because _____.

- A) more; the atmosphere is thinner above the South Pole
- B) more; Earth is closer to the Sun during the southern hemisphere's summer solstice
- C) less; the atmosphere is thicker above the South Pole
- D) less; Earth is further from the Sun during the southern hemisphere's summer solstice

Answer: B

Diff: 3

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 5/6 Synthesis/Evaluation

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

56) Changes in daylength and the Sun's altitude above the horizon over the course of the year

- A) produce Earth's rotation.
- B) are phenomena that occur only at the equator.
- C) are responsible for the seasons.
- D) are factors that follow an irregular, random cycle.

Answer: C

Diff: 2

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

- 57) At all times during the year, the circle of illumination
- A) divides Earth between northern and southern hemispheres.
 - B) divides Earth into eastern and western halves.
 - C) separates winter from summer.
 - D) divides Earth between equal halves of lightness and darkness.

Answer: D

Diff: 2

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

- 58) Which of the following is not true?

- A) The polar regions experience an annual net energy deficit.
- B) The equatorial regions experience an annual net energy surplus.
- C) Areas in the midlatitudes (36° - 55°) experience an annual net energy balance.
- D) None of the above are true.

Answer: C

Diff: 2

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

- 59) Which of the following results from radiation imbalances at different latitudes?

- A) hurricanes
- B) global winds
- C) ocean currents
- D) all of the above
- E) none of the above

Answer: D

Diff: 3

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

- 60) The Sun's altitude refers to

- A) the angular distance from the equator to the latitude at which direct overhead insolation is received.
- B) the angular height of the Sun above the horizon.
- C) the subsolar point.
- D) how far the Sun is from Earth.

Answer: B

Diff: 2

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

- 61) The Sun's declination refers to
- A) the angular distance from the equator to the latitude at which direct overhead insolation is received.
 - B) the angular height of the Sun above the horizon.
 - C) how far the Sun is from Earth.
 - D) its altitude, in thousands of feet, above the horizon.

Answer: A

Diff: 2

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

- 62) The sun's declination migrates through

- A) 23.5°.
- B) 30°.
- C) 47°.
- D) 66.5°.
- E) 133°.

Answer: C

Diff: 2

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

- 63) Which of the following is true of the number of hours of daylight?

- A) The number of hours of daylight includes the hours between dawn and twilight, not just the hours from sunrise to sunset.
- B) The number of hours of daylight varies depending on the latitude of the observer.
- C) The number of hours of daylight varies the most along the equator.
- D) The number of hours of daylight varies the least at higher latitudes.

Answer: B

Diff: 2

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

- 64) Which of the following is true regarding daylength?

- A) The equator experiences at least six-hours difference in daylength from winter to summer.
- B) Nowhere on Earth does daylength vary by as much as 24 hours.
- C) Daylength varies more at the equator than at higher latitudes.
- D) The people living at 40° N or S latitude experience about six-hours difference in daylength from winter to summer.

Answer: D

Diff: 2

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

65) Which of the following characterizes Earth's revolution?

- A) It takes approximately 24 hours.
- B) It is responsible for creating the circle of illumination, and hence, day/night relationships.
- C) It is clockwise when viewed from above the North Pole.
- D) It determines the timing of seasons and length of the year.

Answer: D

Diff: 2

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

66) Which of the following cannot be attributed to the effects of Earth's rotation?

- A) daylength
- B) deflection of the winds
- C) deflection of the ocean currents
- D) rise and fall of tides
- E) seasons

Answer: E

Diff: 2

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

67) Earth's rotation is described as

- A) east to west.
- B) north to south.
- C) west to east.
- D) clockwise when viewed from above the North Pole.

Answer: C

Diff: 2

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

68) Which of the following is true regarding Earth's axis?

- A) The amount of axial tilt fluctuates during the year and forms the basis for seasonal changes.
- B) The axis remains parallel to the plane of the ecliptic.
- C) Axial tilt is unrelated to the phenomenon of seasonal change.
- D) The axis is tilted 23.5° from a perpendicular to the plane of the ecliptic.

Answer: D

Diff: 2

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

69) Which of the following is not true regarding rotational velocities at different latitudes?

