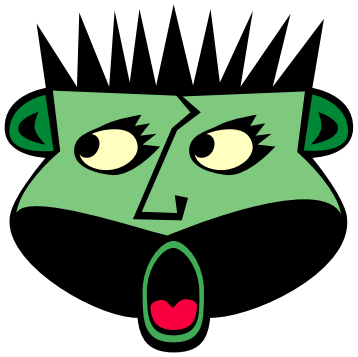
By Zach Miller. Interactivity originally by Charles Burrows.



The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

PHYSICAL SETTING
EARTH SCIENCE

Wednesday, June 17, 2009 — 1:15 to 4:15 p.m., only

This is a test of your knowledge of Earth science. Use that knowledge to answer all questions in this examination. Some questions may require the use of the *Earth Science Reference Tables*. The *Earth Science Reference Tables* are supplied separately. Be certain you have a copy of the *2001 Edition (Revised November 2006)* of these reference tables before you begin the examination.

Your answer sheet for Part A and Part B–1 is the last page of this examination booklet. Turn to the last page and fold it along the perforations. Then, slowly and carefully, tear off your answer sheet and fill in the heading.

The answers to the questions in Part B–2 and Part C are to be written in your separate answer booklet. Be sure to fill in the heading on the front of your answer booklet.

You are to answer *all* questions in all parts of this examination according to the directions provided in the examination booklet. Record your answers to the Part A and Part B–1 multiple-choice questions on your separate answer sheet. Write your answers to the Part B–2 and Part C questions in your answer booklet. All work should be written in pen, except for graphs and drawings, which should be done in pencil. You may use scrap paper to work out the answers to the questions, but be sure to record all your answers on your separate answer sheet and in your answer booklet.

When you have completed the examination, you must sign the statement printed at the end of your separate answer sheet, indicating that you had no unlawful knowledge of the questions or answers prior to the examination and that you have neither given nor received assistance in answering any of the questions during the examination. Your answer sheet and answer booklet cannot be accepted if you fail to sign this declaration.

Notice. . .

A four-function or scientific calculator and a copy of the *2001 Earth Science Reference Tables (Revised November 2006)* must be available for you to use while taking this examination.

The use of any communications device is strictly prohibited when taking this examination. If you use any communications device, no matter how briefly, your examination will be invalidated and no score will be calculated for you.

DO NOT OPEN THIS EXAMINATION BOOKLET UNTIL THE SIGNAL IS GIVEN.

Part A

Answer all questions in this part.

Directions (1–35): For *each* statement or question, write on your separate answer sheet the *number* of the word or expression that, of those given, best completes the statement or answers the question. Some questions may require the use of the *Earth Science Reference Tables*.

1 Evidence that the universe is expanding is best provided by the

(1) red shift in the light from distant galaxies
(2) change in the swing direction of a Foucault pendulum on Earth
(3) parallelism of Earth's axis in orbit
(4) spiral shape of the Milky Way Galaxy

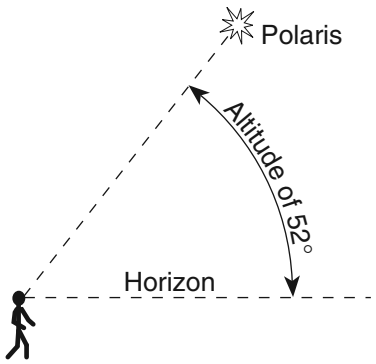
2 Which object forms by the contraction of a large sphere of gases causing the nuclear fusion of lighter elements into heavier elements?

(1) comet
(2) planet
(3) star
(4) moon

3 In New York State, summer is warmer than winter because in summer New York State has

(1) fewer hours of daylight and receives low-angle insolation
(2) fewer hours of daylight and receives high-angle insolation
(3) more hours of daylight and receives low-angle insolation
(4) more hours of daylight and receives high-angle insolation

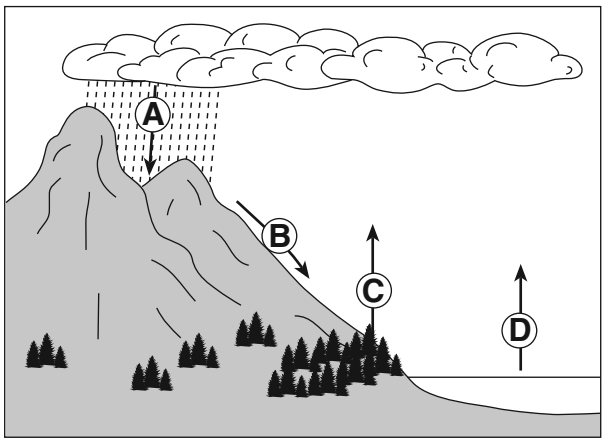
4 The diagram below shows an observer on Earth viewing the star *Polaris*.



What is this observer's latitude?

(1) 38° N
(2) 38° S
(3) 52° N
(4) 52° S

5 The arrows in the diagram below represent the movement of water in the water cycle.



Which arrow represents the process of transpiration?

(1) *A*
(2) *B*
(3) *C*
(4) *D*

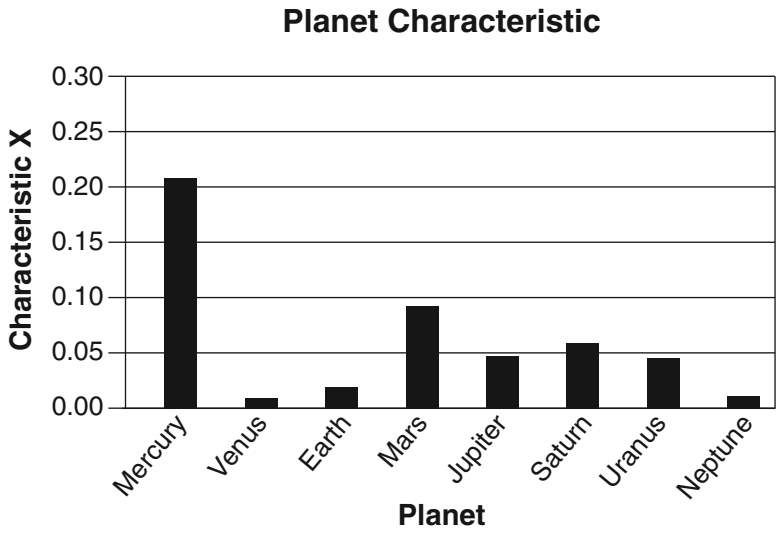
6 Which statement best describes the position of the Sun at sunrise and sunset as seen by an observer in New York State on June 21?

(1) The Sun rises north of due east and sets north of due west.
(2) The Sun rises south of due east and sets south of due west.
(3) The Sun rises north of due east and sets south of due west.
(4) The Sun rises south of due east and sets north of due west.

7 On a cold winter day, the air temperature is 2°C and the wet-bulb temperature is –1°C. What is the relative humidity at this location?

(1) 6%
(2) 37%
(3) 51%
(4) 83%

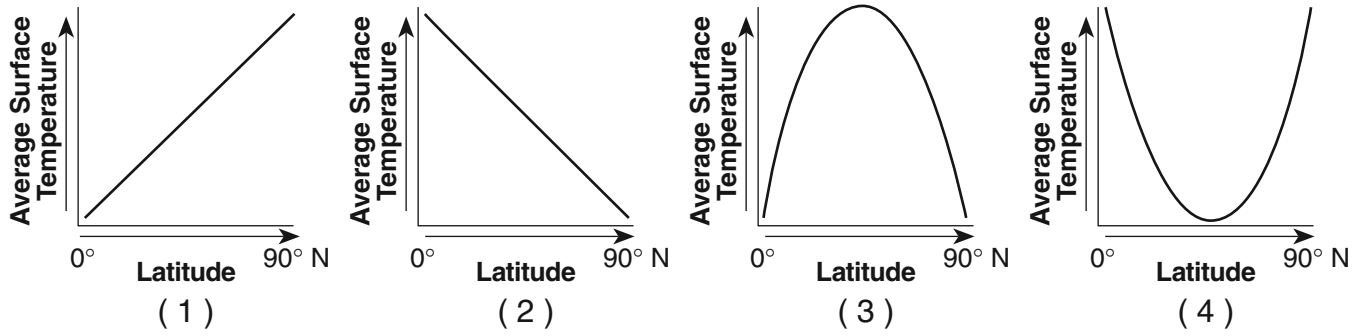
8 The bar graph below shows one planetary characteristic, identified as *X*, plotted for the planets of our solar system.



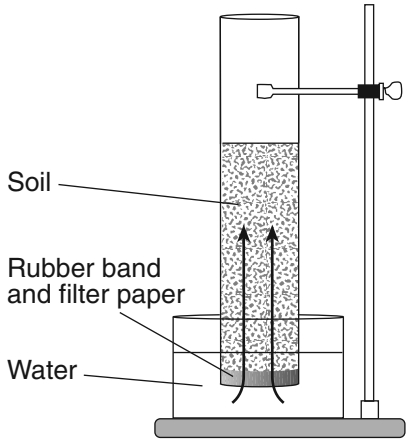
Which characteristic of the planets in our solar system is represented by *X*?

(1) mass
(2) density
(3) eccentricity of orbit
(4) period of rotation

9 Which graph best represents the general relationship between latitude and average surface temperature?



10 The diagram below shows a laboratory setup. The rubber band holds filter paper across the base of the open tube to hold the soil sample. The tube was placed in the water as shown. The upward movement of water is represented by arrows. The height of the water that moved upward within the soil was measured. Students repeated this procedure using soils with different particle sizes. Results of the experiment are shown in the data table.



Data Table

Average Soil Particle Diameter (cm)	**Height of Water in Column** (cm)
0.006	30.0
0.2	8.0
1.0	0.5

Results of this experiment lead to the conclusion that

(1) capillarity is greater in soils with larger particles
(2) capillarity is greater in soils with smaller particles
(3) permeability is greater in soils with larger particles
(4) permeability is greater in soils with smaller particles

---

11 When two tectonic plates collide, oceanic crust usually subducts beneath continental crust because oceanic crust is primarily composed of igneous rock that has

(1) low density and is mafic
(2) low density and is felsic
(3) high density and is mafic
(4) high density and is felsic

12 New York State's generalized landscape regions are identified primarily on the basis of elevation and

(1) bedrock structure
(2) climate zones
(3) geologic age
(4) latitude

13 The data table below shows the origin depths of all large-magnitude earthquakes over a 20-year period.

Data Table

Depth Below Surface (km)	Number of Earthquakes
0–33	27,788
34–100	17,585
101–300	7,329
301–700	3,167

According to these data, most of these earthquakes occurred within Earth's

(1) lithosphere
(2) asthenosphere
(3) stiffer mantle
(4) outer core

14 What is the largest sediment that can be transported by a stream that has a velocity of 125 cm/sec?

(1) cobbles
(2) pebbles
(3) sand
(4) clay

15 The photograph below shows a valley.

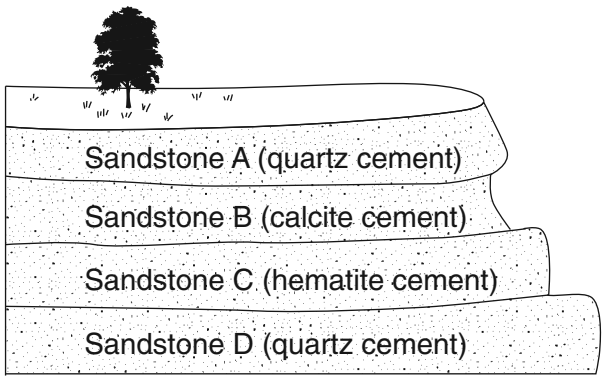
Which agent of erosion most likely produced this valley's shape?

