

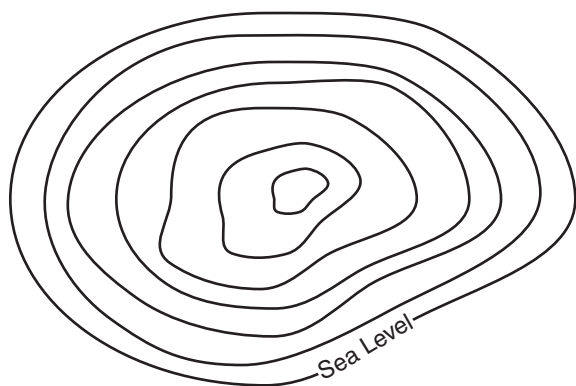
Earth Science

Released Test Questions

1 A day on Saturn takes about 10 Earth hours. Which fact would *best* explain this short day?

- A Saturn is less dense than Earth.
- B Saturn is much farther from the Sun than Earth.
- C Saturn rotates more rapidly than Earth.
- D Saturn's orbit has greater eccentricity than Earth's.

2



Contour Interval - 5 meters

The highest elevation on this topographic map can be no more than about

- A 25 meters.
- B 34 meters.
- C 45 meters.
- D 49 meters.

3 In an area where a river has cut deep into Earth, there are several layers of very different rock exposed. The oldest rock layer is *most* likely to be the layer that is

- A below the other layers.
- B the thickest layer.
- C the most rich in fossils.
- D igneous intrusive rock.

4 The existence of extraterrestrial life may never be proven, but this idea will become more scientifically acceptable over time if

- A no one disputes this idea in a scientific forum.
- B hypotheses are made related to the idea.
- C alternative hypotheses are proposed and confirmed.
- D increasing scientific evidence supports the idea.

5 Which of the following statements *best* describes how the planets of the solar system formed?

- A They are condensed rings of matter thrown off by the young Sun.
- B They are the remains of an exploded star once paired with the Sun.
- C The Sun captured them from smaller, older nearby stars.
- D They formed from a nebular cloud of dust and gas.

6 Evidence suggests that Earth is about 4.6 billion years old, even though no Earth rocks have been found that can be dated at more than 4 billion years old. This discrepancy is *most* likely caused by Earth's original crust being

- A difficult to date so precisely.
- B subject to extensive erosion.
- C blasted away during Earth's formation.
- D destroyed by solar radiation.

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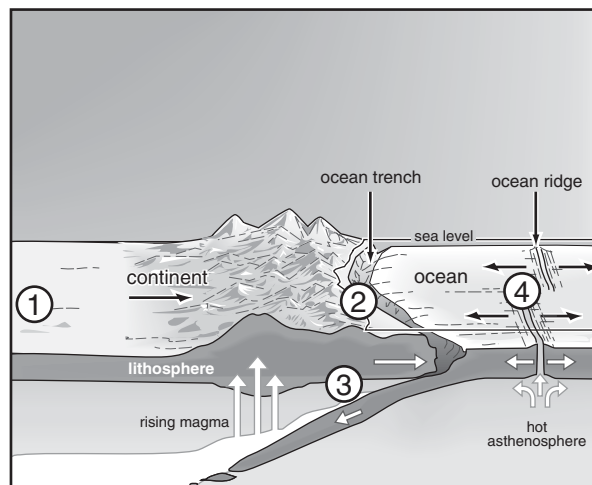
- 7** Which of the following is the *best* evidence that Earth's continents were once in vastly different positions than they are today?
- A Penguins are found only in the Southern Hemisphere.
 - B Fossils of tropical plants are found in Antarctica.
 - C Volcanoes encircle the Pacific Ocean.
 - D Major rivers form deltas from continental erosion.
- 8** Early telescopes showed stars as only points of light, while the planets appeared to be much larger, providing evidence that stars must
- A be more plentiful in our solar system than planets.
 - B travel in elliptical orbits like planets.
 - C be much farther from Earth than planets.
 - D reflect much more light than planets.
- 9** What is the source of energy for the Sun?
- A hydrogen fusion
 - B internal combustion
 - C nuclear fission of metals
 - D burning of solar gases
- 10** The surfaces of planet Mercury and our moon contain some very large craters that are *most* likely the result of
- A giant lava flows.
 - B asteroid impacts.
 - C nuclear explosions.
 - D large collapsed caves.
- 11** The Sun is an average yellow star in the Milky Way galaxy, which is described as
- A a dwarf galaxy.
 - B a spiral galaxy.
 - C an elliptical galaxy.
 - D an irregular galaxy.
- 12** As part of the modern theory of the origins of the elements, it is hypothesized that before the formation of the stars, most of the matter in the universe consisted of what atoms?
- A hydrogen and helium
 - B nitrogen and carbon
 - C silicon and lithium
 - D uranium and radium
- 13** Stars begin their life cycle in
- A a black hole.
 - B a nova.
 - C a nebula.
 - D a supernova.
- 14** Astronomers have discovered vast differences in stars through their observations. One theory used to explain these differences is that
- A the distances between stars are vast.
 - B stars are at different points in their life cycles.
 - C Earth's atmosphere distorts our view of the stars.
 - D there is too much light pollution on Earth to study stars.