- A) At 90° latitude, the rotational velocity is 1452 kmph (902 mph).
- B) At 0° latitude, the rotational velocity is 1675 kmph (1040 mph).
- C) At 60° latitude, the rotational velocity is 838 kmph (521 mph).
- D) At 30° latitude, the rotational velocity is 1449 kmph (900 mph).

Answer: A

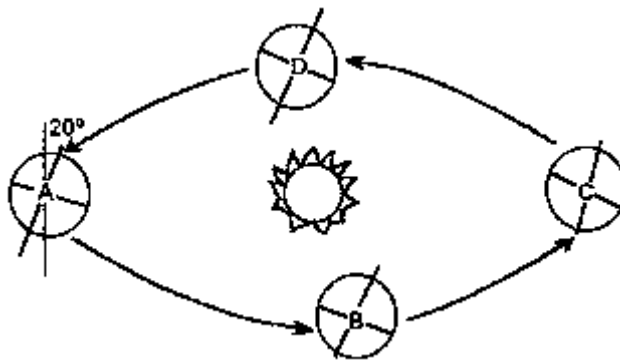
Diff: 2

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

To answer the following questions, refer to the figure below. Assume that it shows the orbit of a hypothetical planet in another part of the galaxy and that this planet has an axial tilt of 20° . (Note the direction of the axial tilt and the direction of the orbit.)



70) In Figure 2.76, what position corresponds to the winter solstice for observers in the northern hemisphere? (Assume north is toward the top of the page.)

- A) A
- B) B
- C) C
- D) D

Answer: C

Diff: 2

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

71) According to Figure 2.76, at what position does the Sun cross the planet's equator moving south, and what is the name for this position in the northern hemisphere?

- A) position B; Spring Equinox
- B) position B; Autumn Equinox
- C) position D; Spring Equinox
- D) position D; Autumn Equinox
- E) position A; Spring Solstice

Answer: B

Diff: 3

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

72) According to Figure 2.76, given the tilt of the axis (20°), the Arctic Circle would be located at

- A) 20° N.
- B) 20° S.
- C) 70° N.
- D) 70° S.

Answer: C

Diff: 2

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

73) According to Figure 2.76, given the tilt of the axis (20°), the Tropic of Capricorn would be located at

- A) 110° N.
- B) 20° N.
- C) 20° S.
- D) 70° N.
- E) 70° S.

Answer: C

Diff: 2

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

74) According to Figure 2.76, at what position would daylight last for 24 hours for observers located north of the Arctic Circle?

- A) A
- B) B
- C) C
- D) D

Answer: A

Diff: 2

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

75) According to Figure 2.76, at what two locations would daylight last for 12 hours for all locations on the planet?

- A) A and B
- B) C and D
- C) A and C
- D) B and D

Answer: D

Diff: 2

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

76) According to Figure 2.76, if the hypothetical planet requires 20 months to complete one orbit around the star, how many months after the Summer Solstice would the Sun cross the equator moving north?

- A) 5
- B) 10
- C) 15
- D) 20
- E) 9

Answer: C

Diff: 2

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

77) On Earth, the Sun passes directly overhead at 25° north latitude _____ times a year.

- A) 0
- B) 1
- C) 2
- D) 4

Answer: A

Diff: 2

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

78) While standing at the Tropic of Cancer, Emma's shadow points north at noon (Sun time). Based on this, which of the following can be definitely concluded?

- A) It must be the summer solstice.
- B) It must be the winter solstice.
- C) It must be one of the equinoxes.
- D) It must not be the summer solstice.
- E) It must not be the winter solstice.

Answer: D

Diff: 3

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 5/6 Synthesis/Evaluation

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

79) On June 21, the Sun never sets at Finn's location. Based on this, it can be concluded that Finn lives

- A) between the Tropic of Cancer and the Arctic Circle.
- B) between the Tropic of Capricorn and the Antarctic Circle.
- C) above the Arctic Circle.
- D) below the Antarctic Circle.

Answer: C

Diff: 3

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 5/6 Synthesis/Evaluation

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

- 80) Which of the following statements is true?
A) December 21 = vernal equinox.
B) September 22 = summer solstice in Australia.
C) March 21 = equal day and nights everywhere on Earth.
D) June 21 = equal day and nights everywhere on Earth.
E) December 21 = subsolar point at the Tropic of Cancer.