(1) wave action
(2) moving ice
(3) blowing wind
(4) flowing water

16 Deposition within a meandering stream usually occurs on the inside of the curves because the

(1) water velocity decreases
(2) stream gradient increases
(3) water is deeper
(4) stream is narrower

17 The diagram below shows an outcrop of different layers of sandstone in a region receiving heavy rainfall.



Which sandstone layer appears to be the *least* resistant to weathering?

(1) *A*
(2) *B*
(3) *C*
(4) *D*

18 Which process led to the formation of thick salt deposits found in the bedrock at some locations in New York State?

(1) melting
(2) runoff
(3) condensation
(4) evaporation

19 Oxygen is the most abundant element by volume in Earth's

(1) inner core
(2) troposphere
(3) hydrosphere
(4) crust

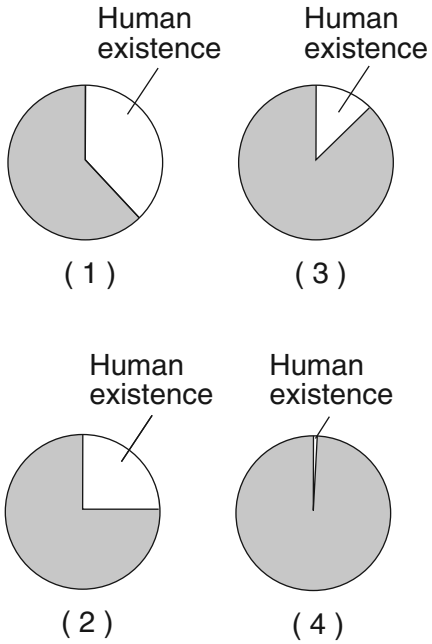
20 Most insolation striking a smooth, light-colored, solid surface is

(1) refracted
(2) transmitted
(3) reflected
(4) absorbed

21 Which process requires water to gain heat energy from the environment?

(1) evaporation
(2) condensation
(3) infiltration
(4) precipitation

22 Which graph best represents human existence on Earth, compared with Earth's entire history?



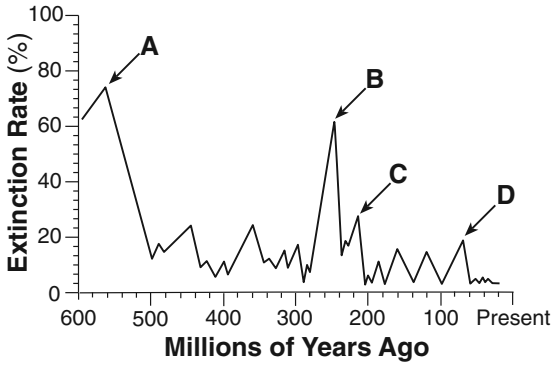
23 How old is a fossil that has radioactively decayed through 4 half-lives of carbon-14?

(1) 5,700 years
(2) 17,100 years
(3) 22,800 years
(4) 28,500 years

24 The gases in Earth's early atmosphere are inferred to have come primarily from

(1) meteor showers
(2) melting of glacial ice
(3) volcanic eruptions
(4) evaporation of seawater

25 The graph below shows the extinction rate of organisms on Earth during the last 600 million years. Letters *A* through *D* represent mass extinctions.



Which letter indicates when dinosaurs became extinct?

(1) *A*
(2) *B*
(3) *C*
(4) *D*

26 Alternating parallel bands of normal and reversed magnetic polarity are found in the basaltic bedrock on either side of the

(1) Mid-Atlantic Ridge
(2) Yellowstone Hot Spot
(3) San Andreas Fault
(4) Peru-Chile Trench

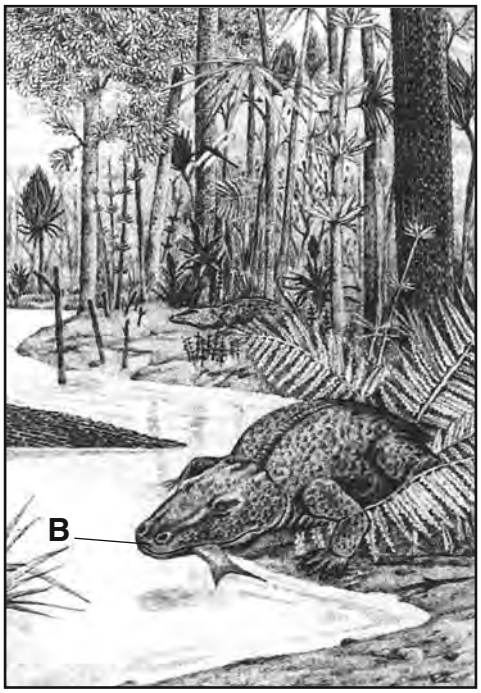
27 Which characteristic would most likely remain constant when a limestone cobble is subjected to extensive abrasion?

(1) shape
(2) mass
(3) volume
(4) composition

Base your answers to questions 28 and 29 on the diagrams below. Diagram 1 is a drawing of a seafloor environment during the Carboniferous Period. Diagram 2 is a drawing of a Carboniferous swamp-forest environment. Two organisms are labeled *A* and *B*.

Diagram 1:
Carboniferous Seafloor

Diagram 2:
Carboniferous Swamp-Forest



Adapted from: Chet Raymo and Maureen Raymo,
Written in Stone: A Geological History of the Northeastern United States,
Second Edition, Black Dome Press Corp., 2001

28 If the fish labeled *A* in diagram 1 are placoderms, the diagram represents conditions during which geologic epoch?

?

(1) Early Mississippian
(2) Late Mississippian
(3) Early Pennsylvanian
(4) Late Pennsylvanian

29 In which type of rock would fossils of organisms *A* and *B* most likely be found?

?

(1) felsic igneous
(2) vesicular igneous
(3) clastic sedimentary
(4) nonfoliated metamorphic

30 According to the fossil record, which sequence correctly represents the evolution of life on Earth?

(1) fish → amphibians → mammals → soft-bodied organisms
(2) fish → soft-bodied organisms → mammals → amphibians
(3) soft-bodied organisms → amphibians → fish → mammals
(4) soft-bodied organisms → fish → amphibians → mammals

31 The data table below compares the climates of two United States cities located at approximately 43° north latitude. The data are based on a 30-year period.

Data Table

Location	Maximum Temperature (°F)	Minimum Temperature (°F)	Mean Annual Precipitation (in)	Mean Annual Snowfall (in)
city A	110	–36	23.8	31.9
city B	98	–19	38.2	92.9

Which statement best explains the climate variation between these two cities?

(1) City *A* and city *B* are located at the same longitude.
(2) City *A* is located at a high elevation, and city *B* is located at sea level.
(3) City *A* is located far inland, and city *B* is located near a large body of water.
(4) City *A* is located on the east coast, and city *B* is located on the west coast.

32 The air above a burning candle is heated and rises. Which table correctly identifies the type of heat transfer within the rising air and the change in air density above the burning candle?

Type of Heat Transfer	Change in Air Density
conduction	density increases

(1)

Type of Heat Transfer	Change in Air Density
convection	density increases

(3)

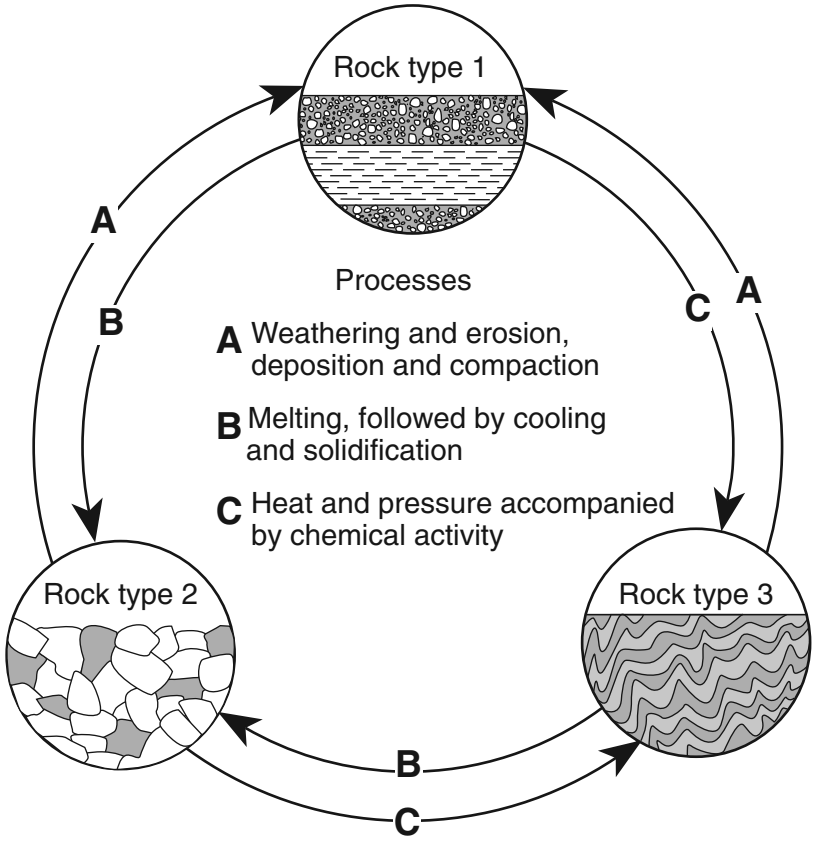
Type of Heat Transfer	Change in Air Density
conduction	density decreases

(2)

Type of Heat Transfer	Change in Air Density
convection	density decreases

(4)

33 The diagram below represents geological processes that act continuously on Earth to form different rock types.



? Which table correctly classifies each rock type?

Rock Type	Classification
1	sedimentary
2	metamorphic
3	igneous

(1)

Rock Type	Classification
1	metamorphic
2	igneous
3	sedimentary

(3)

Rock Type	Classification
1	sedimentary
2	igneous
3	metamorphic

(2)

Rock Type	Classification
1	igneous
2	metamorphic
3	sedimentary

(4)

34 The table below shows some properties of four different minerals.

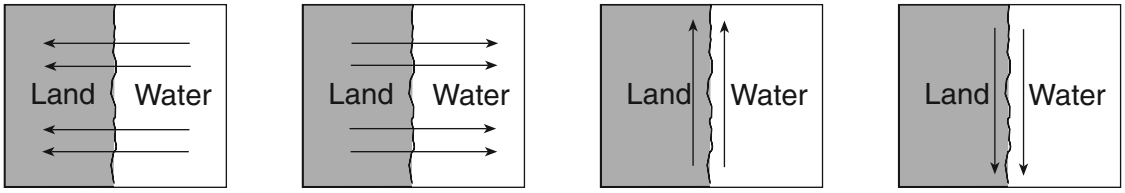
Mineral Variety	Color	Hardness	Luster	Composition
flint	black	7	nonmetallic	SiO_2
chert	gray, brown, or yellow	7	nonmetallic	SiO_2
jasper	red	7	nonmetallic	SiO_2
chalcedony	white or light color	7	nonmetallic	SiO_2

? The minerals listed in the table are varieties of which mineral?