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- 15** Which of the following provides evidence for plate tectonics?
- A sea-floor topography
 - B ocean currents
 - C Coriolis effect
 - D atmospheric temperatures
- 16** A rift valley is evidence of which kind of plate boundary?
- A convergent
 - B divergent
 - C transform
 - D uniform
- 17** The convergence of two continental plates would produce
- A island arcs.
 - B rift valleys.
 - C folded mountains.
 - D trenches.
- 18** It is generally true that igneous rocks
- A contain primarily evaporites.
 - B can be scratched with a penny.
 - C normally contain fossils.
 - D are composed of silicate minerals.
- 19** Earthquake vibrations are detected, measured, and recorded by instruments called
- A sonographs.
 - B seismographs.
 - C Richter scales.
 - D magnetometers.

20



At which location would earthquakes be *least* likely to occur?

- A 1
 - B 2
 - C 3
 - D 4
- 21** Which type of volcano would be the *least* explosive?
- A cinder cone
 - B stratovolcano
 - C shield volcano
 - D composite cone
- 22** Which of the following energy sources is *most* likely to be abundant in California due to its position on a plate boundary?
- A wind
 - B nuclear
 - C solar
 - D geothermal

Released Test Questions

Earth Science

- 23** What energy resource is made possible by the volcanic activity in California?
- A hydroelectricity
 - B nuclear power
 - C geothermal energy
 - D solar energy
- 24** The Long Valley Caldera in east-central California was formed by a massive volcanic eruption about 760,000 years ago. Since then, it has erupted several times. Of the following, which would be *least* likely to indicate that another eruption will soon occur?
- A recurring earthquakes in the vicinity
 - B decreases in precipitation in the area
 - C changes in gas emissions from the caldera
 - D uplifting of the floor of the caldera
- 25** Earthquake activity in California is primarily caused by
- A the lowering of aquifer levels.
 - B the interaction of tides with the coast.
 - C mining activity during the nineteenth century.
 - D plates grinding past each other along active faults.
- 26** The main purpose of the California aqueduct is to
- A allow inexpensive water routes for transporting commercial products.
 - B transport fresh water to areas with dense populations.
 - C divert floodwater from populated regions to sparsely populated areas.
 - D provide abundant ocean water to drier regions of California.
- 27** Only about 50% of the solar energy directed toward Earth penetrates directly to the surface. What happens to the rest of the radiation?
- A It is absorbed or reflected by the atmosphere.
 - B It loses energy traveling through space.
 - C It is reflected off the Moon and back into space.
 - D It loses energy overcoming the Sun's gravity.
- 28** The Moon is very hot on the side facing the Sun and very cold on the dark side. This extreme temperature difference is primarily due to the Moon's
- A mineral composition.
 - B thin atmosphere.
 - C reflective rocks.
 - D lack of volcanic activity.
- 29** Which of these could increase average global temperatures?
- A increased use of fossil fuels
 - B increased ocean algal blooms
 - C decreased carbon dioxide emissions
 - D increased numbers of animal species

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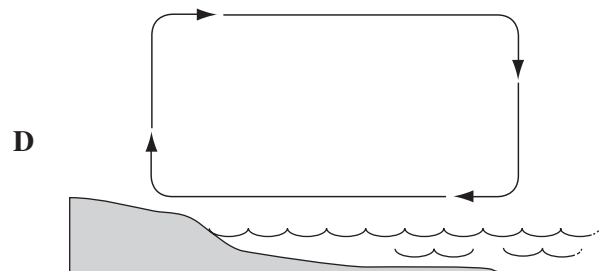
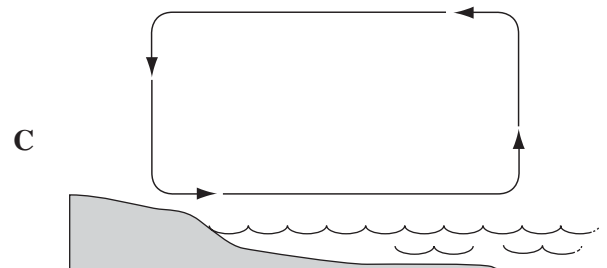
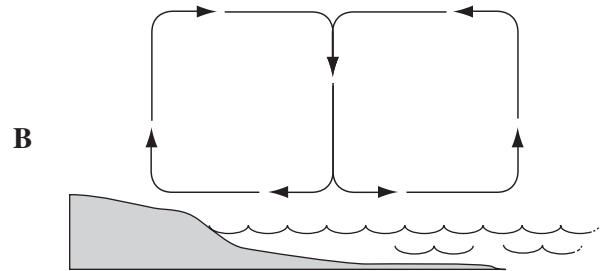
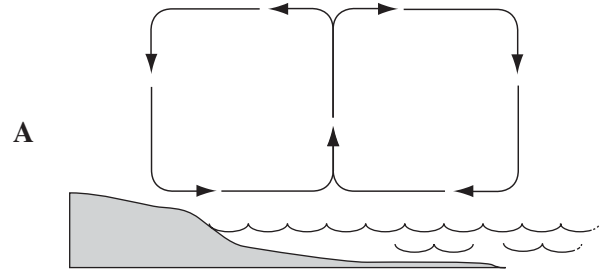
30 The clouds that surround Venus are so thick that the planet actually absorbs less sunlight than the Earth. Nevertheless, Venus has a surface temperature of more than 400 °C. Which of these *best* explains this high surface temperature?