Answer: C

Diff: 3

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

- 81) During which time period would the number of daylight hours always be greater than, or equal to, the number of nighttime hours for observers in the northern hemisphere?

- A) From the summer solstice, to the autumn equinox, to the winter solstice.
B) From the autumn equinox, to the winter solstice, to the spring equinox.
C) From the spring equinox, to the summer solstice, to the autumn equinox.
D) From the winter solstice, to the spring equinox, to the summer solstice.

Answer: C

Diff: 3

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

- 82) The Tropic of Cancer refers to

- A) the parallel that occurs at 23.5° south latitude.
B) the location of the subsolar point on September 22.
C) the parallel that is the farthest northern location for the subsolar point during the year.
D) 0° latitude when the Sun crosses the equator.

Answer: C

Diff: 3

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

- 83) The equinox

- A) occurs four times during the year.
B) has 12 hours of day and 12 hours of night for all locations.
C) is the longest day of the year at any given place.
D) is when the subsolar point is at one of the tropics.

Answer: B

Diff: 2

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

- 84) The Tropic of Capricorn refers to
A) that parallel that is 23.5° south latitude.
B) the location of the subsolar point on September 22.
C) the parallel that is the farthest northern location for the subsolar point during the year.
D) that parallel that is 66.5° south latitude.

Answer: A

Diff: 2

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

- 85) The longest days of the year in the Southern Hemisphere are experienced during the Northern Hemisphere's

- A) Summer solstice.
- B) Spring equinox.
- C) Winter solstice.
- D) Autumn equinox.

Answer: C

Diff: 3

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

- 86) The longest days of the year in the Northern Hemisphere are experienced during the

- A) time of 24-hour days at the South Pole.
- B) vernal equinox.
- C) winter solstice.
- D) autumnal equinox.
- E) time that the Sun is directly overhead at the Tropic of Cancer.

Answer: E

Diff: 3

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

- 87) Which of the following relationships is incorrect?

- A) December solstice - subsolar point at 23.5° S latitude
- B) March equinox - subsolar point at 0° latitude
- C) June 21 - subsolar point at 23.5° N latitude
- D) June solstice - subsolar point at 23.5° N latitude
- E) September equinox - subsolar point at 23.5° S latitude

Answer: E

Diff: 3

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

88) According to the text, which of the following is true regarding the point of sunrise for a location in the northern hemisphere?

- A) It migrates from southeast to northeast from winter to summer.
- B) It remains fixed throughout the year; only the Sun's altitude changes.
- C) It moves to the south from winter to summer.
- D) It is along the western horizon in summer, and the eastern horizon in winter.

Answer: A

Diff: 3

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

89) Which of the following is true regarding dawn and twilight?

- A) Dawn and twilight last longest at the equator approximately 2.5 hours.
- B) The polar regions do not experience dawn and twilight.
- C) 60° north and south latitudes receive the most dawn and twilight.
- D) The duration of both increases with increasing latitude.

Answer: D

Diff: 2

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

90) On June 21st, the Sun's declination is at

- A) the equator.
- B) Rio de Janeiro, Brazil and Alice Springs, Australia.
- C) the Tropic of Capricorn.
- D) the Tropic of Cancer.

Answer: D

Diff: 2

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

True/False Questions

1) The Solar System, Sun, and Earth formed about 4.6 billion years ago.

Answer: TRUE

Diff: 1

Chapter/section: 2.1 The Solar System, Sun, and Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

2) Our galaxy contains over 400 billion stars.

Answer: TRUE

Diff: 1

Chapter/section: 2.1 The Solar System, Sun, and Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

3) The most distant galaxies yet observed are at least 10 billion light years away.

Answer: TRUE

Diff: 1

Chapter/section: 2.1 The Solar System, Sun, and Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

4) At the speed of light, Earth is an average of only 8 minutes and 20 seconds from the Sun.

Answer: TRUE

Diff: 1

Chapter/section: 2.1 The Solar System, Sun, and Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

5) If we can see galaxies 12 billion light years away, that means that the universe must be at least 12 billion years old because that is how long it took the light from these galaxies to reach us.

Answer: TRUE

Diff: 1

Chapter/section: 2.1 The Solar System, Sun, and Earth

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

6) Earth is at perihelion in early January when it is closest to the Sun.