(1) garnet
(2) magnetite
(3) quartz
(4) olivine

35 Adjacent water and landmasses are heated by the morning Sun on a clear, calm day. After a few hours, a surface wind develops. Which map best represents this wind's direction?

?



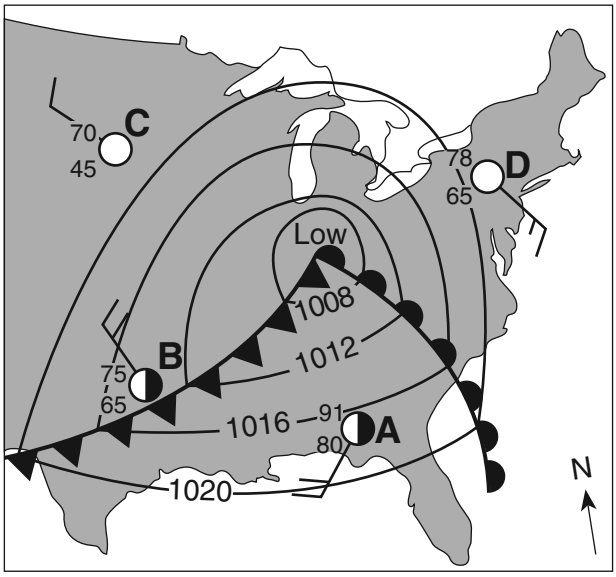
(1) (2) (3) (4)

Part B–1

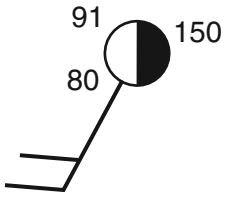
Answer all questions in this part.

Directions (36–50): For *each* statement or question, write on your separate answer sheet the *number* of the word or expression that, of those given, best completes the statement or answers the question. Some questions may require the use of the *Earth Science Reference Tables*.

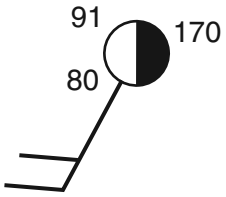
Base your answers to questions 36 through 38 on the weather map below, which shows a low-pressure system over the eastern United States. Letters *A* through *D* represent weather stations.



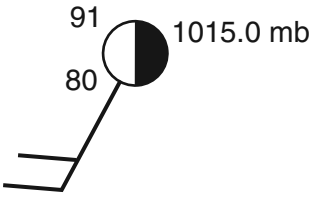
? 36 Which station model correctly represents the barometric pressure at station *A*?



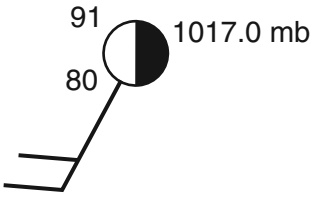
(1)



(2)



(3)



(4)

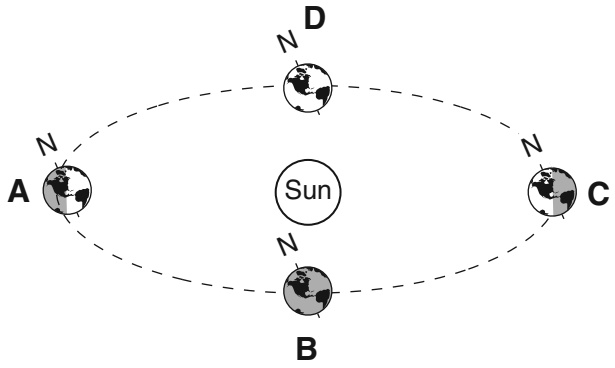
37 Which weather instrument was used to measure wind speed at station *D*?

? (1) barometer
(2) thermometer
(3) psychrometer
(4) anemometer

38 Surface winds within this low-pressure system most likely are flowing

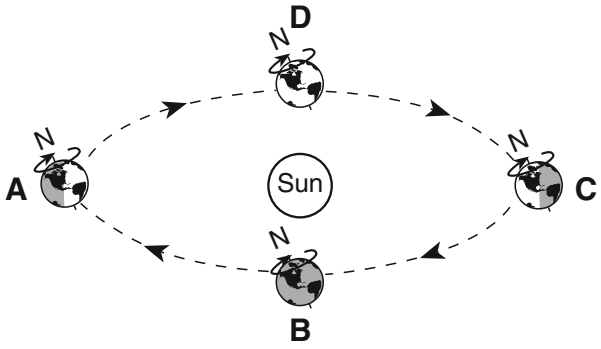
? (1) toward the center in a clockwise pattern
(2) toward the center in a counterclockwise pattern
(3) away from the center in a clockwise pattern
(4) away from the center in a counterclockwise pattern

Base your answers to questions 39 through 42 on the diagram below, which represents Earth in its orbit around the Sun. The position of Earth on the first day of each season is labeled *A*, *B*, *C*, and *D*.

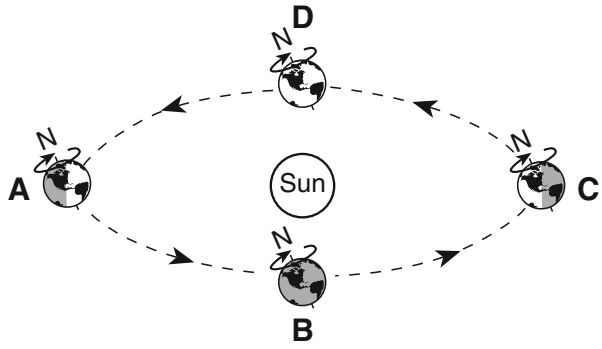


(Not drawn to scale)

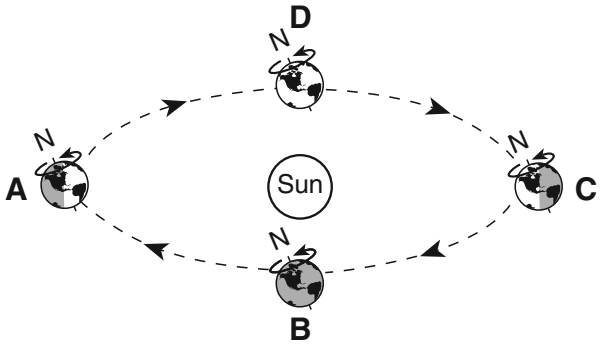
? 39 Which diagram correctly shows the directions of Earth's revolution and rotation?



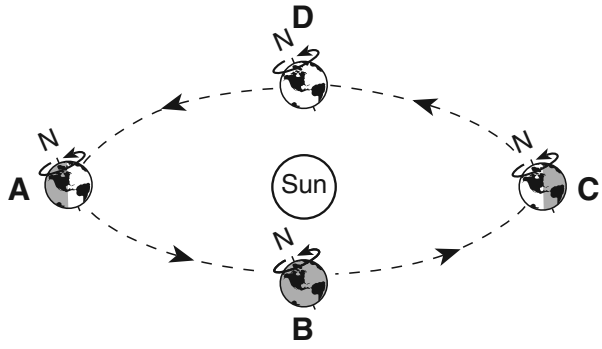
(1)



(3)



(2)



(4)

? 40 At which location are the Sun's noontime rays perpendicular to Earth's surface at the Tropic of Cancer (23.5° N)?

(1) *A*
(2) *B*
(3) *C*
(4) *D*

41 What is the approximate rate of Earth's revolution around the Sun?

?

(1) 1° per day
(2) 1° per year
(3) 15° per day
(4) 15° per year

42 Which event is caused by Earth's revolution?

?

(1) the apparent shift in the path of a Foucault pendulum
(2) deflection of planetary winds to the right in the Northern Hemisphere
(3) the apparent rising and setting of the Sun
(4) different constellations observed in the night sky throughout the year

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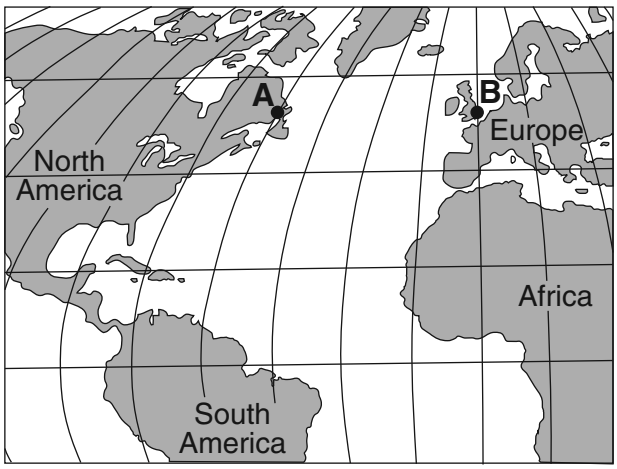
Base your answers to questions 43 and 44 on the map below, which shows locations *A* and *B* on Earth's surface at the same distance from the ocean, at the same elevation above sea level, and at the same latitude.



43 Which statement best explains why location *A* has a cooler climate than location *B*?

?

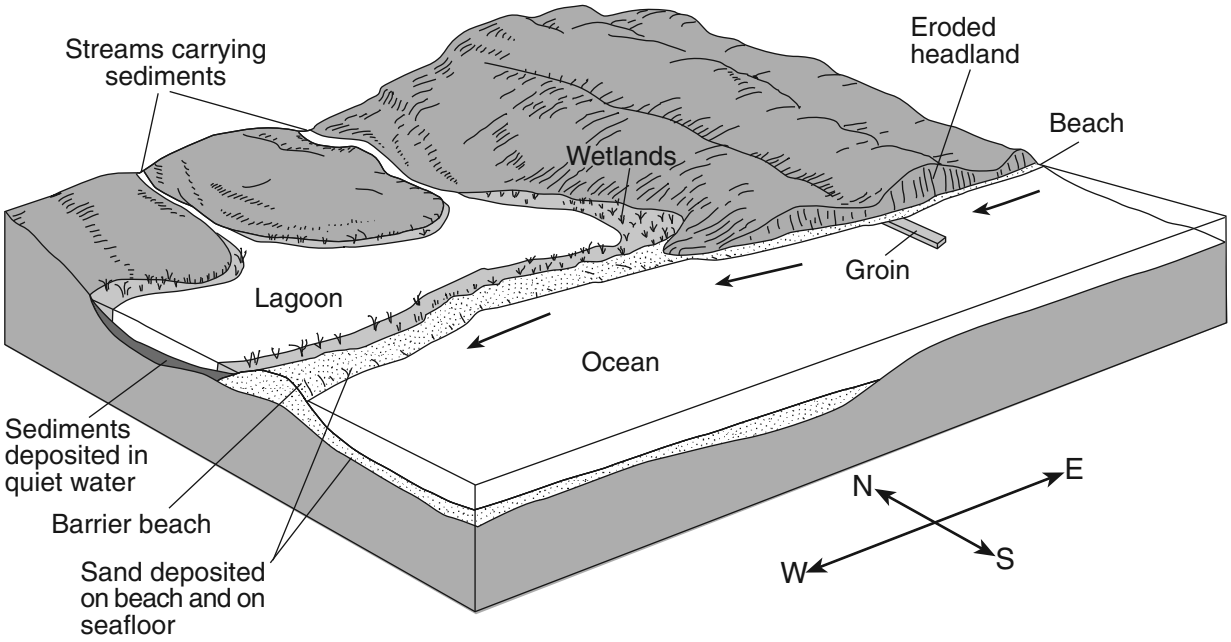
(1) Location *A* has a longer duration of insolation each day.
(2) Location *A* is influenced by a cold ocean current.
(3) Location *B* is farther from the equator.
(4) Location *B* has less intense insolation each day.