- A The bright surfaces of the clouds reflect sunlight back on the planet.
- B The strong winds in the atmosphere produce friction.
- C The thick clouds in the atmosphere prevent heat from escaping.
- D The sulfuric acid in the clouds releases heat energy.

31 More solar energy reaches the equatorial regions than the polar regions because the equatorial regions

- A are covered by a greater area of land.
- B have more vegetation to absorb sunlight.
- C have days with more hours of light.
- D receive sun rays closest to vertical.

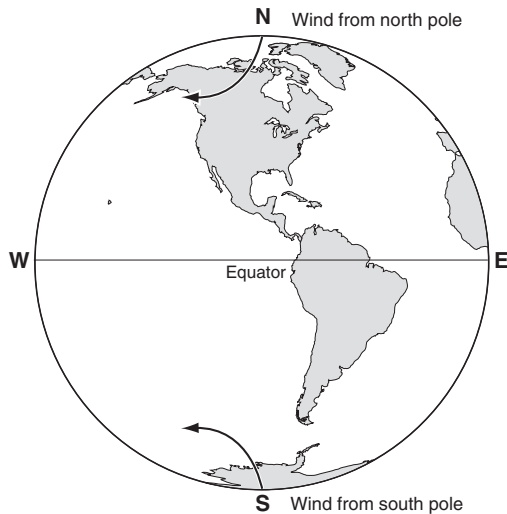
32 Which diagram *best* models the movement of coastal air during the afternoon?



Released Test Questions

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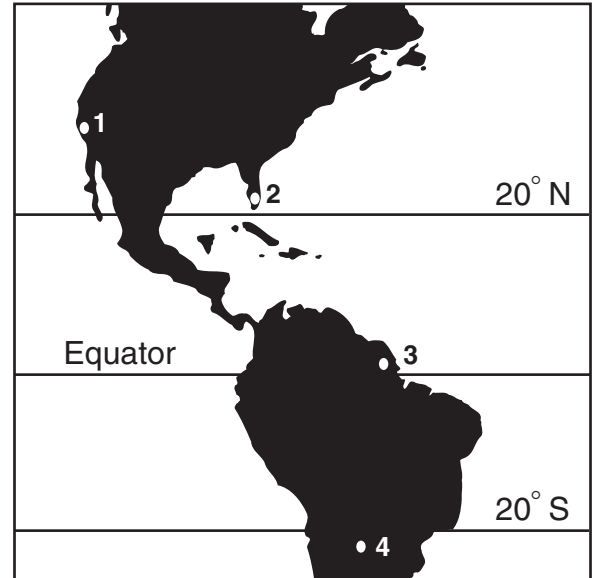
33



What causes the wind deflection from the north and south poles?

- A the rotation of Earth on its axis
- B the oblate shape of Earth
- C the tilt of Earth's axis relative to its orbital plane
- D the difference in total land mass of the two hemispheres

34



At which location on the map would a rain forest *most likely* be found?

- A 1
- B 2
- C 3
- D 4

35

Which of these effects generally occurs as the result of a warm air mass and a cooler air mass converging at Earth's surface?

- A The sky becomes clear.
- B Winds die down.
- C Cloud formation decreases.
- D Stormy weather patterns develop.

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36 Shifts in Earth's continents *most* likely caused a change in Earth's

- A climatic regions.
- B mass.
- C orbital velocity.
- D atmospheric temperature.