Answer: TRUE

Diff: 1

Chapter/section: 2.1 The Solar System, Sun, and Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

7) We live on a continent on a small planet, that orbits about an average star, that is located near the trailing edge of a galaxy, that is in a local group of galaxies in the Universe.

Answer: TRUE

Diff: 1

Chapter/section: 2.1 The Solar System, Sun, and Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

8) Earth is farthest from the Sun at perihelion and closest at aphelion.

Answer: FALSE

Diff: 1

Chapter/section: 2.1 The Solar System, Sun, and Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

9) A plane intersecting all points of Earth's orbit is called the plane of the Sun.

Answer: FALSE

Diff: 1

Chapter/section: 2.1 The Solar System, Sun, and Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

10) The Sun and Earth formed from a collapsing cloud of dust and gas.

Answer: TRUE

Diff: 1

Chapter/section: 2.1 The Solar System, Sun, and Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

11) The planetesimal hypothesis has no observational evidence to support it.

Answer: FALSE

Diff: 1

Chapter/section: 2.1 The Solar System, Sun, and Earth

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

12) The distance from the Sun to Earth varies by about 17 million km (11 million mi) over the course of a year.

Answer: FALSE

Diff: 1

Chapter/section: 2.1 The Solar System, Sun, and Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

13) Energy is liberated within the Sun's interior through a process known as nuclear fusion.

Answer: TRUE

Diff: 1

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

14) Sunspots are associated with magnetic storms.

Answer: TRUE

Diff: 1

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

15) The Sun emits streams of charged particles that are collectively referred to as the electromagnetic spectrum.

Answer: FALSE

Diff: 1

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

16) The electromagnetic spectrum of radiant energy travels in waves at the speed of light in all directions from the Sun.

Answer: TRUE

Diff: 1

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

17) Large magnetic disturbances on the Sun's surface are called sunspots and produce increased amounts of solar wind.

Answer: TRUE

Diff: 1

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

18) Sunspots vary in a cycle from 7 to 17 years, averaging 11 years from a minimum to maximum peak.

Answer: TRUE

Diff: 1

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

19) Auroras in the upper atmosphere are stimulated by streams of charged (ionized) particles emitted by the Sun.

Answer: TRUE

Diff: 1

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

20) The magnetosphere deflects the solar wind toward Earth's two poles.

Answer: TRUE

Diff: 1

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

21) There is no evidence for a correlation between sunspot activity and weather conditions on Earth.

Answer: FALSE

Diff: 1

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

- 22) The correct order for wavelengths of electromagnetic radiation, from shortest to longest is: X-rays, infrared, radio waves, visible light, and ultraviolet.
Answer: FALSE
Diff: 1
Chapter/section: 2.2 Solar Energy: From Sun to Earth
Bloom's Taxonomy: 1/2 Knowledge/Comprehension
Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.
- 23) The Sun produces more gamma rays than Earth.
Answer: TRUE
Diff: 1
Chapter/section: 2.2 Solar Energy: From Sun to Earth
Bloom's Taxonomy: 1/2 Knowledge/Comprehension
Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.
- 24) Insolation occurs primarily in the ultraviolet portion of the spectrum.
Answer: FALSE
Diff: 1
Chapter/section: 2.2 Solar Energy: From Sun to Earth
Bloom's Taxonomy: 1/2 Knowledge/Comprehension
Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.
- 25) Intercepted solar energy is called insolation and is measured as the solar constant at the top of the atmosphere.
Answer: TRUE
Diff: 1
Chapter/section: 2.2 Solar Energy: From Sun to Earth
Bloom's Taxonomy: 1/2 Knowledge/Comprehension
Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.
- 26) The uneven distribution of insolation at the thermopause is caused by Earth's curvature, with only the subsolar point receiving sunlight from directly overhead.
Answer: TRUE
Diff: 2
Chapter/section: 2.3 The Seasons
Bloom's Taxonomy: 3/4 Application/Analysis
Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.
- 27) The amount of the solar energy received by a given location is not really constant; it varies depending upon the season and Earth's distance from the Sun.
Answer: TRUE
Diff: 1
Chapter/section: 2.3 The Seasons
Bloom's Taxonomy: 1/2 Knowledge/Comprehension
Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

28) All points on Earth's surface experience the subsolar point at some moment during the year.