44 There is a four-hour solar time difference between locations *A* and *B*. What is the difference in longitude between locations *A* and *B*?

?

(1) 15°
(2) 23.5°
(3) 45°
(4) 60°

Base your answers to questions 45 through 48 on the diagram below. The arrows show the direction in which sediment is being transported along the shoreline. A barrier beach has formed, creating a lagoon (a shallow body of water in which sediments are being deposited). The eroded headlands are composed of diorite bedrock. A groin has recently been constructed. Groins are wall-like structures built into the water perpendicular to the shoreline to trap beach sand.



45 The groin structure will change the pattern of deposition along the shoreline, initially causing the beach to become

?

(1) wider on the western side of the groin
(2) wider on the eastern side of the groin
(3) narrower on both sides of the groin
(4) wider on both sides of the groin

46 Which two minerals are most likely found in the beach sand that was eroded from the headlands?

?

(1) quartz and olivine
(2) plagioclase feldspar and amphibole
(3) potassium feldspar and biotite
(4) pyroxene and calcite

47 The sediments that have been deposited by streams flowing into the lagoon are most likely

?

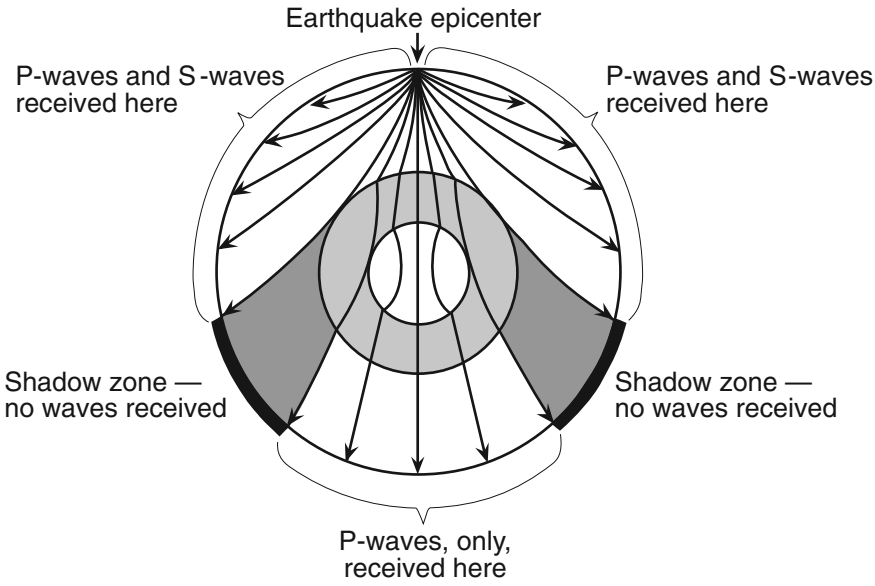
(1) sorted and layered
(2) sorted and not layered
(3) unsorted and layered
(4) unsorted and not layered

48 Which event will most likely occur during a heavy rainfall?

?

(1) Less sediment will be carried by the streams.
(2) An increase in sea level will cause more sediments to be deposited along the shoreline.
(3) The shoreline will experience a greater range in tides.
(4) The discharge from the streams into the lagoon will increase.

Base your answers to questions 49 and 50 on the cross section below, which shows the paths of seismic waves traveling from an earthquake epicenter through the different layers of Earth's interior.



49 No *P*-waves or *S*-waves are received in the shadow zone because

?

(1) *P*-waves are absorbed and *S*-waves are refracted by Earth's outer core
(2) *P*-waves are refracted and *S*-waves are absorbed by Earth's outer core
(3) both the *P*-waves and *S*-waves are refracted by Earth's outer core
(4) both the *P*-waves and *S*-waves are absorbed by Earth's outer core

50 The distance from Albany, New York, to the epicenter of this earthquake is 5600 km. Approximately how much longer did it take for the *S*-wave to arrive at Albany than the *P*-wave?

?

(1) 4 minutes and 20 seconds
(2) 7 minutes and 10 seconds
(3) 9 minutes and 0 seconds
(4) 16 minutes and 10 seconds

Part B–2

Answer all questions in this part.

Directions (51–65): Record your answers in the spaces provided in your answer booklet. Some questions may require the use of the *Earth Science Reference Tables*.

Base your answers to questions 51 through 53 on the passage below.

Is Earth Gaining Weight?

Scientists believe that Earth may gain more than 100 tons of dust from space every day. The dust comes from thawing comets as they orbit the Sun and from pieces of asteroids that collided with other asteroids. Most asteroids orbit the Sun between Mars and Jupiter. Each dust particle dates back to the days when our solar system was created. So in a way, each tiny speck of dust holds clues to how our solar system formed.

All the space dust produced by comets and asteroids in our solar system is drawn to the Sun by its gravitational force. However, space dust that passes within about 60 miles of Earth's surface may be slowed enough by friction with Earth's atmosphere to be pulled to the surface by Earth's gravity.

51 State *one* reason why more space dust is attracted to the Sun than to Earth. [1]

52 In which temperature zone of Earth's atmosphere is space dust first slowed enough by friction to be pulled to Earth's surface? [1]

53 Approximately how many million kilometers from the Sun are most asteroids located? [1]

Base your answers to questions 54 through 57 on the data table below. The data table shows the latitude of several cities in the Northern Hemisphere and the duration of daylight on a particular day.

Data Table

City	Latitude (°N)	Duration of Daylight (hr)
Panama City, Panama	9	11.6
Mexico City, Mexico	19	11.0
Tampa, Florida	28	10.4
Memphis, Tennessee	35	9.8
Winnipeg, Canada	50	8.1
Churchill, Canada	59	6.3
Fairbanks, Alaska	65	3.7

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ANSWER

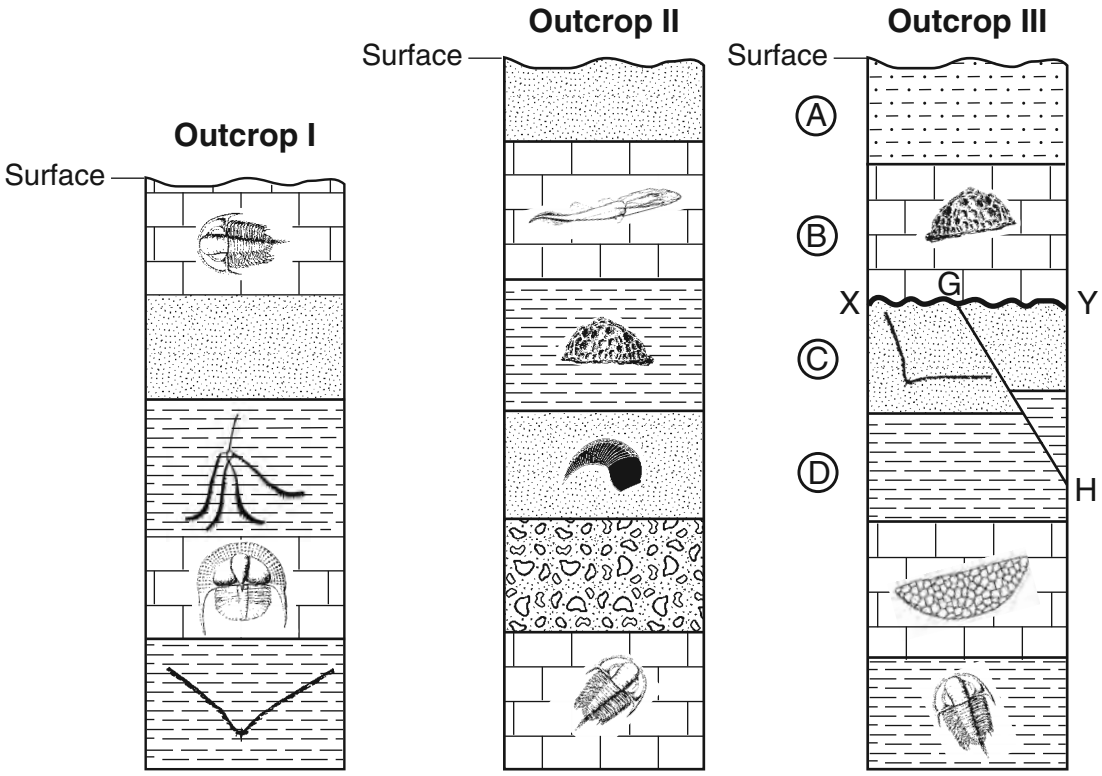
54 On the grid *in your answer booklet*, plot with an **X** the duration of daylight for each city shown in the data table. Connect your **X**s with a smooth, curved line. [1]

55 Based on the data table, state the relationship between latitude and the duration of daylight. [1]

56 Use your graph to determine the latitude at which the Sun sets 7 hours after it rises. [1]

57 The data were recorded for the first day of a certain season in the Northern Hemisphere. State the name of this season. [1]

Base your answers to questions 58 through 60 on the cross sections below, which show widely separated outcrops labeled I, II, and III. Index fossils are found in some of the rock layers in the three outcrops. In outcrop III, layers *A*, *B*, *C*, and *D* are labeled. Line *XY* represents an unconformity. Line *GH* represents a fault.



58 Describe *one* characteristic necessary for a fossil to be classified as an index fossil. [1]

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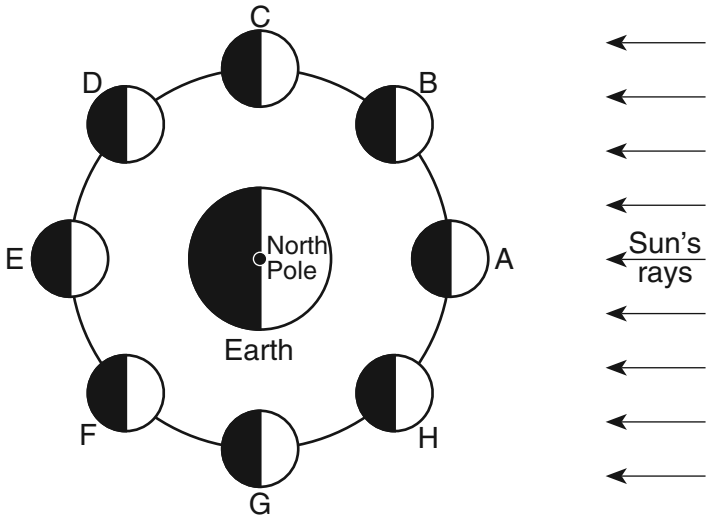
ANSWER

59 On outcrop II *in your answer booklet,* place the symbol ~~~ for an unconformity between the two rock layers where the Silurian-age bedrock has been removed by erosion. [1]

BLANK
ANSWER

60 List in order, from oldest to youngest, the relative age of the four rock layers, *A*, *B*, *C*, and *D*, fault *GH*, and unconformity *XY* shown in outcrop III. [1]

Base your answers to questions 61 through 63 on the diagram below, which shows the Moon at positions *A* through *H* in its orbit around Earth.