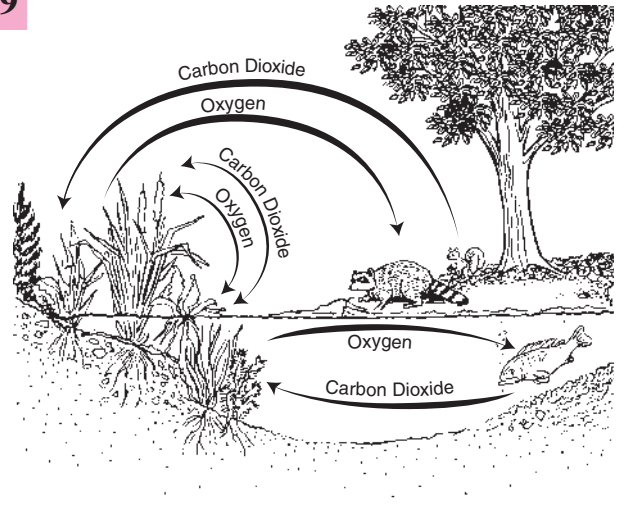
37 The Gulf Stream in the Northern Hemisphere and the Brazilian Current in the Southern Hemisphere move poleward. Compared to inland areas at the same latitude, the coastal areas bordering these currents will

- A be warmer.
- B be more arid.
- C have more advection fogs.
- D have shorter growing seasons.

38 Scientists have found fossils of tropical plants in Antarctica. How could tropical plants have grown in Antarctica?

- A At one time, Earth's entire surface was a tropical rain forest.
- B At one time, Antarctica was located closer to the equator.
- C The rotation of Earth has increased, causing cooling of the atmosphere.
- D Catastrophic volcanic eruptions melted the ice and exposed the soil to sunlight.

39



Which of these statements is *best* illustrated by this diagram?

- A Animals under water eat plants.
- B Land animals exhale oxygen into water.
- C Water-dwelling animals breathe carbon dioxide.
- D Plants can take in carbon dioxide from air or water.

40 From Earth's atmosphere, carbon dioxide is used by plants, algae, and cyanobacteria during the process of

- A photosynthesis.
- B respiration.
- C decomposition.
- D nitrogen fixation.

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Analysis of Gases From a Hawaiian Volcano

Gas	Amount
H ₂ O (steam)	79%
CO ₂	12%
SO ₂	6.5%
N ₂	1.5%
H ₂ , CO, Cl ₂ , and Ar	trace

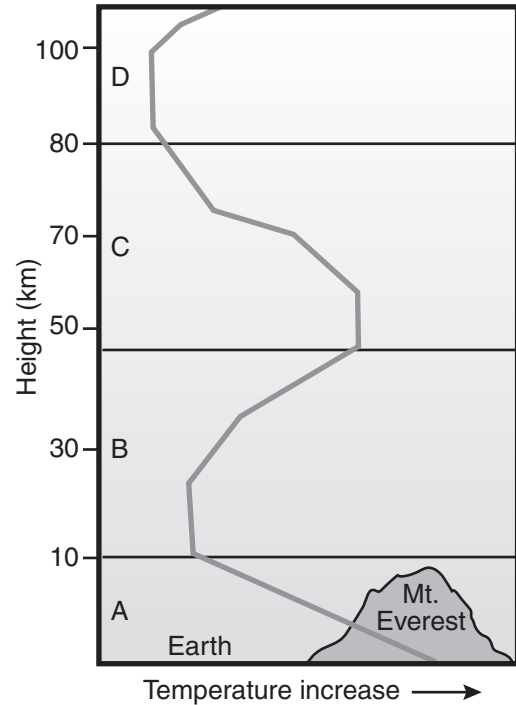
The table above lists the gases coming from a modern Hawaiian volcano. If ancient volcanoes gave off the same gases, which gas would have been *most* helpful in the development of early life-forms that could carry out photosynthesis?

- A N₂
- B SO₂
- C CO₂
- D Cl₂

42 Earth's atmosphere is divided into layers that are based upon their

- A water content.
- B relative humidity.
- C gas content.
- D temperature gradient.

43



The diagram above shows four layers of Earth's atmosphere. Which of the following correctly labels the layers represented by A, B, C, and D (from Earth moving upward) in the correct sequence?

- A troposphere, stratosphere, mesosphere, thermosphere
- B thermosphere, mesosphere, stratosphere, troposphere
- C troposphere, mesosphere, thermosphere, stratosphere
- D mesosphere, troposphere, thermosphere, stratosphere

- 44** The primitive atmosphere of Earth was deficient in free oxygen. What process was primarily responsible for the development of the present percentage of free oxygen in the Earth's atmosphere?
- A outgassing
 - B photosynthesis
 - C volcanic eruptions
 - D oxidation of iron-based minerals
- 45** Which of the following human activities reduces the level of ozone in the atmosphere?
- A using artificial lighting in scientific polar stations
 - B using large banks of solar cells for energy production
 - C releasing chlorofluorocarbons from aerosol cans
 - D destroying large areas of the equatorial rain forests