Answer: FALSE

Diff: 1

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

29) The seasons are caused by the changing amounts of energy received at Earth as a result of Earth's elliptical orbit.

Answer: FALSE

Diff: 2

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

30) The 28-ton stones assembled at Stonehenge in England were evidently used by ancients to mark seasonal changes. In other words, Stonehenge is an ancient calendar.

Answer: TRUE

Diff: 1

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

31) The Sun's height in the sky above the horizon is termed its altitude.

Answer: TRUE

Diff: 1

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

32) Seasonality involves the variability of both daylength and the altitude of the Sun.

Answer: TRUE

Diff: 1

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

33) Rotation is Earth's motion on its axis; revolution is its motion about the Sun.

Answer: TRUE

Diff: 1

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

34) Earth's axis is tilted 23.5° from a perpendicular to the plane of the ecliptic.

Answer: TRUE

Diff: 1

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

35) Earth's spherical shape is not a factor with regards to seasonality.

Answer: FALSE

Diff: 2

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

36) Earth rotates east to west, or clockwise, when viewed from above the North Pole.

Answer: FALSE

Diff: 1

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 3/4 Application/Analysis

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

37) The subsolar point is at the Tropic of Cancer on December 21.

Answer: FALSE

Diff: 1

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

38) All places on Earth receive the same period of day and night on March 21.

Answer: TRUE

Diff: 1

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

39) The Sun is directly overhead north of 23.5° north latitude twice a year.

Answer: FALSE

Diff: 1

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

40) The duration of dawn and twilight tends to increase with increasing latitude.

Answer: TRUE

Diff: 1

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

41) On the northern hemisphere's summer solstice, the north polar region receives more total daily energy than the equator.

Answer: TRUE

Diff: 1

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

42) The subsolar point migrates through 23.5° during the year.

Answer: FALSE

Diff: 1

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

43) Spring is coming 3 weeks later as a result of climate change.

Answer: FALSE

Diff: 1

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 1/2 Knowledge/Comprehension

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

Essay Questions

1) Briefly list and describe the main components of the planetesimal hypothesis.

Diff: 3

Chapter/section: 2.1 The Solar System, Sun, and Earth

Bloom's Taxonomy: 5/6 Synthesis/Evaluation

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

2) Why is the light year a useful unit of measurement for astronomical distances?

Diff: 3

Chapter/section: 2.1 The Solar System, Sun, and Earth

Bloom's Taxonomy: 5/6 Synthesis/Evaluation

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

3) Why does the Sun emit shorter wavelengths of radiation than Earth?

Diff: 3

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 5/6 Synthesis/Evaluation

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

4) First describe the process of fusion inside stars. Then define the terms "solar wind" and "sunspot."

Diff: 3

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 5/6 Synthesis/Evaluation

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

5) What evidence points to a correlation between solar-wind intensity and Earth's weather?

Diff: 3

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 5/6 Synthesis/Evaluation

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

6) What wavelengths of energy emitted by the Sun are absorbed by Earth's atmosphere? What wavelengths of energy emitted by Earth are absorbed by the atmosphere?

Diff: 3

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 5/6 Synthesis/Evaluation

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

7) Define these terms: thermopause, insolation, solar constant, subsolar point.

Diff: 3

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 5/6 Synthesis/Evaluation

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

8) How does latitude tend to affect net radiation?

Diff: 3

Chapter/section: 2.2 Solar Energy: From Sun to Earth

Bloom's Taxonomy: 5/6 Synthesis/Evaluation

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

9) Why does Earth have seasons?

Diff: 3

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 5/6 Synthesis/Evaluation

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

10) For where you live, how do daylength and the Sun's altitude vary throughout the year?

Diff: 3

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 5/6 Synthesis/Evaluation

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

11) Why are seasonal changes less noticeable near the equator than at mid-latitudes?

Diff: 3

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 5/6 Synthesis/Evaluation

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.

12) Draw and label a diagram of the Earth-Sun relationship for the four seasons. Include the average distance from Earth to the Sun, the location of the subsolar point for each seasonal event, and the name and date for each of the solstices and equinoxes.

Diff: 3

Chapter/section: 2.3 The Seasons

Bloom's Taxonomy: 5/6 Synthesis/Evaluation

Geo Standard: 07. The physical processes that shape the patterns of Earth's surface.