(Not drawn to scale)

61 Which letters represent the *two* positions of the Moon when the *least* difference between the levels of high and low ocean tides occur on Earth? [1]

62 How many days does it take for the Moon to complete one cycle of phases as viewed from Earth? [1]

63 At which Moon position could a lunar eclipse occur? [1]

Base your answers to questions 64 and 65 on the *Luminosity and Temperature of Stars* graph in the *Earth Science Reference Tables*.

64 Describe the relationship between temperature and luminosity of main sequence stars. [1]

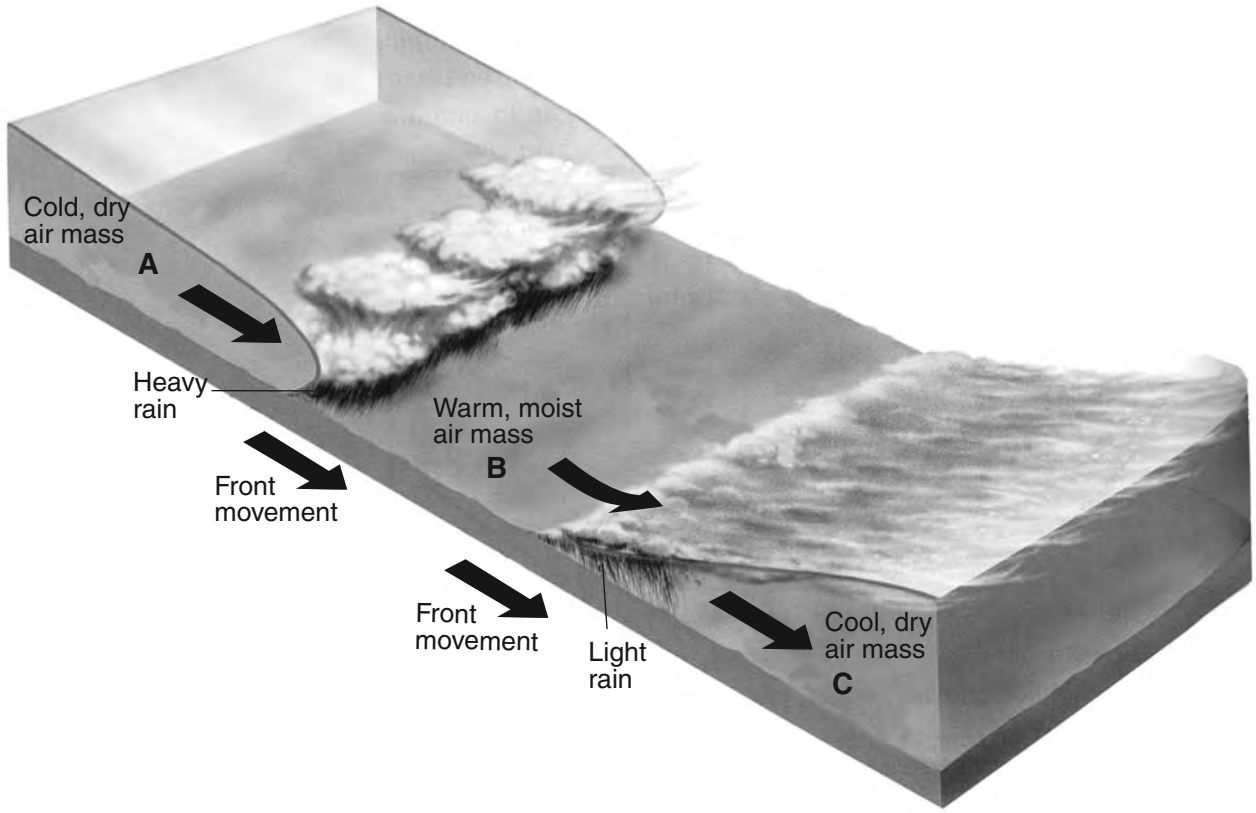
65 In which group of stars would a star with a temperature of 5000°C and a luminosity of approximately 100 times that of the Sun be classified? [1]

Part C

Answer all questions in this part.

Directions (66–85): Record your answers in the spaces provided in your answer booklet. Some questions may require the use of the *Earth Science Reference Tables*.

Base your answers to questions 66 through 68 on the diagram below, which shows air masses, clouds, and rain associated with two fronts that are influencing weather conditions in New York State. Letters *A*, *B*, and *C* represent three air masses. The arrows show the direction of air and front movements.

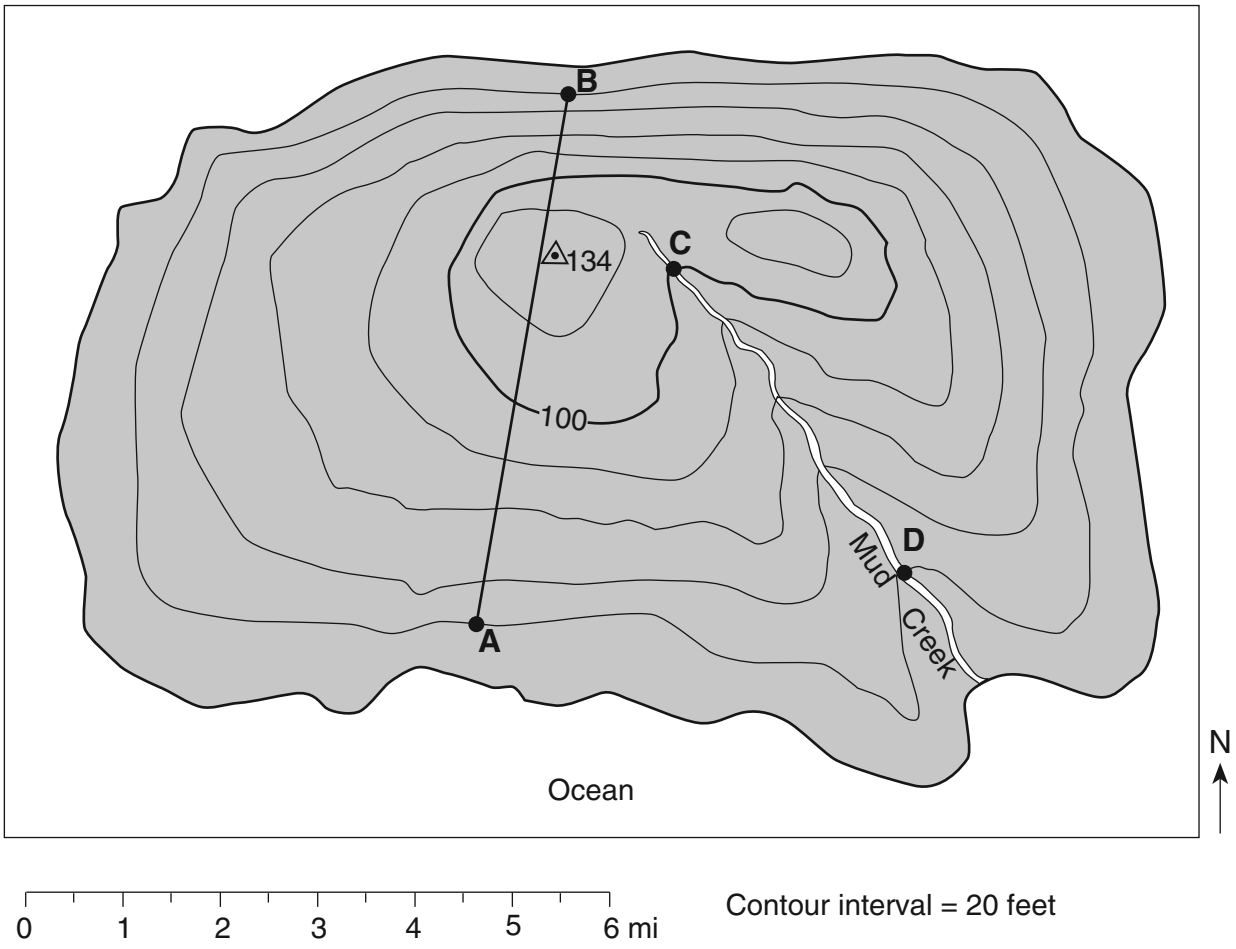


66 Identify the most likely geographic source region for air mass *B*. [1]

67 Identify the type of front shown between air mass *B* and air mass *C*. [1]

68 Identify *one* process that causes clouds to form in the air rising along the frontal surface between air mass *A* and air mass *B*. [1]

Base your answers to questions 69 through 72 on the topographic map below, which shows a small island in an ocean. Points *A*, *B*, *C*, and *D* represent surface locations on the island. The symbol ▵134 represents an elevation on the hilltop. Elevations are measured in feet and distances are measured in miles.



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ANSWER

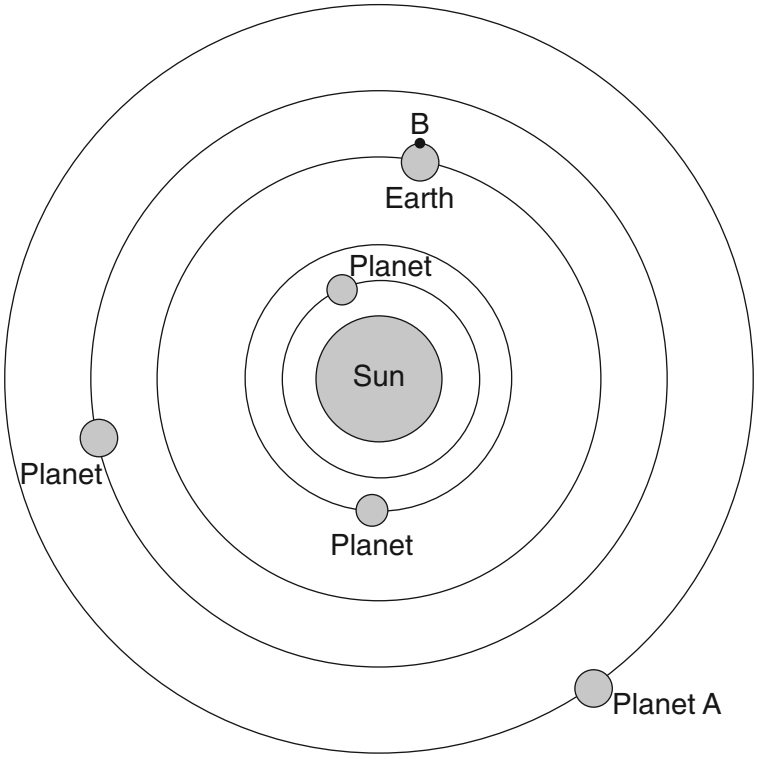
69 On the grid *in your answer booklet*, construct a profile along line *AB* by plotting an **X** for the elevation of *each* contour line that crosses line *AB*. Connect the **X**s with a smooth, curved line to complete the profile. [1]

70 Calculate the gradient of Mud Creek between points *C* and *D* and label your answer with the correct units. [1]

71 State the compass direction toward which Mud Creek flows. [1]

72 Explain how the contour lines on the map indicate that the north side of the island has the steepest slope. [1]

Base your answers to questions 73 through 76 on the diagram below, which shows the heliocentric model of a part of our solar system. The planets closest to the Sun are shown. Point *B* is a location on Earth's equator.



(Not drawn to scale)

73 State the name of planet *A*. [1]

74 Explain why location *B* experiences both day and night in a 24-hour period. [1]

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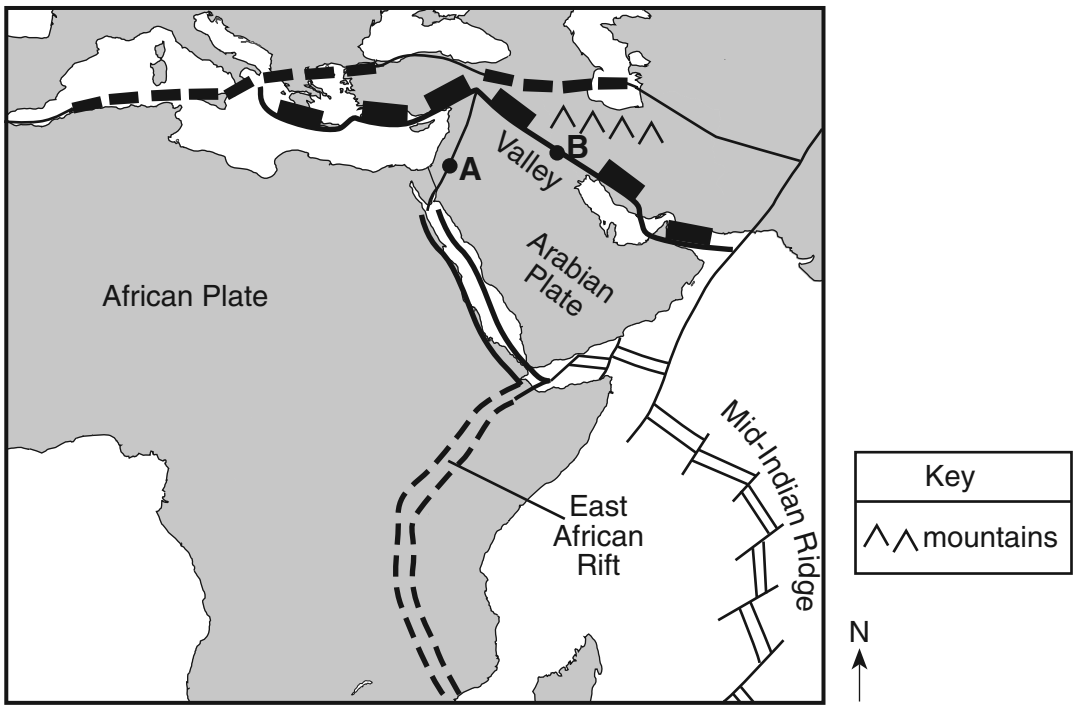
ANSWER

75 On the graph *in your answer booklet*, draw a line to show the general relationship between a planet's distance from the Sun and the planet's period of revolution. [1]

76 Identify *one* feature of the geocentric model of our solar system that differs from the heliocentric model shown. [1]

Base your answers to questions 77 through 79 on the map below, which is an enlargement of a portion of the *Tectonic Plates* map from the *Earth Science Reference Tables*. Points *A* and *B* are locations on different boundaries of the Arabian Plate.



77 Identify the type of tectonic plate boundary located at point *A*. [1]

78 On the map shown, a valley is located south of point *B* and a mountain range north of point *B*. State the tectonic process that is creating these two land features. [1]

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ANSWER

79 The block diagram *in your answer booklet* represents Earth's surface and interior along the East African Rift. Draw *two* arrows, one through point *X* and one through point *Y*, to indicate the relative motion of each of these sections of the continental crust. [1]

Base your answers to questions 80 and 81 on the United States map in your answer booklet, which shows recorded temperatures in degrees Fahrenheit for October 2, 2004. The 60°F isotherm has been drawn on the map.

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ANSWER

80 On the map *in your answer booklet*, draw the 70°F isotherm. Extend the isotherm to the edges of the continent. [1]

81 Identify the two-letter weather map symbol for the dry, cold air mass over North Dakota. [1]

Base your answers to questions 82 through 85 on the passage below.

Asbestos

Asbestos is a general name given to the fibrous varieties of six naturally occurring minerals used in commercial products. Most asbestos minerals are no longer mined due to the discovery during the 1970s that long-term exposure to high concentrations of their long, stiff fibers leads to health problems. Workers who produce or handle asbestos products are most at risk, since inhaling high concentrations of airborne fibers allows the asbestos particles to become trapped in the workers' lungs. Chrysotile is a variety of asbestos that is still mined because it has short, soft, flexible fibers that do not pose the same health threat.

82 State *one* reason for the decline in global asbestos use after 1980. [1]

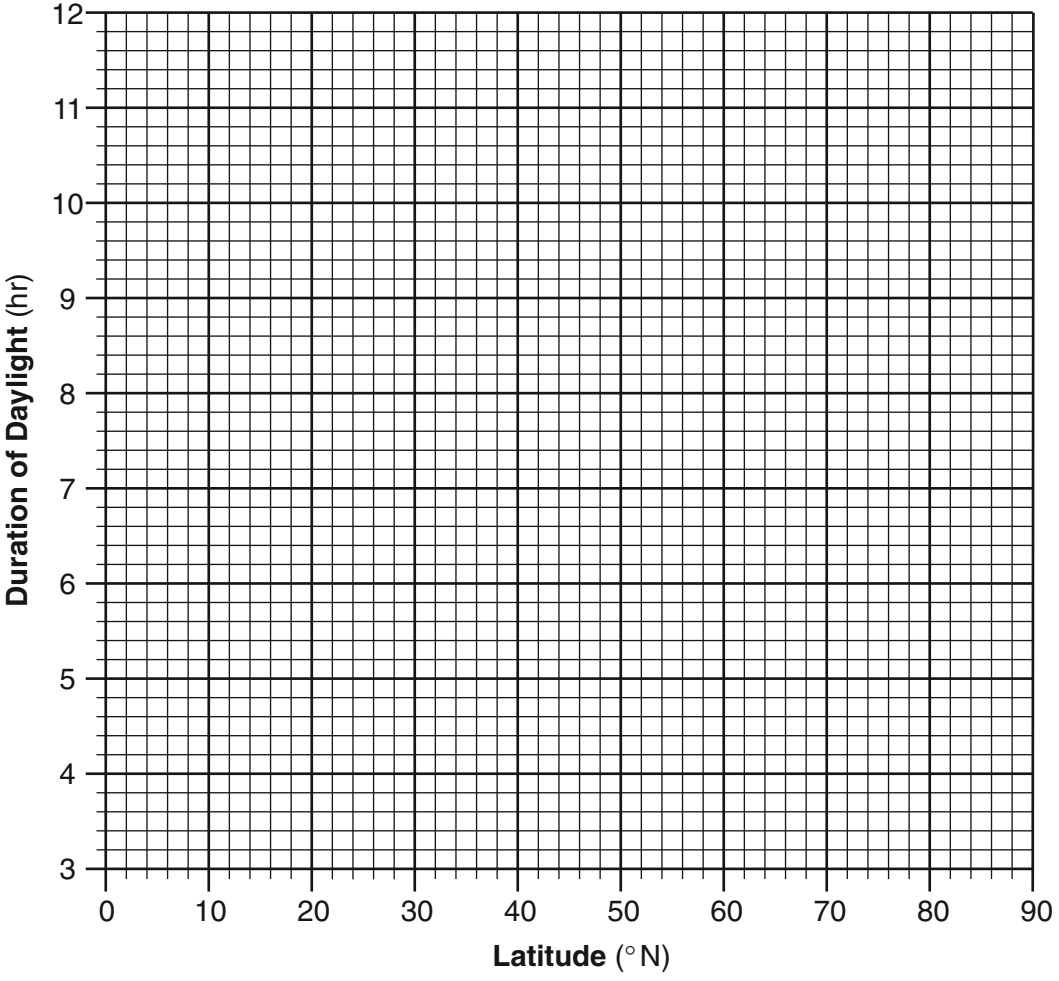
83 Chrysotile is found with other minerals in New York State mines located near 44° 30' N, 74° W. In which New York State landscape region are these mines located? [1]

84 What determines the physical properties of minerals, such as the long, stiff fibers of some varieties of asbestos? [1]

85 The chemical formula for chrysotile is $Mg_3Si_2O_5(OH)_4$. State the name of the mineral found on the *Earth Science Reference Tables* that is most similar in chemical composition. [1]

BACK

Duration of Daylight and Latitude

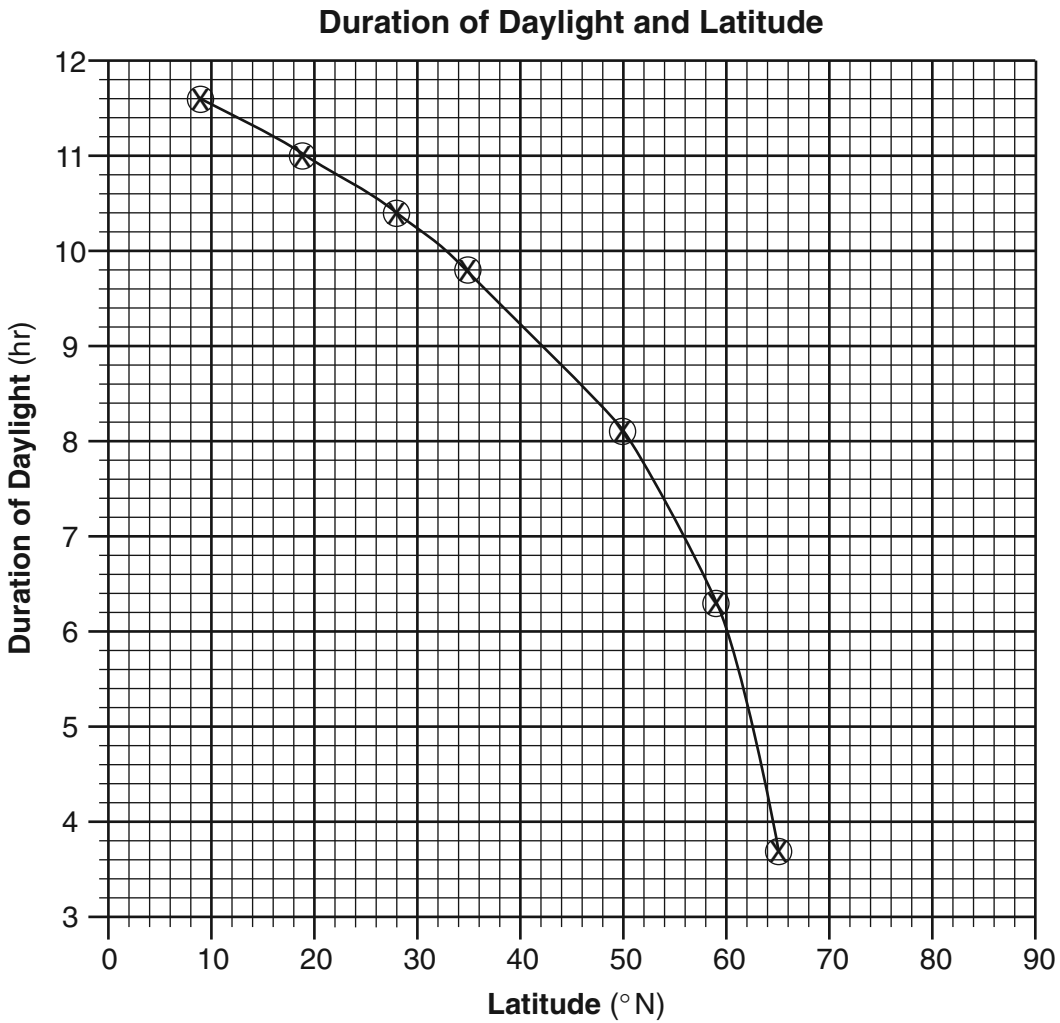


BACK

54 [1] Allow 1 credit if the center of all **X**s are plotted within the circles shown and are correctly connected with a smooth, curved line that passes through the circles.

Note: It is recommended that an overlay be used to ensure uniformity in scoring.

Example of a 1-credit response:



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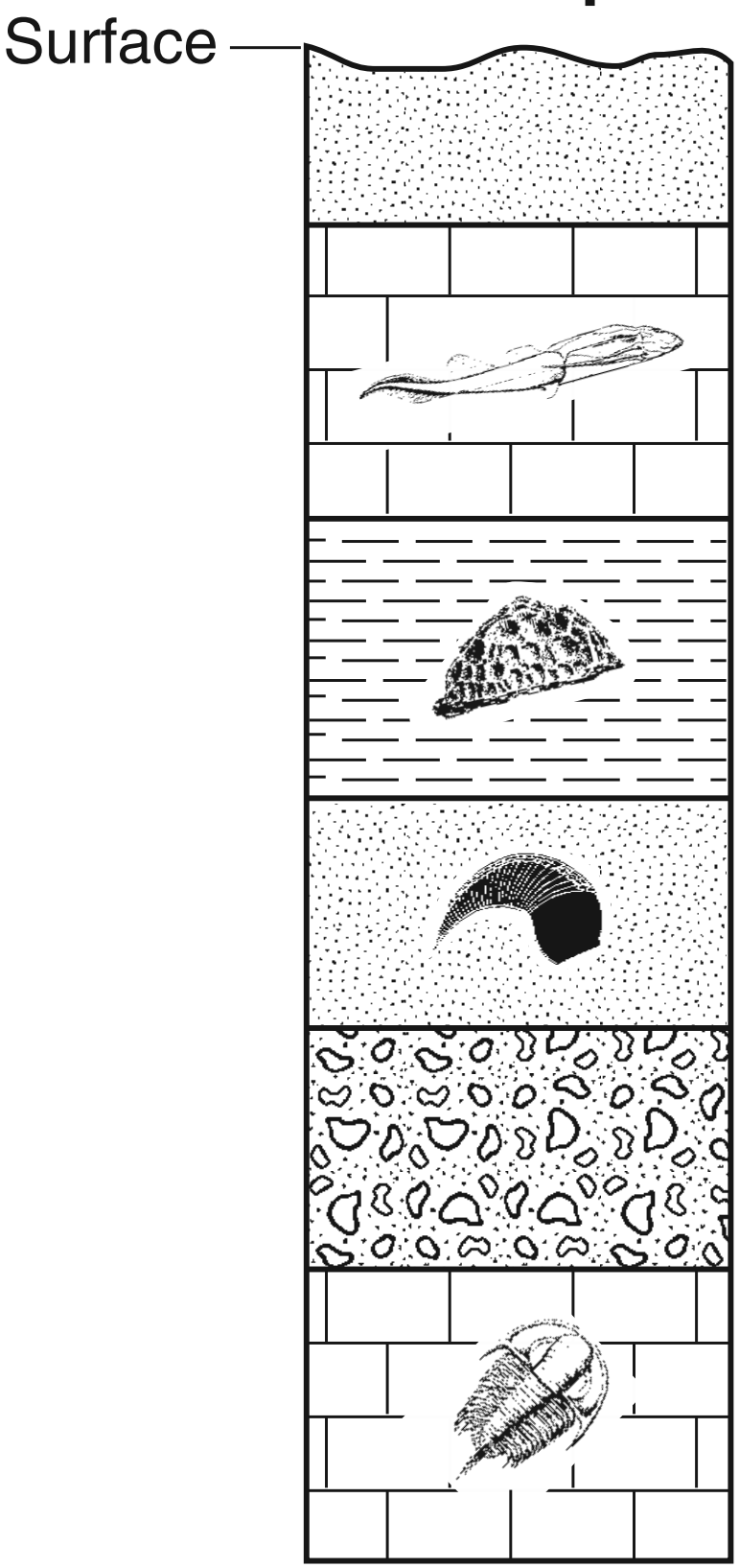
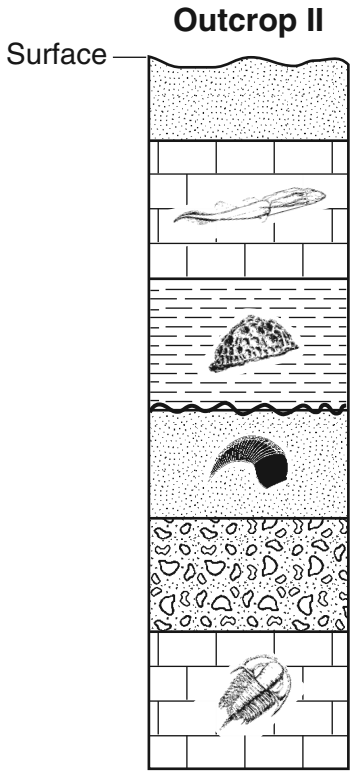
Outcrop II



59 [1] Allow 1 credit for placing the symbol ~~ between the layers shown below.



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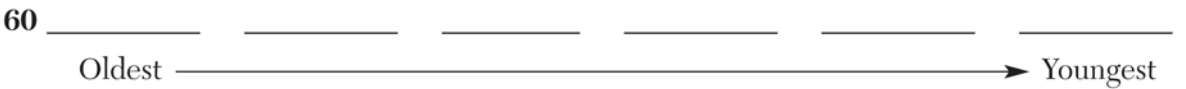
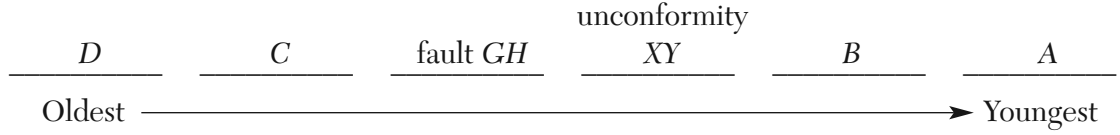


60 [1] Allow 1 credit for the correct sequence shown below.



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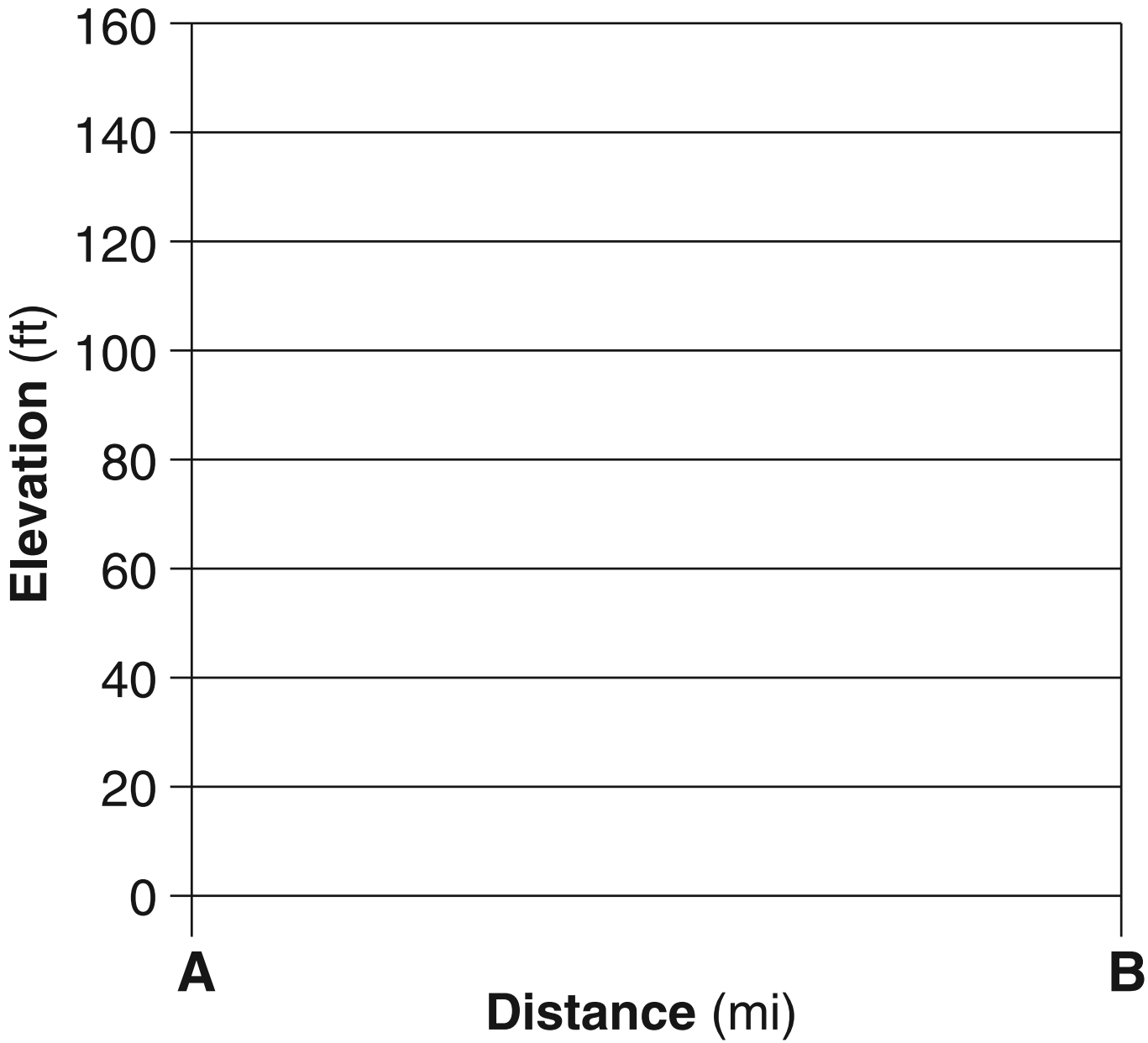
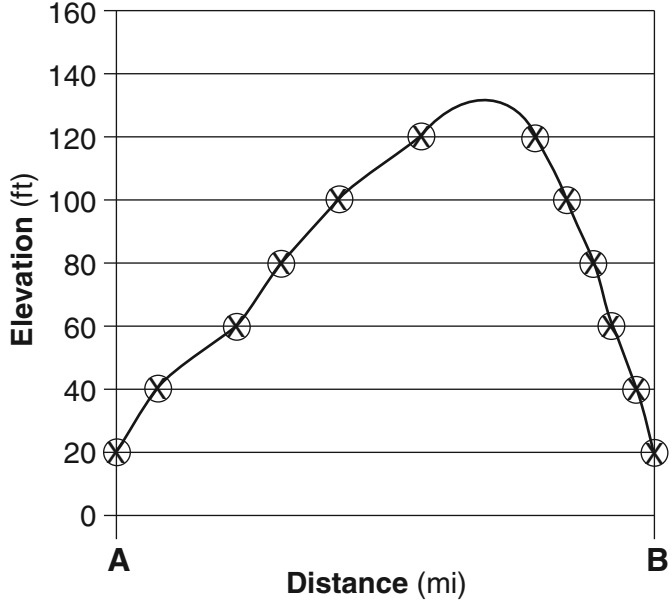


69 [1] Allow 1 credit if the centers of ten to twelve **X**s are within the circles shown below and are correctly connected with a smooth, curved line that passes through the circles and extends above 120 feet but below 140 feet.

Note: It is recommended that an overlay be used to ensure uniformity in scoring.

Example of a 1-credit response:



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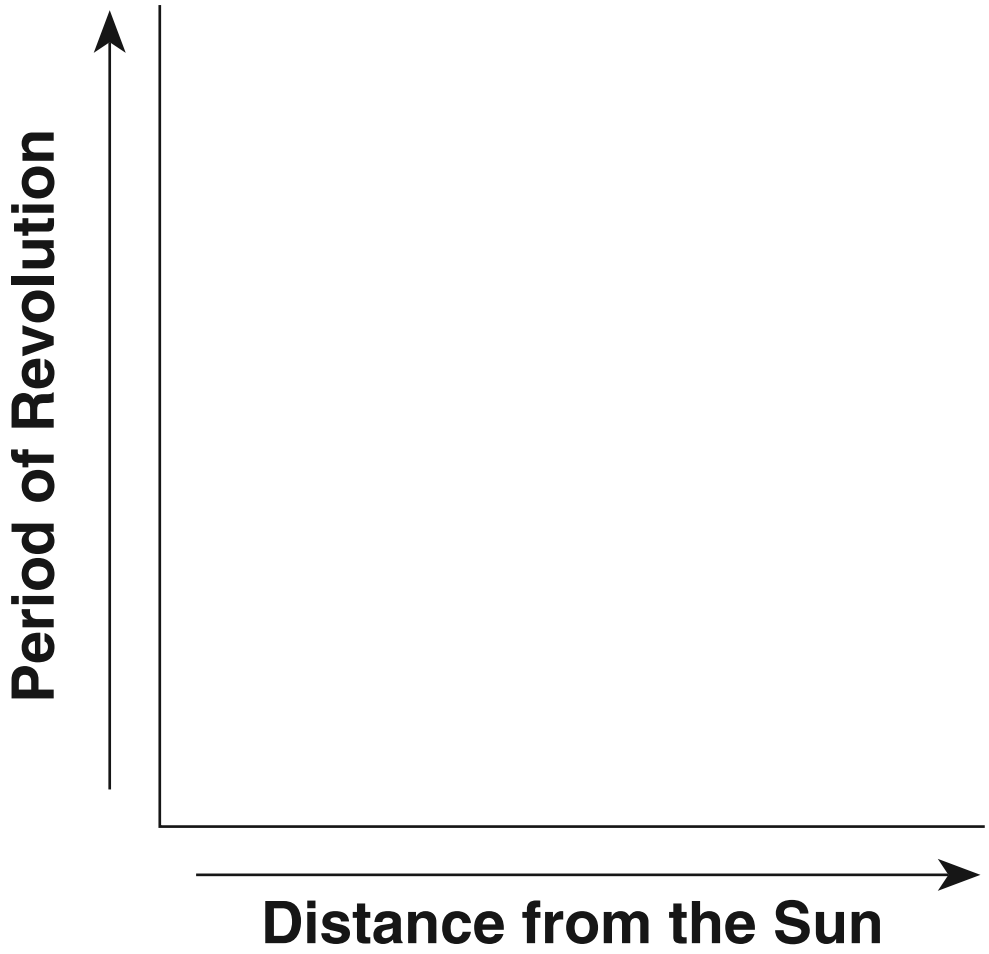

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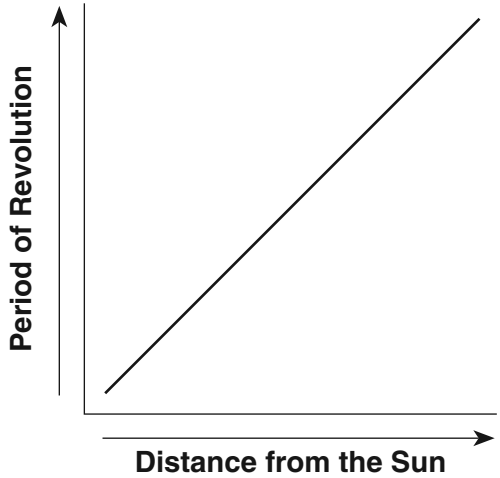
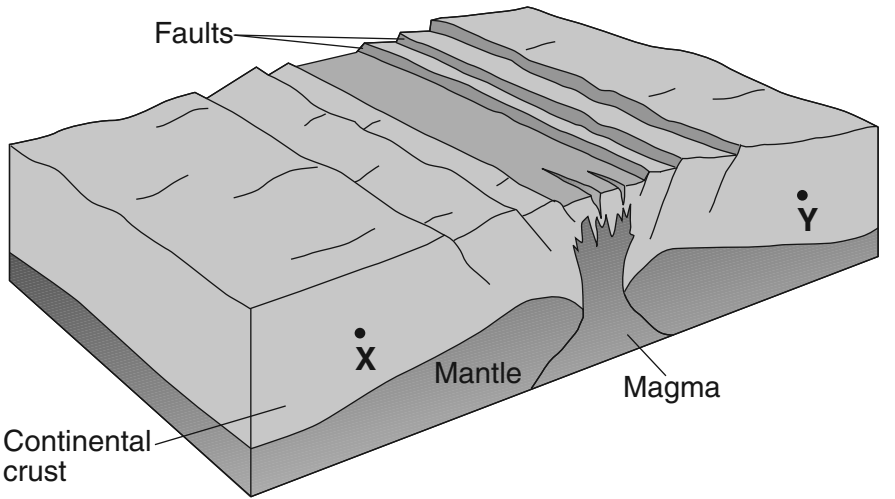
75 [1] Allow 1 credit for a line graph which shows a direct relationship.

Example of a 1-credit response:

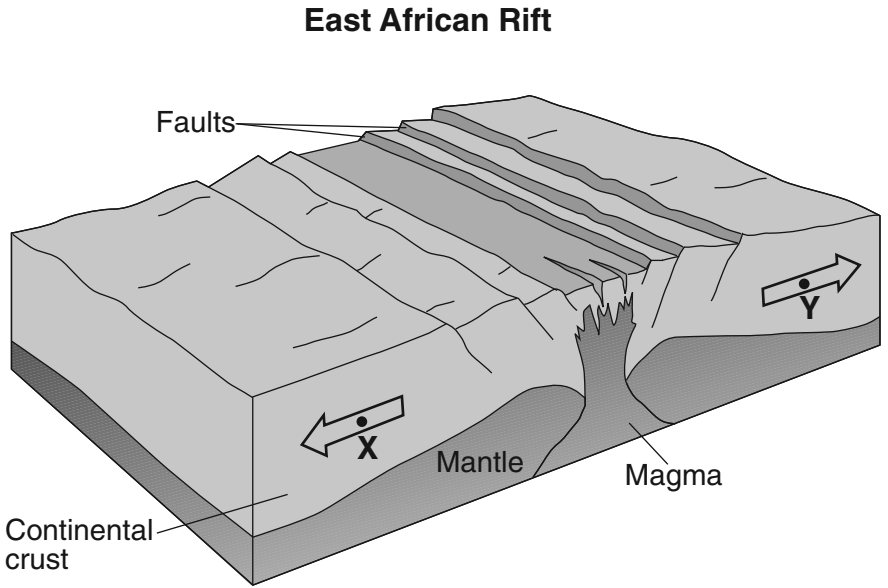


East African Rift



79 [1] Allow 1 credit if *both* arrows show correct directions, even if the arrows do *not* pass through the points.

Example of a 1-credit response:



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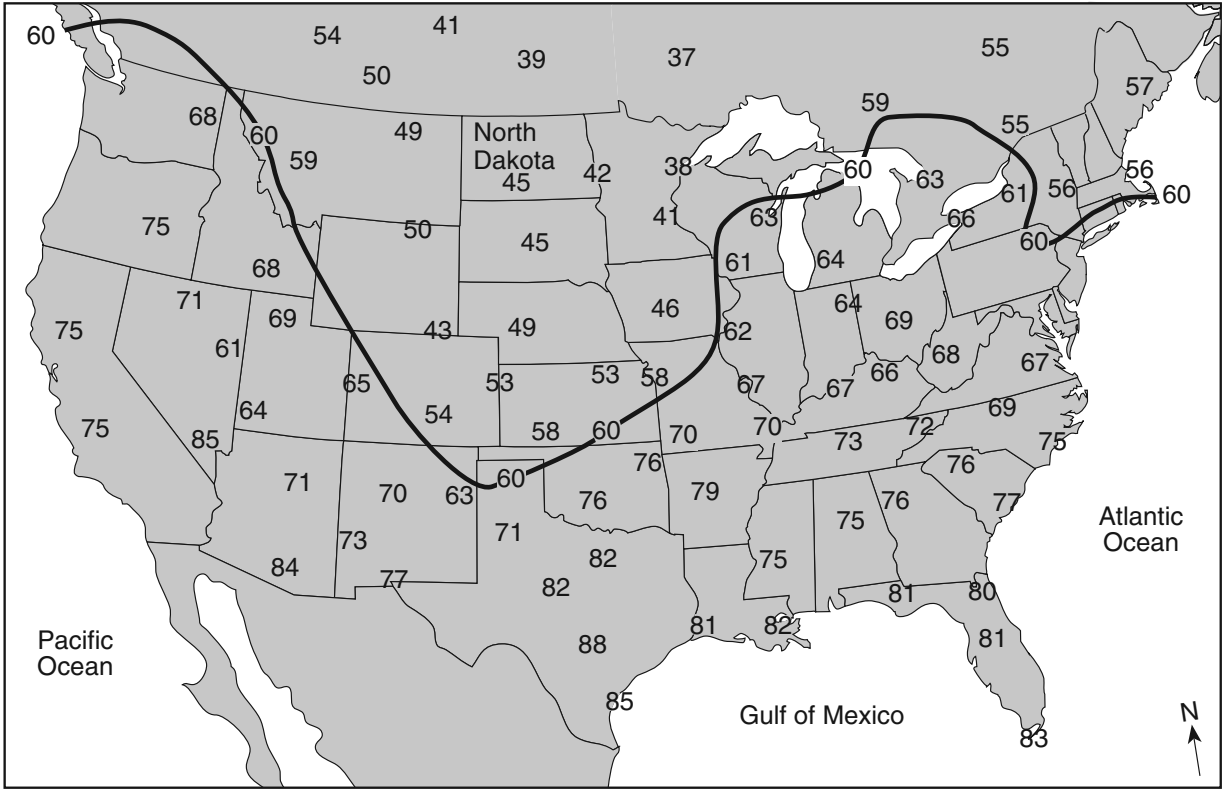
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77
82
82
75
81
80
81
82
88
81
Pacific
Ocean
85
Gulf of Mexico
83
Atlantic
Ocean
N

80 [1] Allow 1 credit for a correctly drawn 70°F isotherm. The isotherm must extend to the edges of the continent. If additional isotherms are drawn, all isotherms must be correct to receive credit.

Example of a 1-credit response: