

The University of the State of New York  
REGENTS HIGH SCHOOL EXAMINATION

**PHYSICAL SETTING**  
**EARTH SCIENCE**

Wednesday, January 23, 2008 — 9:15 a.m. to 12:15 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.**

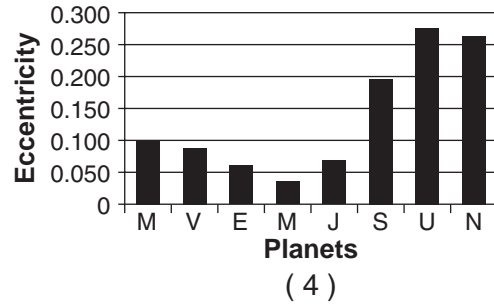
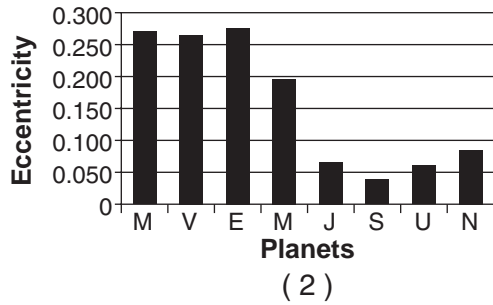
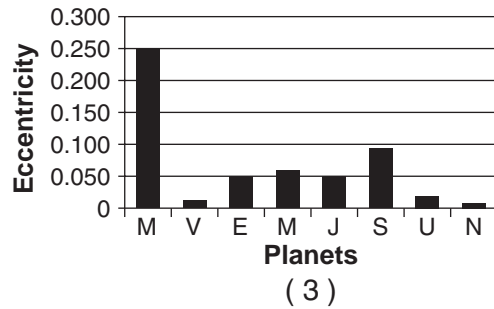
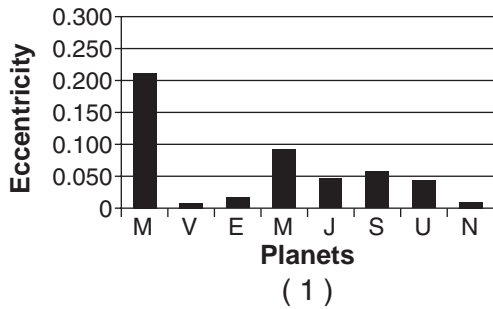
## Part A

### Answer all questions in this part.

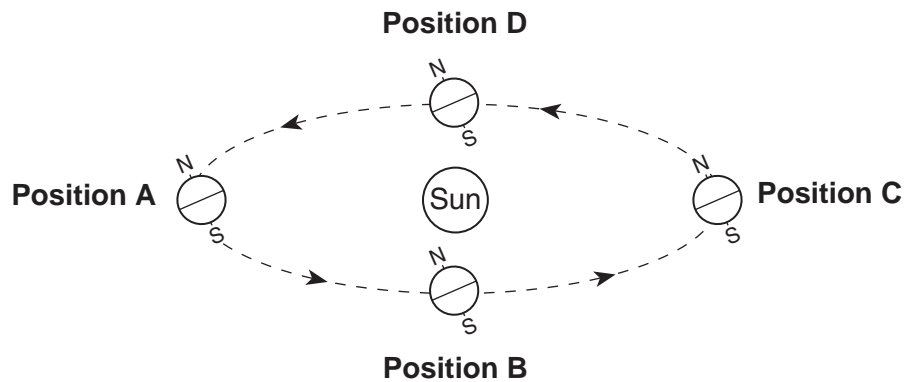
*Directions (1–35):* For *each* statement or question, write on your separate answer sheet the *number* of the word or expression that, of those given, best completes the statement or answers the question. Some questions may require the use of the *Earth Science Reference Tables*.

- 1 One factor responsible for the strength of gravitational attraction between a planet and the Sun is the
- (1) degree of tilt of the planet's axis
  - (2) distance between the planet and the Sun
  - (3) planet's period of rotation
  - (4) amount of insolation given off by the Sun
- 2 Which planet is located approximately ten times farther from the Sun than Earth is from the Sun?
- (1) Mars
  - (2) Jupiter
  - (3) Saturn
  - (4) Uranus
- 3 Large craters found on Earth support the hypothesis that impact events have caused
- (1) a decrease in the number of earthquakes and an increase in sea level
  - (2) an increase in solar radiation and a decrease in Earth radiation
  - (3) the red shift of light from distant stars and the blue shift of light from nearby stars
  - (4) mass extinctions of life-forms and global climate changes
- 4 What is the inferred age of our solar system, in millions of years?
- (1) 544
  - (2) 1300
  - (3) 4600
  - (4) 10,000
- 5 The water table usually rises when there is
- (1) a decrease in the amount of infiltration
  - (2) a decrease in the amount of surface area covered by vegetation
  - (3) an increase in the amount of precipitation
  - (4) an increase in the slope of the land
- 6 What causes the Coriolis effect?
- (1) Earth's tilt on its axis
  - (2) the spin of Earth on its axis
  - (3) the orbital motion of the Moon around Earth
  - (4) the orbital motion of Earth around the Sun
- 7 What is the relative humidity when the dry-bulb temperature is 16°C and the wet-bulb temperature is 14°C?
- (1) 90%
  - (2) 80%
  - (3) 14%
  - (4) 13%
- 8 Which weather instrument is used to measure wind speed?
- (1) anemometer
  - (2) wind vane
  - (3) psychrometer
  - (4) thermometer
- 9 A weather station model is shown below.
- The diagram shows a simple weather station model, which is a circle with the number '029' positioned to its upper right. This represents a barometric pressure reading of 1002.9 millibars.
- What is the barometric pressure indicated by this station model?
- (1) 0.029 mb
  - (2) 902.9 mb
  - (3) 1002.9 mb
  - (4) 1029.0 mb
- 10 The upward movement of air in the atmosphere generally causes the temperature of that air to
- (1) decrease and become closer to the dewpoint
  - (2) decrease and become farther from the dewpoint
  - (3) increase and become closer to the dewpoint
  - (4) increase and become farther from the dewpoint

11 Which bar graph correctly shows the orbital eccentricity of the planets in our solar system?



12 The diagram below shows Earth in its orbit around the Sun. Positions A, B, C, and D represent Earth at the beginning of each season.

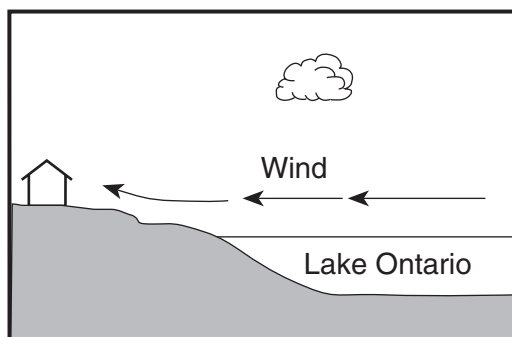


(Not drawn to scale)

At which lettered position of Earth does New York State experience the first day of summer?

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

- 13 The cross section below shows a house on the shore of Lake Ontario in August.



(Not drawn to scale)

Under which conditions would the wind shown in the cross section most likely occur?

- (1) at 2 a.m., when the air over land is 70°F and the air over the lake is 80°F
  - (2) at 6 a.m., when the air over land is 70°F and the air over the lake is 70°F
  - (3) at 2 p.m., when the air over land is 80°F and the air over the lake is 70°F
  - (4) at 10 p.m., when the air over land is 70°F and the air over the lake is 72°F
- 14 Which type of surface absorbs the greatest amount of electromagnetic energy from the Sun?
- (1) smooth, shiny, and light colored
  - (2) smooth, shiny, and dark colored
  - (3) rough, dull, and light colored
  - (4) rough, dull, and dark colored
- 15 Which New York State location is most likely to experience the heaviest winter snowfall when the surface winds are blowing from the west or north-west?
- |                   |                 |
|-------------------|-----------------|
| (1) New York City | (3) Oswego      |
| (2) Binghamton    | (4) Plattsburgh |
- 16 The largest particles that a stream deposits as it enters a pond are 8 centimeters in diameter. The minimum velocity of the stream is approximately
- |                |                |
|----------------|----------------|
| (1) 100 cm/sec | (3) 300 cm/sec |
| (2) 200 cm/sec | (4) 400 cm/sec |

- 17 Which ocean current transports warm water away from Earth's equatorial region?

- |                    |                        |
|--------------------|------------------------|
| (1) Brazil Current | (3) Falkland Current   |
| (2) Guinea Current | (4) California Current |

- 18 The data table below shows the density of four different mineral samples.

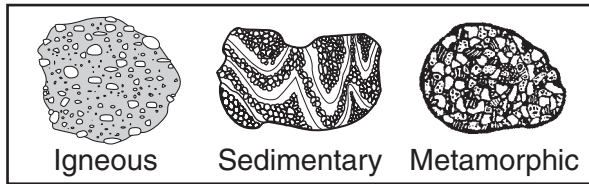
**Data Table**

Mineral	Density (g/cm <sup>3</sup> )
corundum	4.0
galena	7.6
hematite	5.3
quartz	2.7

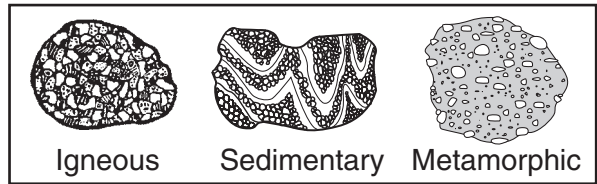
A student accurately measured the mass of a sample of one of the four minerals to be 294.4 grams and its volume to be 73.6 cm<sup>3</sup>. Which mineral sample did the student measure?

- |              |              |
|--------------|--------------|
| (1) corundum | (3) hematite |
| (2) galena   | (4) quartz   |
- 19 Which mineral has a metallic luster, a black streak, and is an ore of iron?
- |               |              |
|---------------|--------------|
| (1) galena    | (3) pyroxene |
| (2) magnetite | (4) graphite |
- 20 The edges of most lithospheric plates are characterized by
- (1) reversed magnetic orientation
  - (2) unusually rapid radioactive decay
  - (3) frequent volcanic activity
  - (4) low *P*-wave and high *S*-wave velocity
- 21 Compared to Earth's continental crust, Earth's oceanic crust is
- (1) thinner and more dense
  - (2) thinner and less dense
  - (3) thicker and more dense
  - (4) thicker and less dense

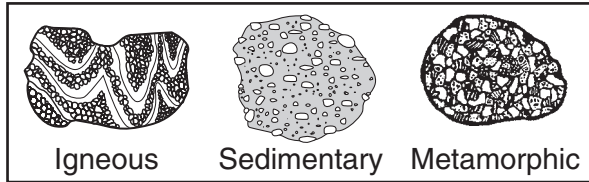
22 In which set are the rock drawings labeled with their correct rock types?



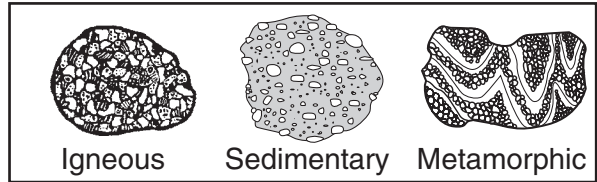
( 1 )



( 3 )

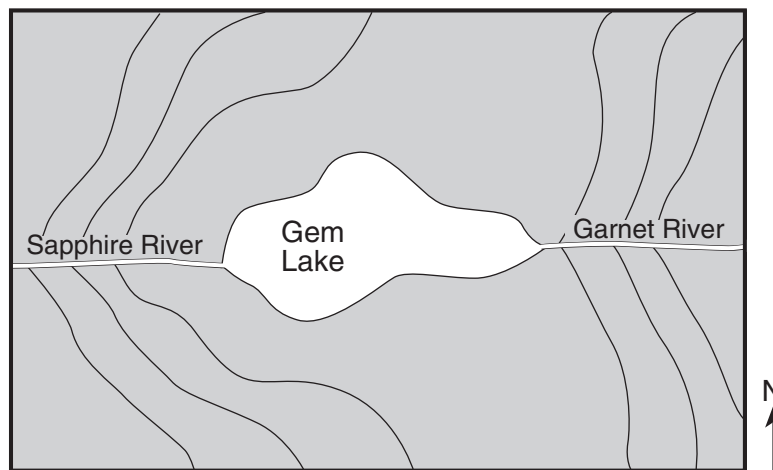


( 2 )



( 4 )

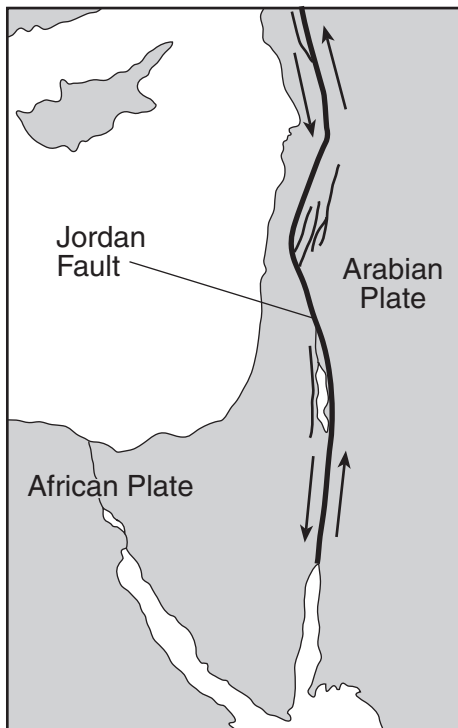
23 The topographic map below shows a lake and two rivers.



In which direction does each of the rivers flow?

- (1) The Sapphire River and the Garnet River both flow east.
- (2) The Sapphire River and the Garnet River both flow west.
- (3) The Sapphire River flows east and the Garnet River flows west.
- (4) The Sapphire River flows west and the Garnet River flows east.

- 24 The map below shows the northern section of the boundary between the Arabian Plate and the African Plate. Arrows show the relative direction of plate motion.

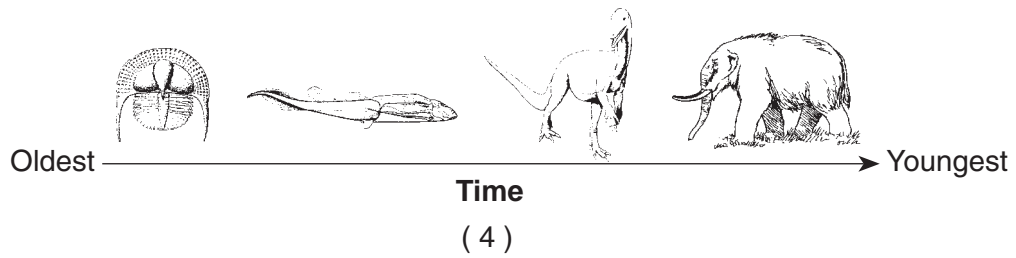
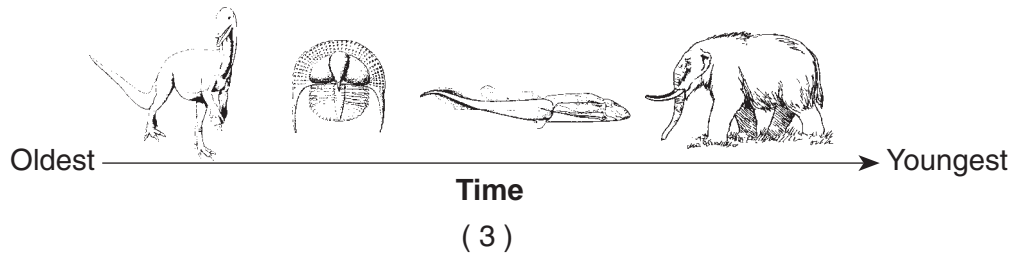
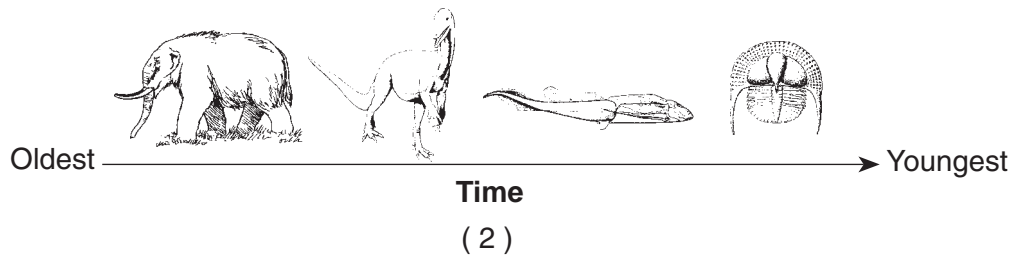
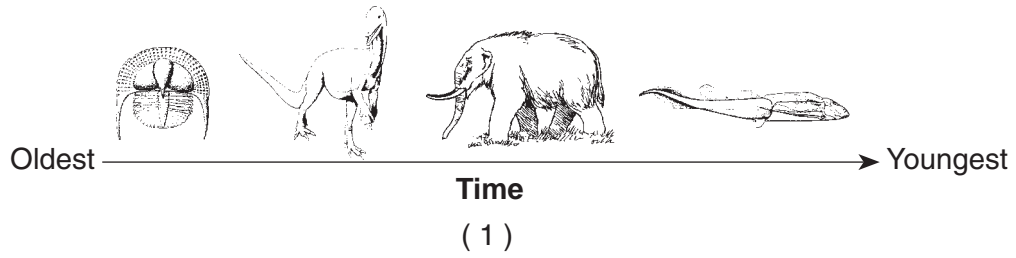


Which type of plate boundary is located at the Jordan Fault?

- (1) divergent (3) convergent  
 (2) subduction (4) transform
- 25 A seismograph station recorded the arrival of the first *P*-wave at 7:32 p.m. from an earthquake that occurred 4000 kilometers away. What time was it at the station when the earthquake occurred?
- (1) 7:20 p.m. (3) 7:32 p.m.  
 (2) 7:25 p.m. (4) 7:39 p.m.
- 26 Which temperature is inferred to exist in Earth's plastic mantle?
- (1) 2000°C (3) 5000°C  
 (2) 3000°C (4) 6000°C

- 27 Which statement correctly compares seismic *P*-waves with seismic *S*-waves?
- (1) *P*-waves travel faster than *S*-waves and pass through Earth's liquid zones.  
 (2) *P*-waves travel faster than *S*-waves and do not pass through Earth's liquid zones.  
 (3) *P*-waves travel slower than *S*-waves and pass through Earth's liquid zones.  
 (4) *P*-waves travel slower than *S*-waves and do not pass through Earth's liquid zones.
- 28 What is the geologic age sequence of the surface bedrock from Ithaca, New York, to Watertown, New York?
- (1) Ordovician, Taconic, Cambrian  
 (2) Ordovician, Tertiary, Pleistocene  
 (3) Devonian, Silurian, Cambrian  
 (4) Devonian, Silurian, Ordovician
- 29 A whalebone that originally contained 200 grams of radioactive carbon-14 now contains 25 grams of carbon-14. How many carbon-14 half-lives have passed since this whale was alive?
- (1) 1 (3) 3  
 (2) 2 (4) 4
- 30 Which geologic event occurred during the same geologic period as the first appearance of modern corals in Earth's oceans?
- (1) Grenville Orogeny  
 (2) Acadian Orogeny  
 (3) intrusion of the Palisades Sill  
 (4) formation of the Catskill Delta
- 31 The presence of eurypterid fossils in New York State bedrock indicates that
- (1) eurypterids lived in land environments  
 (2) eurypterids first appeared on Earth during the Devonian Period  
 (3) most of New York State was once a mountainous region  
 (4) areas of New York State were once covered with shallow seas

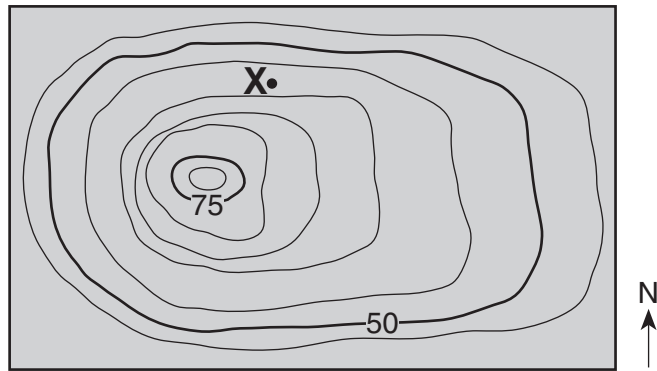
32 Which sequence of New York State index fossils shows the order in which the organisms appeared on Earth?



33 The generalized landscape regions of New York State are classified according to

- (1) bedrock structure and elevation
- (2) bedrock type and index fossils
- (3) latitude and longitude
- (4) climate and topography

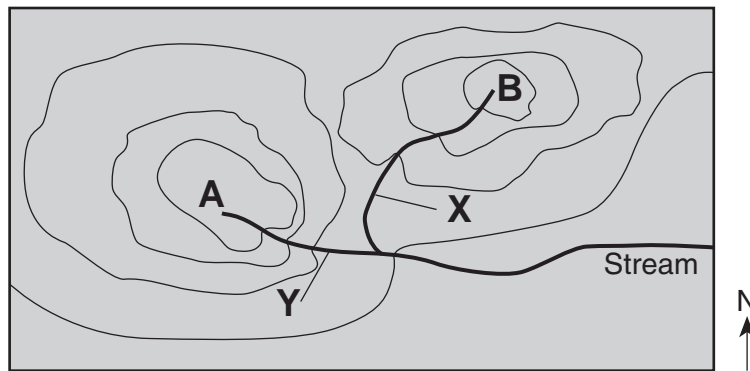
34 Point X is a location on the topographic map below. Elevations are measured in meters.



What is a possible elevation, in meters, of point X?

- |        |        |
|--------|--------|
| (1) 55 | (3) 68 |
| (2) 57 | (4) 70 |

35 The topographic map below shows two hills labeled A and B. The tributary streams labeled X and Y have the same volume of water.



Which statement is best supported by the map?

- |                                   |  |
|-----------------------------------|--|
| (1) Hill A is higher than hill B. | (3) Stream X flows faster than stream Y. |
| (2) Hill B is higher than hill A. | (4) Stream Y flows faster than stream X. |
-

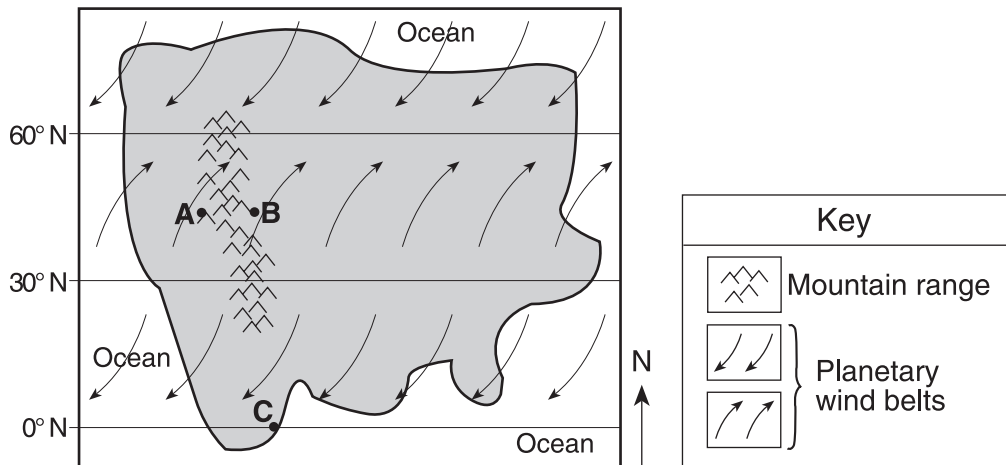


## Part B-1

### Answer all questions in this part.

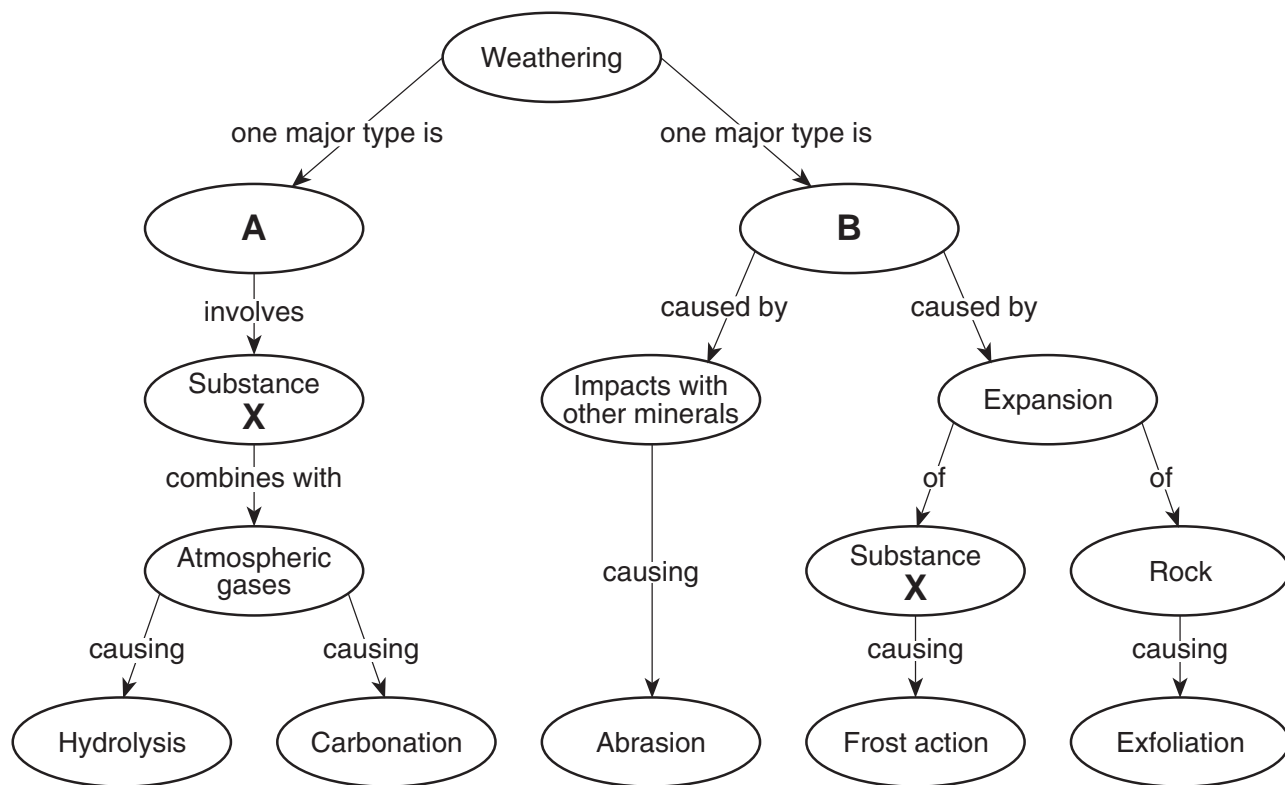
*Directions (36–50):* For *each* statement or question, write on your separate answer sheet the *number* of the word or expression that, of those given, best completes the statement or answers the question. Some questions may require the use of the *Earth Science Reference Tables*.

Base your answers to questions 36 and 37 on the map below, which represents an imaginary continent. Locations *A* and *B* are on opposite sides of a mountain range on a planet similar to Earth. Location *C* is on the planet's equator.



- 36 Compared to the climate at location *A*, the climate at location *B* would most likely be
- (1) warmer and more humid
  - (2) warmer and less humid
  - (3) cooler and more humid
  - (4) cooler and less humid
- 37 Location *C* most likely experiences
- (1) low air pressure and low precipitation
  - (2) low air pressure and high precipitation
  - (3) high air pressure and low precipitation
  - (4) high air pressure and high precipitation
-

Base your answers to questions 38 through 40 on the flowchart below, which shows a general overview of the processes and substances involved in the weathering of rocks at Earth's surface. Letter X represents an important substance involved in both major types of weathering, labeled A and B on the flowchart. Some weathering processes are defined below the flowchart.



Definitions
Frost action – the breakup of rocks caused by the expansion of substance X
Abrasion – the wearing down of rocks or particles as they rub or bounce against other rocks
Exfoliation – the peeling away of large sheets of loosened material at the surface of a rock
Hydrolysis – the change in a material caused by contact with substance X
Carbonation – the change in a material caused by contact with carbonic acid

38 Which term best identifies the type of weathering represented by A?

- (1) physical
- (2) biological
- (3) chemical
- (4) glacial

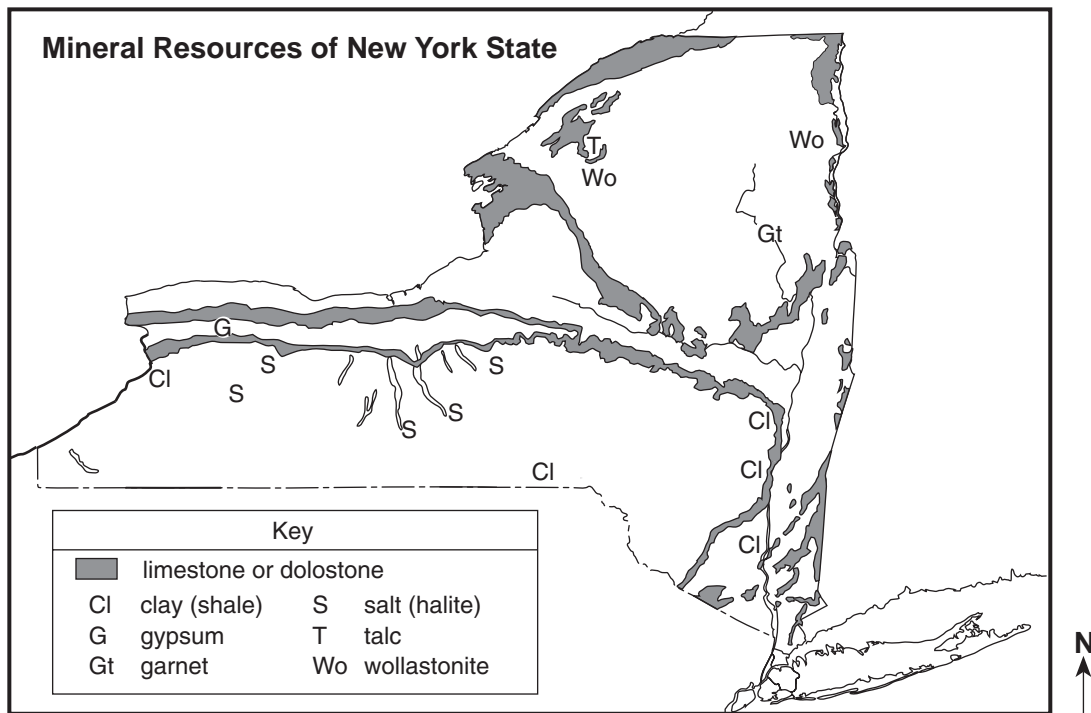
39 Which substance is represented by X on both sides of the flowchart?

- (1) potassium feldspar
- (2) air
- (3) hydrochloric acid
- (4) water

40 Which weathering process is most common in a hot, dry environment?

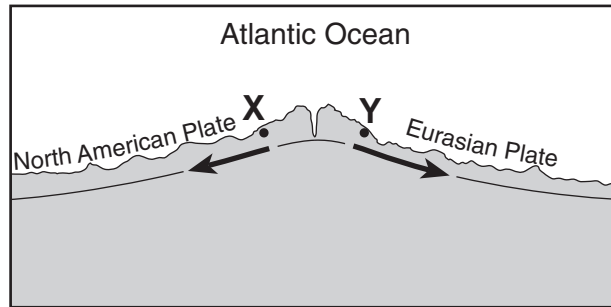
- (1) abrasion
- (2) carbonation
- (3) frost action
- (4) hydrolysis

Base your answers to questions 41 through 44 on the map below, which shows areas where certain minerals were mined in significant amounts during 1989.



41. In which New York State landscape region was most of the garnet mined?
- (1) Catskills (2) Adirondack Mountains (3) Tug Hill Plateau (4) Erie-Ontario Lowlands
42. What is a common use for the mineral that is mined at the southern end of the two largest Finger Lakes?
- (1) making talcum powder (2) vulcanizing rubber (3) polishing jewelry (4) melting ice
43. The gypsum deposits in New York State were formed
- (1) as a result of volcanic eruptions (2) as a result of metamorphism (3) in a shallow ocean (4) in a glacial outwash plain
44. The mineral wollastonite has a hardness of 4.5 to 5. Which New York State mineral could easily scratch wollastonite?
- (1) garnet (2) halite (3) talc (4) gypsum

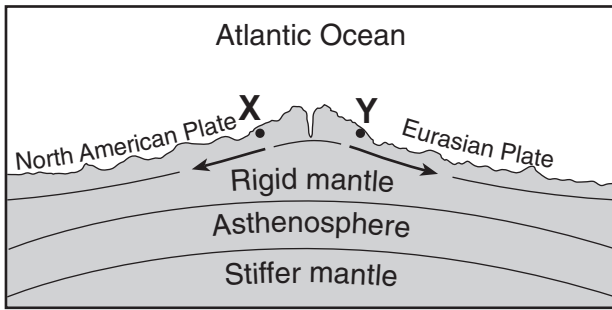
Base your answers to questions 45 and 46 on the cross section below, which shows an underwater mountain range in the Atlantic Ocean. The oceanic bedrock is composed mainly of basalt. Points X and Y are locations in the bedrock that have been diverging at the same rate. The movement of the North American Plate and Eurasian Plate is shown by the two arrows.



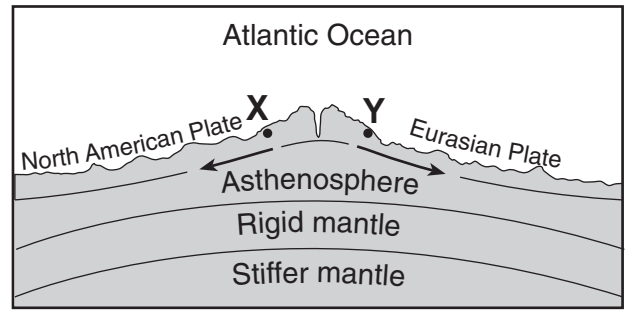
( Not drawn to scale )

- 45 Which statements best describe the age and magnetic orientation of the basalts found at locations X and Y?
- (1) The basalt at location X is younger than the basalt at location Y. Both locations have the same magnetic orientation.
  - (2) The basalts at locations X and Y are the same age. Both locations have the same magnetic orientation.
  - (3) The basalts at locations X and Y are the same age. Location X has normal magnetic orientation and location Y has reversed magnetic orientation.
  - (4) The basalt at location X is older than the basalt at location Y. Location X has reversed magnetic orientation and location Y has normal magnetic orientation.

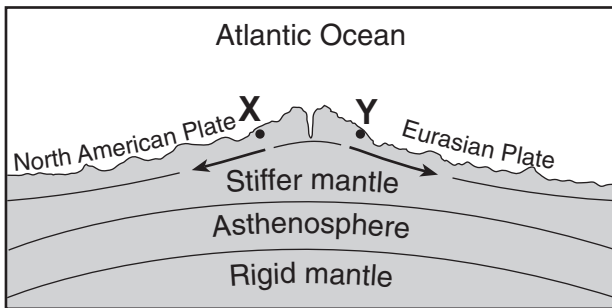
46 Which cross section best represents the relative locations of Earth's asthenosphere, rigid mantle, and stiffer mantle? (The cross sections are not drawn to scale.)



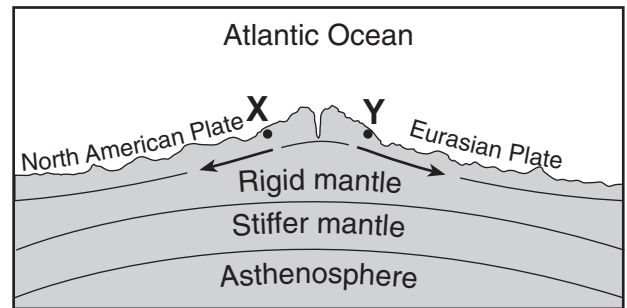
( 1 )



( 3 )

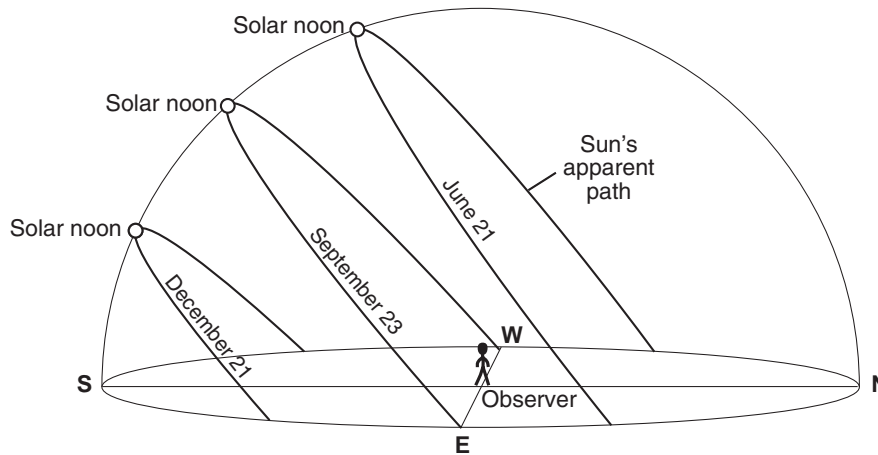


( 2 )



( 4 )

Base your answers to questions 47 through 50 on the diagram below, which represents the Sun's apparent paths and the solar noon positions for an observer at  $42^\circ$  N latitude on December 21, September 23, and June 21.



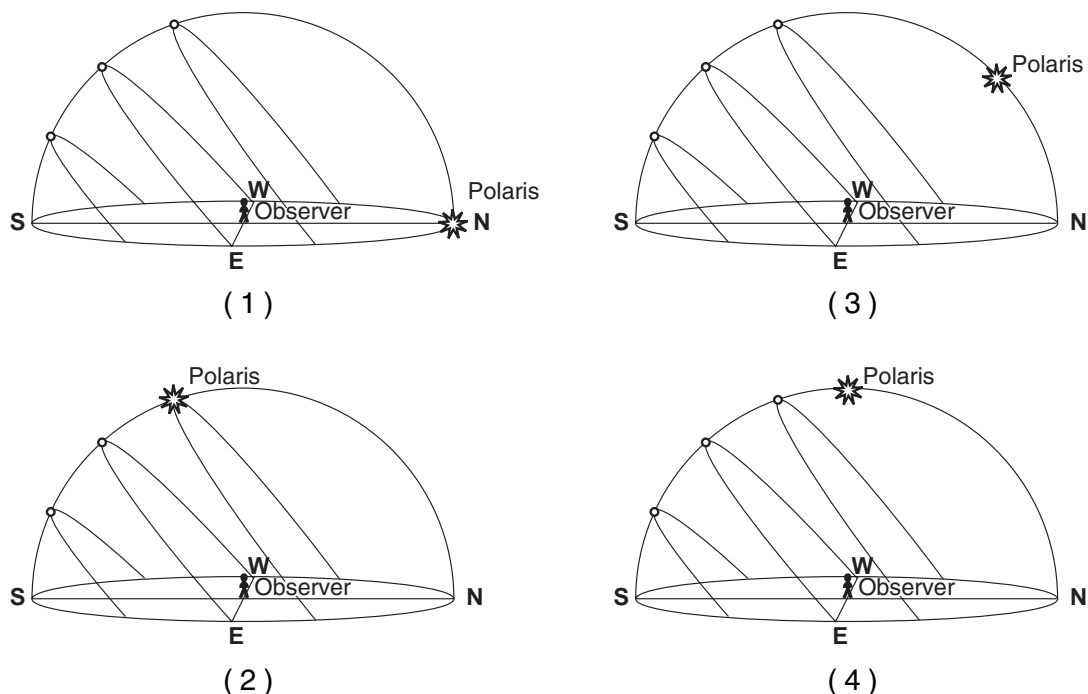
47 In which direction will sunrise occur on June 21?

- (1) north of due west
- (2) north of due east
- (3) south of due west
- (4) south of due east

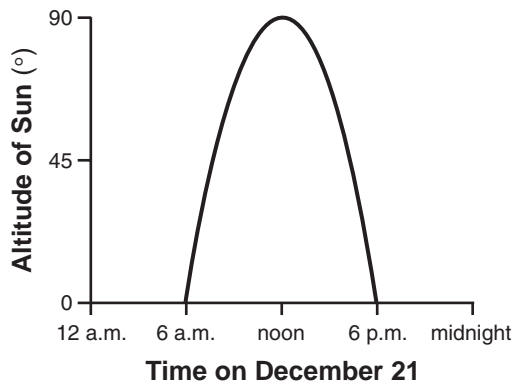
48 How many hours occurred between sunrise and solar noon on September 23?

- (1) 6
- (2) 8
- (3) 12
- (4) 24

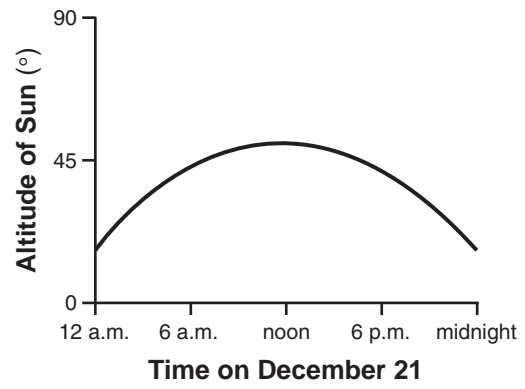
49 Which diagram best shows the location of *Polaris* relative to the observer?



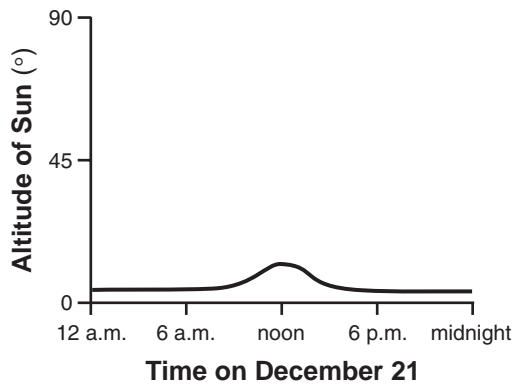
50 Which graph best shows the altitude of the Sun, as measured by the observer located at  $42^\circ$  N, at various times on December 21?



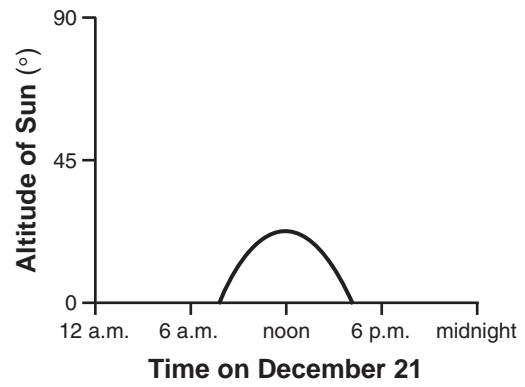
( 1 )



( 3 )



( 2 )



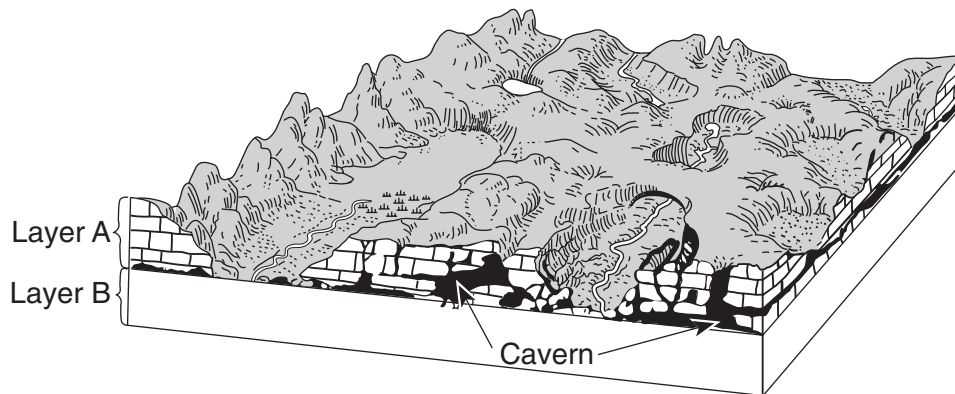
( 4 )

**Part B-2**

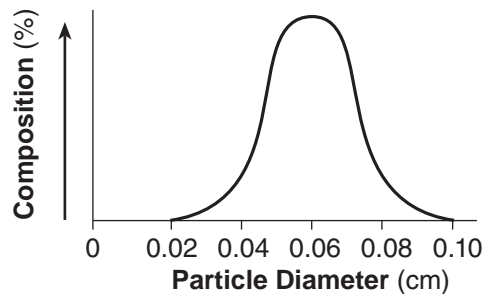
**Answer all questions in this part.**

*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 block diagram below, which shows the landscape features of an area of Earth's crust. Two sedimentary rock layers, A and B, are labeled in the diagram. The rock symbol for layer B has been omitted.



- 51 Identify the most abundant mineral in rock layer A. [1]
- 52 Describe how the caverns formed in rock layer A. [1]
- 53 The graph below shows the particle sizes that compose the clastic sedimentary rock in layer B.



In the box in your answer booklet, draw the map symbol from the *Earth Science Reference Tables* that represents rock layer B. [1]

---



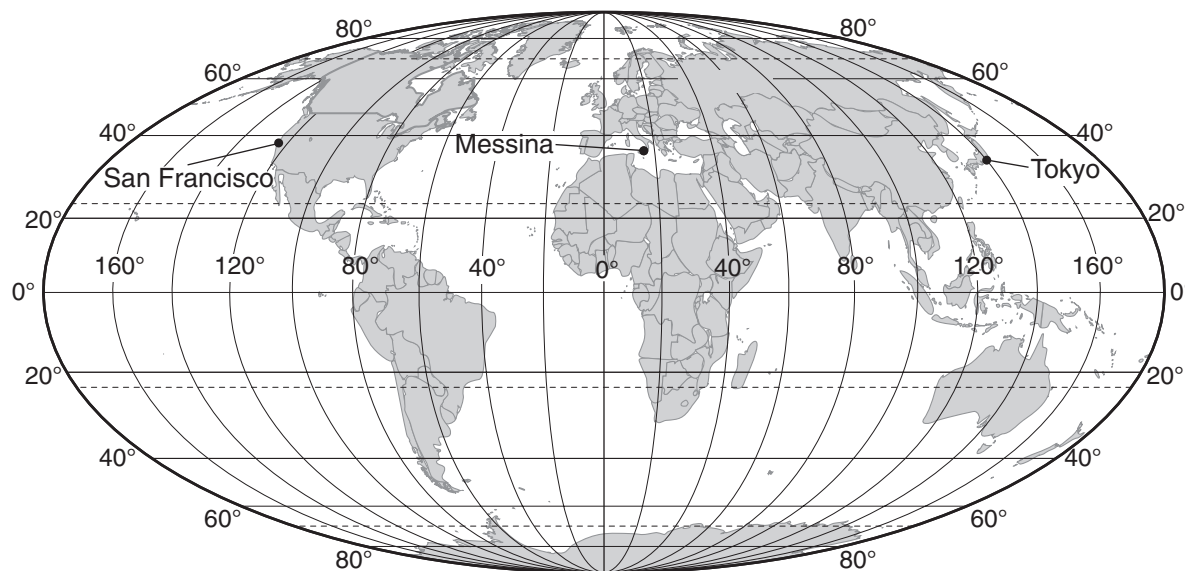
Base your answers to questions 54 through 56 on the table below, which lists the location of some earthquakes, their Richter magnitude, and their year of occurrence.

**Data Table**

Location	Richter Magnitude	Year
San Francisco, United States	7.8	1906
Messina, Italy	7.5	1908
Tokyo, Japan	8.3	1923
San Francisco, United States	7.1	1989

54 What data do scientists use to determine the magnitude of earthquakes without visiting the actual sites? [1]

55 The locations of the earthquakes listed in the table are shown on the map below.

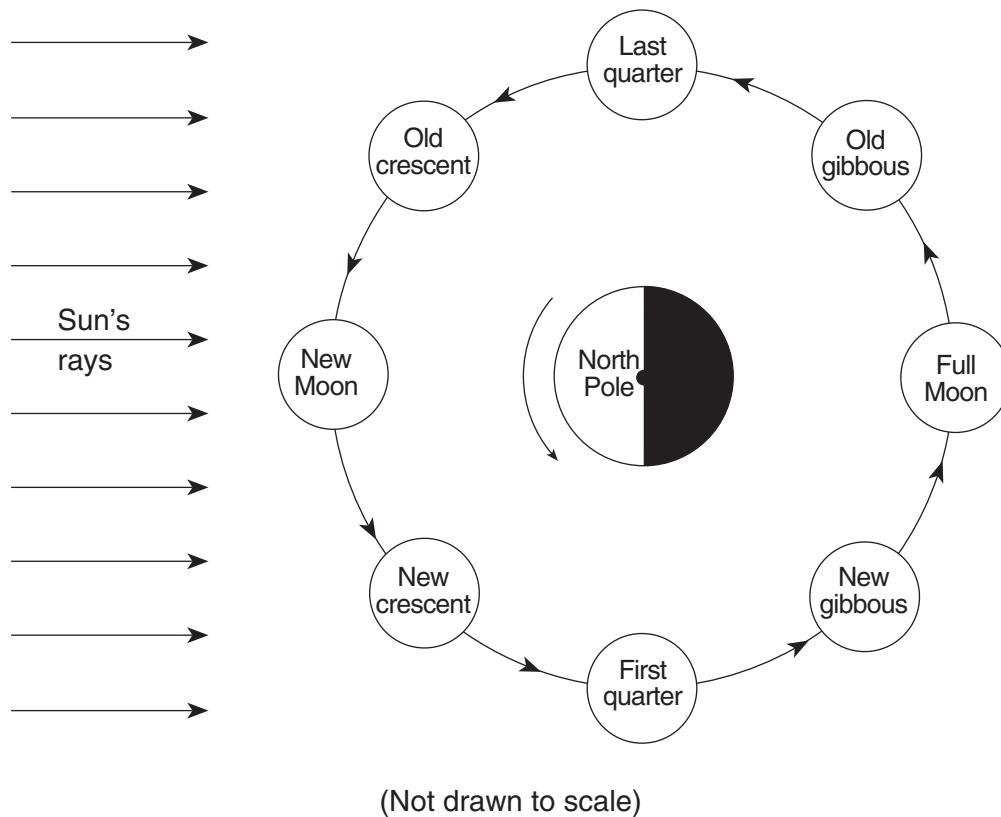


Explain how the locations of these earthquakes are related to tectonic plates. [1]

56 Identify the process in Earth's asthenosphere that is inferred to be the cause of tectonic plate motion. [1]

---

Base your answers to questions 57 through 60 on the diagram below, which shows Earth as viewed from above the North Pole. The nighttime side of Earth has been shaded. The Moon is shown at eight positions in its orbit around Earth. The name of each Moon phase is indicated at each Moon position. The dark portion of each Moon position has not been shaded.



- 57 On the diagram *in your answer booklet*, shade the portion of the Moon that is in darkness to show the last quarter phase as viewed from New York State. [1]
- 58 Explain what causes the Moon's phases when viewed from Earth. [1]
- 59 Which Moon phase occurs approximately one week after the New Moon phase? [1]
- 60 Explain why the same side of the Moon always faces Earth. [1]
- 
- 61 Complete the table *in your answer booklet* by identifying the color and classification of the star *Procyon B*. The data for the Sun have been completed as an example. [1]
-

Base your answers to questions 62 through 65 on the cross section in your answer booklet which shows a portion of Earth's crust. Letters *A* through *J* represent rock units or geologic structures. The rock units have not been overturned.

62 On the cross section *in your answer booklet*, draw a circle around the letter of the oldest rock unit shown. [1]

63 On the same cross section, place an **X** to indicate a location where the rock, marble, was formed. [1]

64 Describe *one* piece of evidence shown in the cross section that suggests rock unit *D* is younger than rock unit *F*. [1]

65 Explain why rock unit *H* is *not* one continuous layer. [1]

---

## Part C

### Answer all questions in this part.

*Directions (66–84):* Record your answers in the spaces provided in your answer booklet. Some questions may require the use of the *Earth Science Reference Tables*.

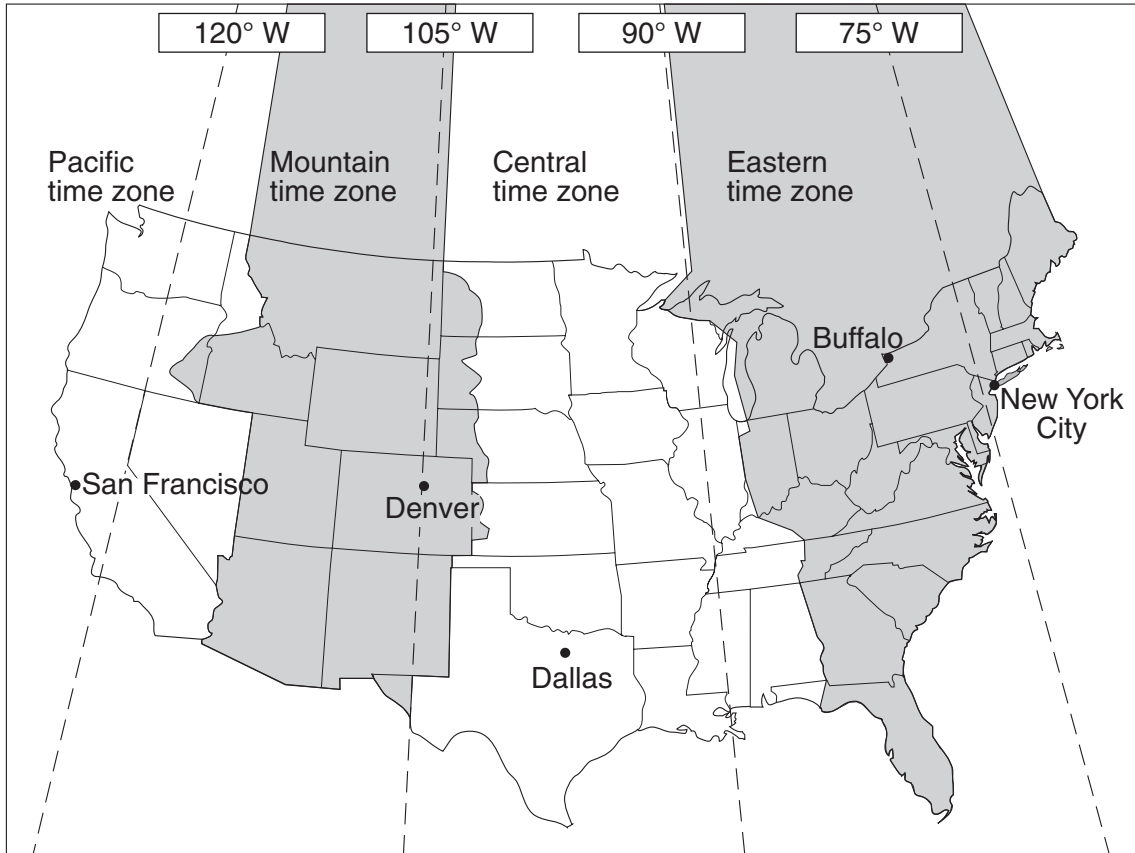
Base your answers to questions 66 through 70 on the weather map in your answer booklet. The isobars show air pressures, in millibars. Points *A* and *B* indicate locations on the map.

- 66 On the weather map *in your answer booklet*, place an **X** centered on the geographic region that was most likely the source of the mT air mass. [1]
- 67 Calculate the pressure gradient along a straight line between point *A* and point *B* on the map. Label your answer with the correct units. [2]
- 68 Describe the evidence shown on the map that indicates strong winds were blowing between Miles City and Pierre. [1]
- 69 In the table *in your answer booklet*, write the names of the cities listed below in sequence from lowest relative humidity to highest relative humidity. [1]
- Albuquerque  
Chicago  
New York City
- 70 Describe the pattern of the surface winds around the center of the low-pressure system (**L**). [1]
-

Base your answers to questions 71 and 72 on the passage and time zones map shown below.

### Time Zones

In 1883, Earth was divided into 24 time zones. The United States (excluding Alaska and Hawaii) has four time zones, which are indicated by different shadings on the map. Each zone is roughly centered on lines of longitude that are  $15^\circ$  apart. These lines are shown as dashed lines on the map. Most locations within a time zone have the same time. This time is called standard time. As you move to the west, the time in each zone is one hour earlier than the previous time zone.



71 When it is 1 a.m. in New York City, what time is it in Denver? [1]

72 Explain, in terms of Earth's rotation, why the time zones are  $15^\circ$  of longitude apart. [1]

---

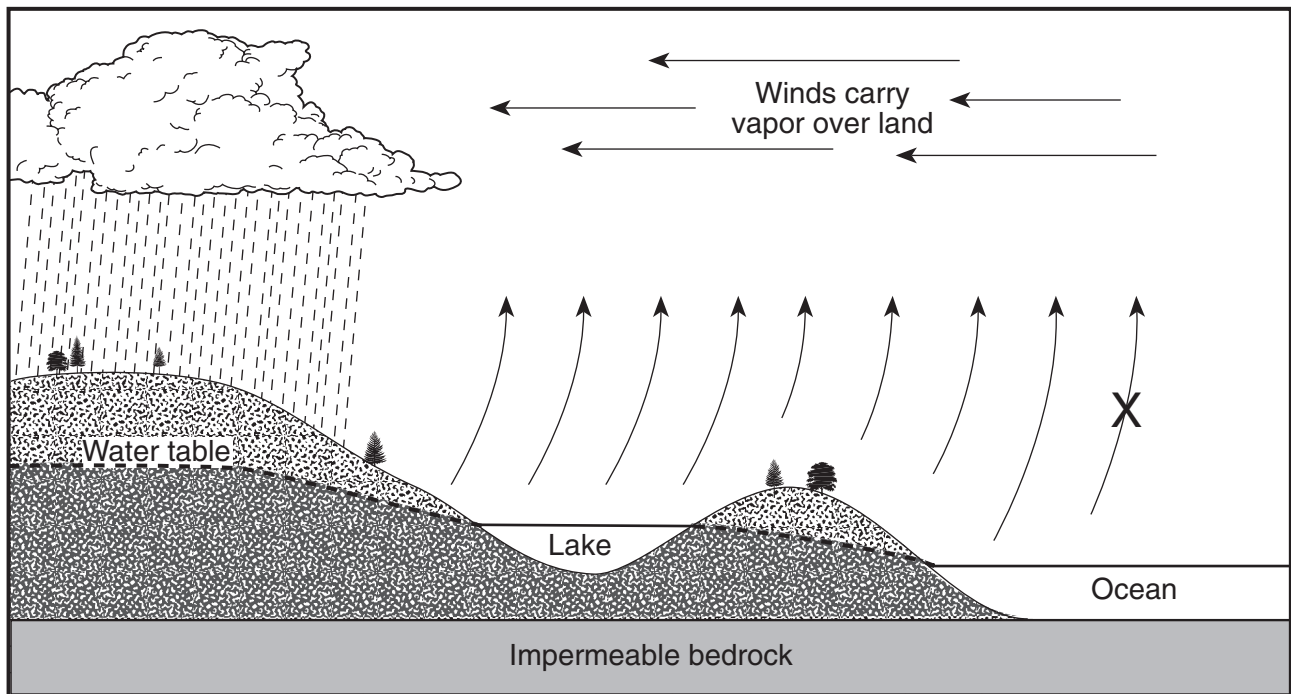
Base your answers to questions 73 and 74 on the data table below, which shows the average number of days with thunderstorms that occur over land areas at different latitudes each year.

**Data Table**

<b>Latitude</b>	<b>Average Number of Days a Thunderstorm Occurs Over Land</b>
60° N	5
45° N	14
30° N	19
15° N	30
0° (equator)	56
15° S	44
30° S	21
45° S	8
60° S	0

- 73 On the grid *in your answer booklet*, plot, with an **X**, the average number of days per year a thunderstorm occurs over a land area for *each* latitude shown on the data table. Connect the centers of the **X**s with a line. [1]
- 74 State the relationship between latitude and the average number of days each year that thunderstorms occur over a land area. [1]
-

Base your answers to questions 75 through 79 on the cross section below, which shows the general pattern of water movement in the water cycle. Letter X represents a water-cycle process.



75 What process of the water cycle is represented by X? [1]

76 Describe the process of condensation. [1]

77 Describe *one* surface condition that would allow runoff to occur. [1]

78 Explain *one* role of plants in the water cycle. [1]

79 As the lake surface freezes in the winter, how many calories of heat are released by each gram of water? [1]

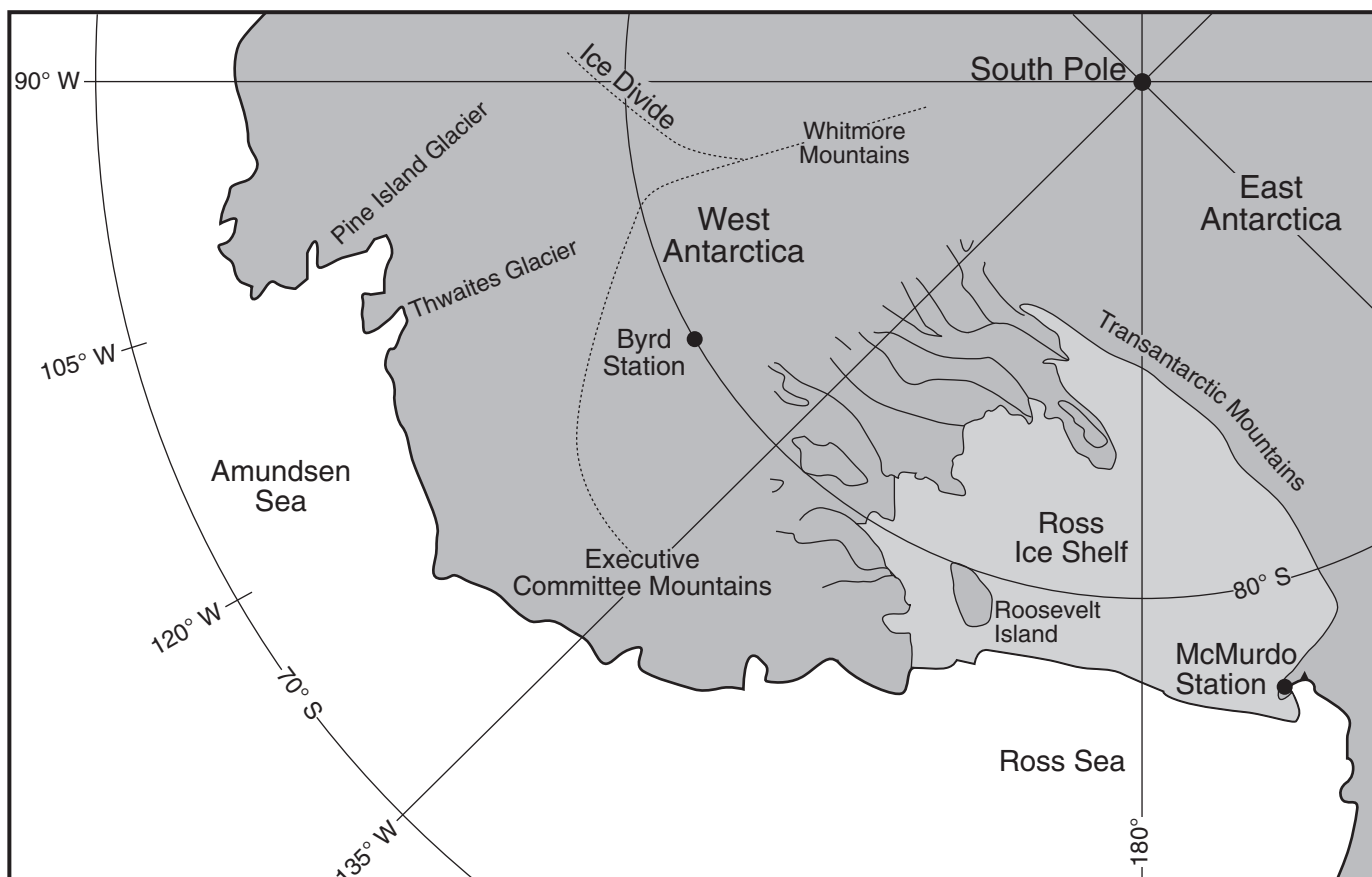
---

Base your answers to questions 80 through 84 on the passage and map below. The map shows a portion of the continent of Antarctica.

### Antarctica's Ice Sheet

The size and shape of the West Antarctic Ice Sheet depends on many factors, including melting and freezing beneath the glacier; the amount of snowfall, snow removal by wind, iceberg formation, and the rate of ice flow. Glacial moraines are found in the Executive Committee Mountains shown on the map. Moraines are located up to 100 meters in elevation above the present ice sheet surface, which indicates that a thicker ice sheet existed 20,000 years ago.

The world's oceans and climate are influenced by Antarctica's ice. Even a small increase in sea level from melting glaciers would be a disaster for the nearly two billion people who live near coastal areas.



80 Identify *one* piece of evidence found on the sides of some Antarctic mountains that indicates that an ice sheet, hundreds of meters thicker than the current ice sheet, existed in the past. [1]

81 What is the duration of insolation on December 21 at McMurdo Station? [1]



- 82 State the latitude and longitude of Byrd Station. Your answer must include *both* the units and the compass directions. [1]
- 83 Describe the arrangement of sediment found in a glacial moraine. [1]
- 84 Identify *one* change that would cause a decrease in the size of the West Antarctic Ice Sheet. [1]
-

Tear Here

The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

PHYSICAL SETTING  
EARTH SCIENCE

Wednesday, January 23, 2008 — 9:15 a.m. to 12:15 p.m., only

ANSWER SHEET

Student ..... Sex:  Male  Female Grade .....

Teacher ..... School .....

Record your answers to Part A and Part B-1 on this answer sheet.

Part A

- 1 ..... 13 ..... 25 .....
- 2 ..... 14 ..... 26 .....
- 3 ..... 15 ..... 27 .....
- 4 ..... 16 ..... 28 .....
- 5 ..... 17 ..... 29 .....
- 6 ..... 18 ..... 30 .....
- 7 ..... 19 ..... 31 .....
- 8 ..... 20 ..... 32 .....
- 9 ..... 21 ..... 33 .....
- 10 ..... 22 ..... 34 .....
- 11 ..... 23 ..... 35 .....
- 12 ..... 24 .....

Part A Score

Part B-1

- 36 ..... 44 .....
- 37 ..... 45 .....
- 38 ..... 46 .....
- 39 ..... 47 .....
- 40 ..... 48 .....
- 41 ..... 49 .....
- 42 ..... 50 .....
- 43 .....

Part B-1 Score

Write your answers to Part B-2 and Part C in your answer booklet.

The declaration below should be signed when you have completed the examination.

I do hereby affirm, at the close of this examination, that I had no unlawful knowledge of the questions or answers prior to the examination and that I have neither given nor received assistance in answering any of the questions during the examination.

Signature

Tear Here

**PHYSICAL SETTING  
 EARTH SCIENCE**

Wednesday, January 23, 2008 — 9:15 a.m. to 12:15 p.m., only

**ANSWER BOOKLET**

Male

Student..... Sex:  Female

Teacher .....

School..... Grade .....

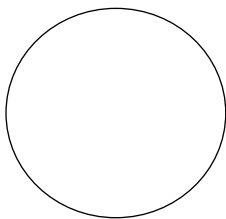
Answer all questions in Part B-2 and Part C. Record your answers in this booklet.

<input type="checkbox"/>		<b>Performance Test Score (Maximum Score: 23)</b>
.....		
<b>Part</b>	<b>Maximum Score</b>	<b>Student's Score</b>
<b>A</b>	<b>35</b>	
<b>B-1</b>	<b>15</b>	
<b>B-2</b>	<b>15</b>	
<b>C</b>	<b>20</b>	
<b>Total Written Test Score (Maximum Raw Score: 85)</b>		<input type="checkbox"/>
<b>Final Score (from conversion chart)</b>		<input type="checkbox"/>
<b>Raters' Initials:</b>		
Rater 1 ..... Rater 2 .....		

<b>Part B-2</b>		<b>For Raters Only</b>
51 _____		51 <input type="checkbox"/>
52 _____		52 <input type="checkbox"/>
53 _____	<input type="checkbox"/>	53 <input type="checkbox"/>
54 _____		54 <input type="checkbox"/>
55 _____		55 <input type="checkbox"/>
56 _____		56 <input type="checkbox"/>

**For Raters  
Only**

57



57

58

---

---

58

59

---

59

60

---

---

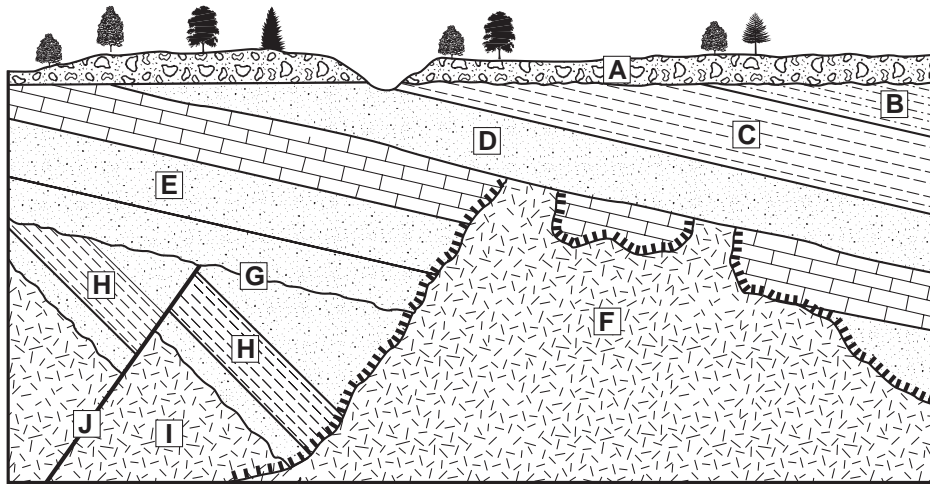
60

61

<b>Star</b>	<b>Color</b>	<b>Classification</b>
Sun	yellow	main sequence
<i>Procyon B</i>		

61

62 and 63



For Raters Only

62

63

Key	
	Igneous rock
	Contact metamorphism

64 \_\_\_\_\_

64

\_\_\_\_\_

65 \_\_\_\_\_

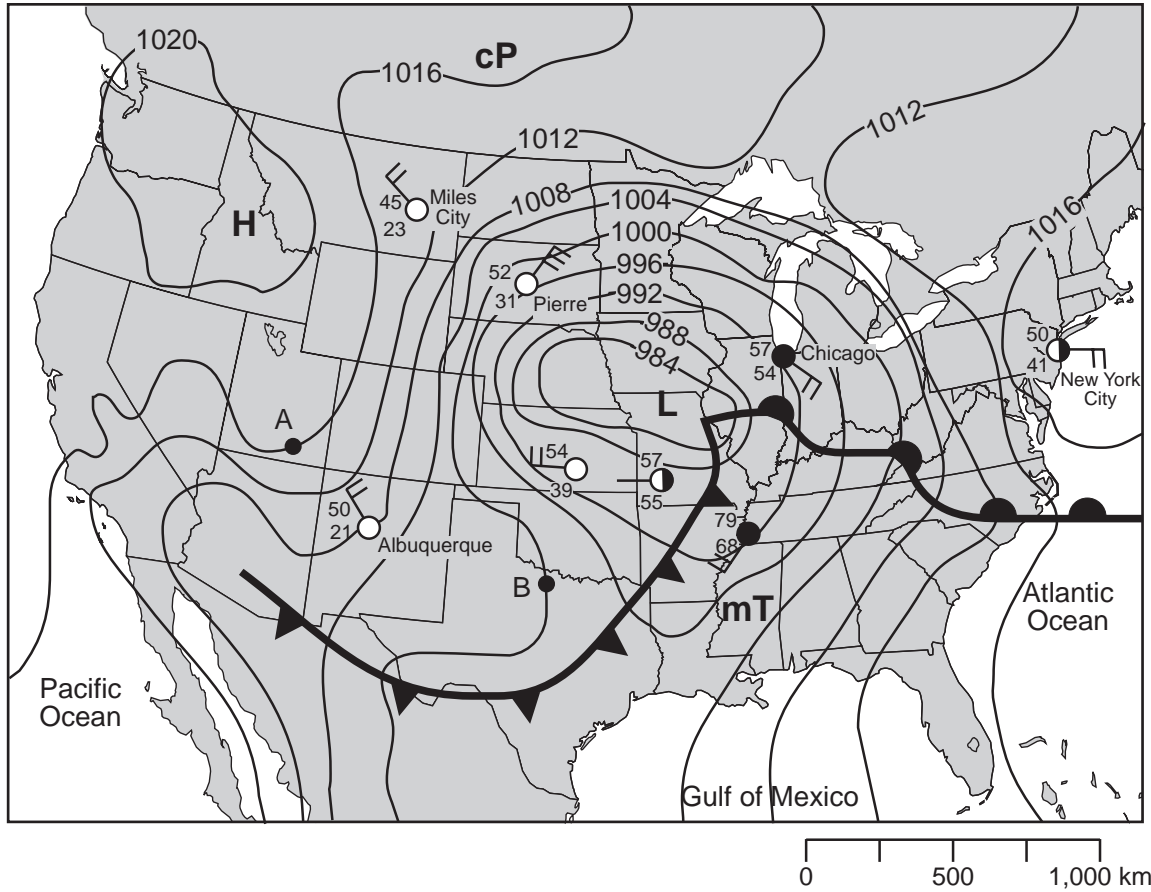
65

\_\_\_\_\_

Total Score for Part B-2

Part C

66



66

67 Gradient = \_\_\_\_\_

67

68 \_\_\_\_\_  
\_\_\_\_\_

68

For Raters Only

69

--	--	--

Lowest Relative Humidity  $\longrightarrow$  Highest Relative Humidity

69

70

---

70

71

---

71

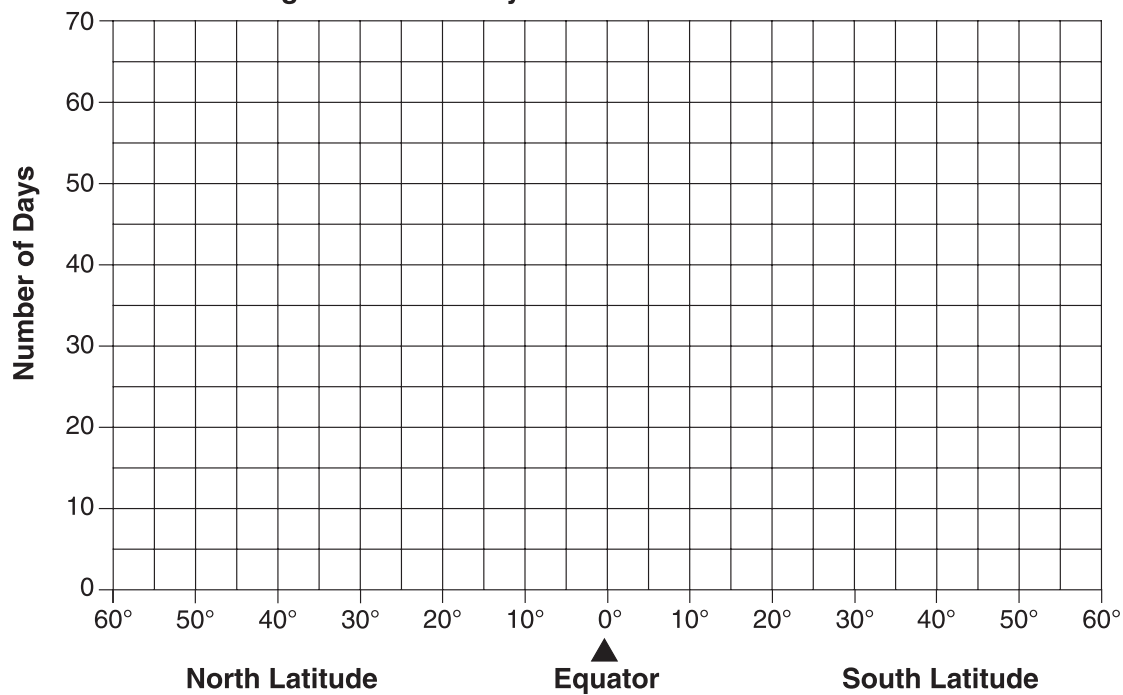
72

---

72

73

Average Number of Days a Thunderstorm Occurs Over Land



73

74

---

74

**For Raters  
Only**

75 \_\_\_\_\_

75

76 \_\_\_\_\_

76

\_\_\_\_\_

77 \_\_\_\_\_

77

\_\_\_\_\_

78 \_\_\_\_\_

78

\_\_\_\_\_

79 \_\_\_\_\_ **calories/gram**

79

80 \_\_\_\_\_

80

81 \_\_\_\_\_ **hr**

81

82 Latitude: \_\_\_\_\_

82

Longitude: \_\_\_\_\_

83 \_\_\_\_\_

83

84 \_\_\_\_\_

84

\_\_\_\_\_

**Total Score for  
Part C**



# FOR TEACHERS ONLY

The University of the State of New York  
REGENTS HIGH SCHOOL EXAMINATION

## PS-ES PHYSICAL SETTING/EARTH SCIENCE

Wednesday, January 23, 2008 — 9:15 a.m. to 12:15 p.m., only

### SCORING KEY AND RATING GUIDE

**Directions to the Teacher:**

Refer to the directions on page 3 before rating student papers.

Updated information regarding the rating of this examination may be posted on the New York State Education Department's web site during the rating period. Check this web site <http://www.emsc.nysed.gov/osa/> and select the link "Examination Scoring Information" for any recently posted information regarding this examination. This site should be checked before the rating process for this examination begins and several times throughout the Regents examination period.

**Part A and Part B-1**

Allow 1 credit for each correct response.

Part A			Part B-1	
1 . . . . . <b>2</b> . . . . .	13 . . . . . <b>3</b> . . . . .	25 . . . . . <b>2</b> . . . . .	36 . . . . . <b>2</b> . . . . .	44 . . . . . <b>1</b> . . . . .
2 . . . . . <b>3</b> . . . . .	14 . . . . . <b>4</b> . . . . .	26 . . . . . <b>1</b> . . . . .	37 . . . . . <b>2</b> . . . . .	45 . . . . . <b>2</b> . . . . .
3 . . . . . <b>4</b> . . . . .	15 . . . . . <b>3</b> . . . . .	27 . . . . . <b>1</b> . . . . .	38 . . . . . <b>3</b> . . . . .	46 . . . . . <b>1</b> . . . . .
4 . . . . . <b>3</b> . . . . .	16 . . . . . <b>2</b> . . . . .	28 . . . . . <b>4</b> . . . . .	39 . . . . . <b>4</b> . . . . .	47 . . . . . <b>2</b> . . . . .
5 . . . . . <b>3</b> . . . . .	17 . . . . . <b>1</b> . . . . .	29 . . . . . <b>3</b> . . . . .	40 . . . . . <b>1</b> . . . . .	48 . . . . . <b>1</b> . . . . .
6 . . . . . <b>2</b> . . . . .	18 . . . . . <b>1</b> . . . . .	30 . . . . . <b>3</b> . . . . .	41 . . . . . <b>2</b> . . . . .	49 . . . . . <b>3</b> . . . . .
7 . . . . . <b>2</b> . . . . .	19 . . . . . <b>2</b> . . . . .	31 . . . . . <b>4</b> . . . . .	42 . . . . . <b>4</b> . . . . .	50 . . . . . <b>4</b> . . . . .
8 . . . . . <b>1</b> . . . . .	20 . . . . . <b>3</b> . . . . .	32 . . . . . <b>4</b> . . . . .	43 . . . . . <b>3</b> . . . . .	
9 . . . . . <b>3</b> . . . . .	21 . . . . . <b>1</b> . . . . .	33 . . . . . <b>1</b> . . . . .		
10 . . . . . <b>1</b> . . . . .	22 . . . . . <b>4</b> . . . . .	34 . . . . . <b>2</b> . . . . .		
11 . . . . . <b>1</b> . . . . .	23 . . . . . <b>1</b> . . . . .	35 . . . . . <b>4</b> . . . . .		
12 . . . . . <b>3</b> . . . . .	24 . . . . . <b>4</b> . . . . .			

**Directions to the Teacher**

Follow the procedures below for scoring student answer papers for the Physical Setting/Earth Science examination. Additional information about scoring is provided in the publication *Information Booklet for Scoring Regents Examinations in the Sciences*.

Use only *red* ink or *red* pencil in rating Regents papers. Do *not* correct the student's work by making insertions or changes of any kind.

On the detachable answer sheet for Part A and Part B–1, indicate by means of a check mark each incorrect or omitted answer. In the box provided at the end of each part, record the number of questions the student answered correctly for that part.

At least two science teachers must participate in the scoring of each student's responses to the Part B–2 and Part C open-ended questions. Each of these teachers should be responsible for scoring a selected number of the open-ended questions on each answer paper. No one teacher is to score all the open-ended questions on a student's answer paper.

Students' responses must be scored strictly according to the Scoring Key and Rating Guide. For open-ended questions, credit may be allowed for responses other than those given in the rating guide if the response is a scientifically accurate answer to the question and demonstrates adequate knowledge as indicated by the examples in the rating guide. In the student's answer booklet, record the number of credits earned for each answer in the box printed to the right of the answer lines or spaces for that question.

Fractional credit is *not* allowed. Only whole-number credit may be given to a response. Units need not be given when the wording of the questions allows such omissions.

Raters should enter the scores earned for Part A, Part B–1, Part B–2, and Part C on the appropriate lines in the box printed on the answer booklet and then should add these four scores and enter the total in the box labeled "Total Written Test Score." The student's score for the Earth Science Performance Test should be entered in the space provided. Then, the student's raw scores on the performance test and written test should be converted to a scaled score by using the conversion chart that will be posted on the Department's web site <http://www.emsc.nysed.gov/osa/> on Wednesday, January 23, 2008. The student's scaled score should be entered in the labeled box on the student's answer booklet. The scaled score is the student's final examination score.

All student answer papers that receive a scaled score of 60 through 64 **must** be scored a second time. For the second scoring, a different committee of teachers may score the student's paper or the original committee may score the paper, except that no teacher may score the same open-ended questions that he/she scored in the first rating of the paper. The school principal is responsible for assuring that the student's final examination score is based on a fair, accurate, and reliable scoring of the student's answer paper.

Because scaled scores corresponding to raw scores in the conversion chart may change from one examination to another, it is crucial that for each administration, the conversion chart provided for that administration be used to determine the student's final score.

**Part B–2**

**Allow a total of 15 credits for this part. The student must answer all questions in this part.**

**51** [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- calcite
- $\text{CaCO}_3$

**52** [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- Limestone reacts with acids in groundwater.
- Acids in water cause limestone to dissolve.
- chemical weathering of limestone
- Water flowing through cracks removes limestone.

**53** [1] Allow 1 credit for .

**54** [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- seismic wave recordings
- *P*-waves and *S*-waves
- seismograms
- damage reports

**55** [1] Allow 1 credit. Acceptable responses include, but are not limited to:

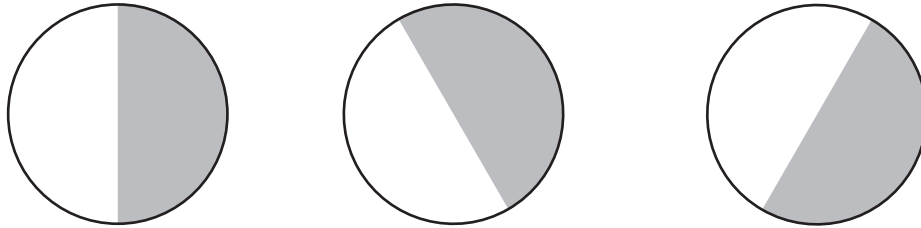
- They are all located at or near tectonic plate boundaries.
- They are located where crustal plates meet.

**56** [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- convection currents
- convection
- density currents

- 57 [1] Allow 1 credit if approximately  $\frac{1}{2}$  of the Moon is shaded on the right-hand side.

**Examples of 1-credit responses:**



- 58 [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- Moon phases are caused by the Moon revolving around Earth.
  - The Moon traveling around Earth causes the Moon to show a cycle of phases.
  - Different amounts of the lighted half of the Moon are seen from Earth.
- 59 [1] Allow 1 credit for first quarter.
- 60 [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- The Moon's rate of rotation equals the Moon's rate of revolution.
  - The Moon completes one spin on its axis in the same amount of time it takes to complete one orbit around Earth.

61 [1] Allow 1 credit if both the color and classification are correct.

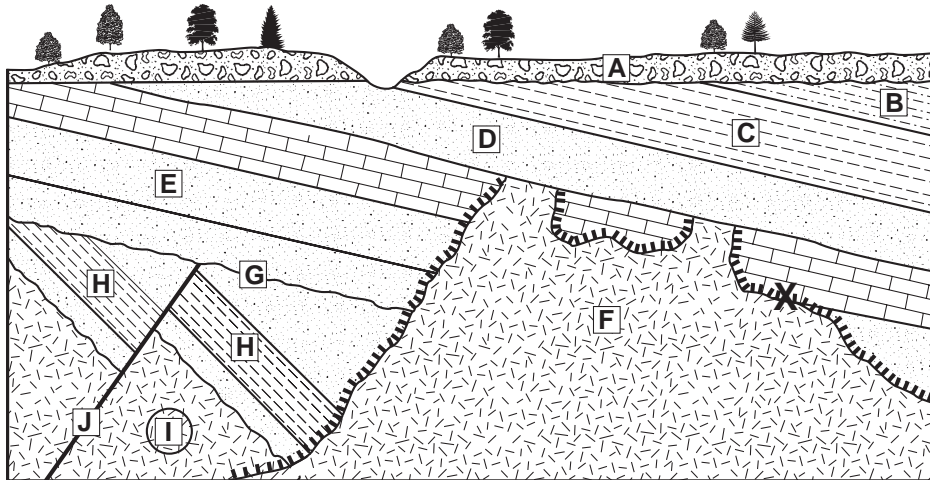
**Example of a 1-credit response:**

Star	Color	Classification
<i>Procyon B</i>	yellow or yellow white	white dwarf

62 [1] Allow 1 credit for circling letter *I*.

63 [1] Allow 1 credit if the center of the **X** is located anywhere in the contact metamorphic zone in the limestone layer.

**Example of a correct response for questions 62 and 63:**



Key	
	Igneous rock
	Contact metamorphism

64 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- There is no contact metamorphism shown in rock unit *D*.
- Rock unit *F* was eroded, then rock unit *D* was formed.
- There is a buried erosional surface between *F* and *D*.
- Rock unit *D* is on top of rock unit *F*.

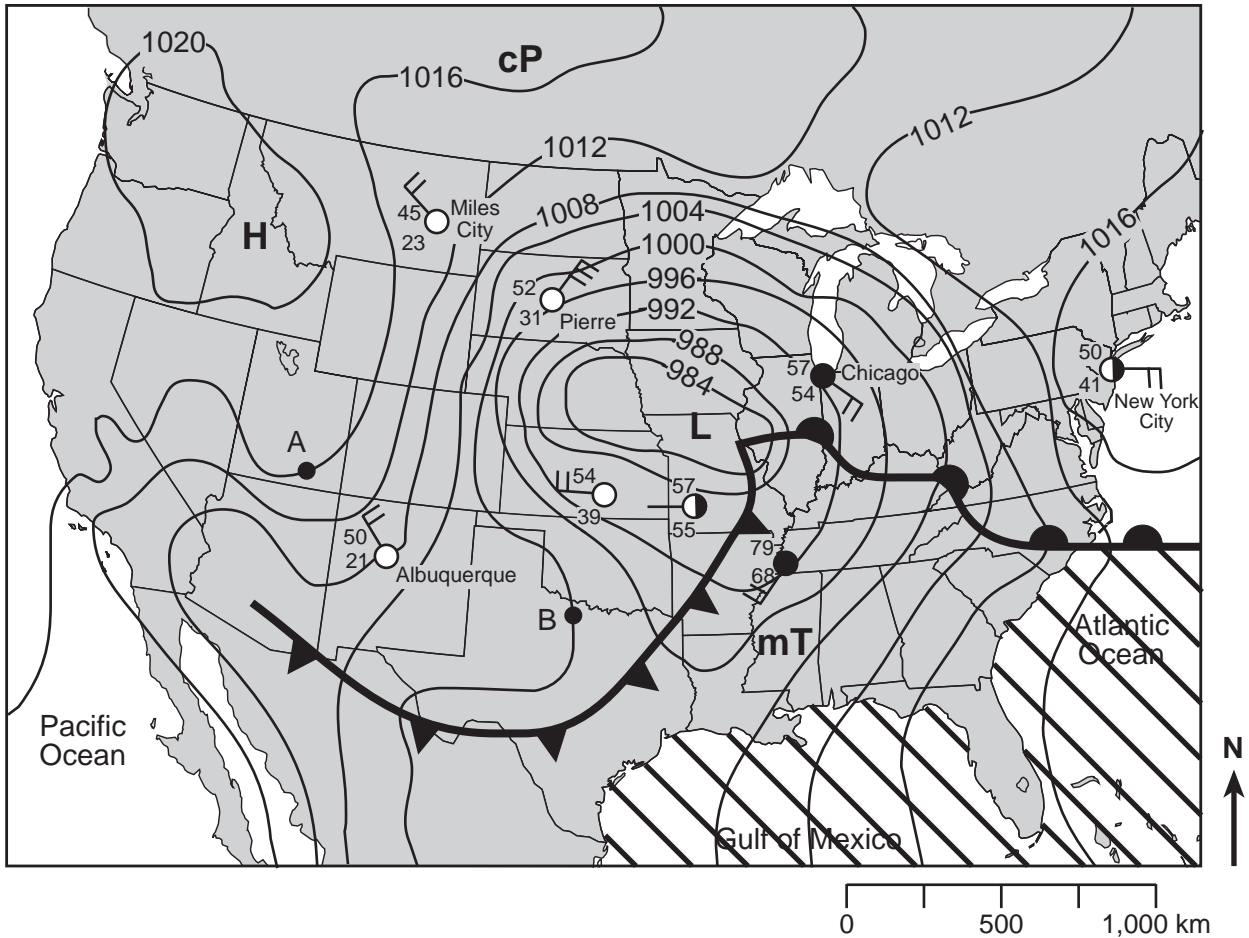
65 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- Rock unit *H* was displaced by movement along a fault.
- Rock unit *H* was broken when an earthquake occurred.

**Part C**

**Allow a total of 20 credits for this part. The student must answer all questions in this part.**

**66** [1] Allow 1 credit if the center of the student's **X** is located over the water in the diagonally lined area.

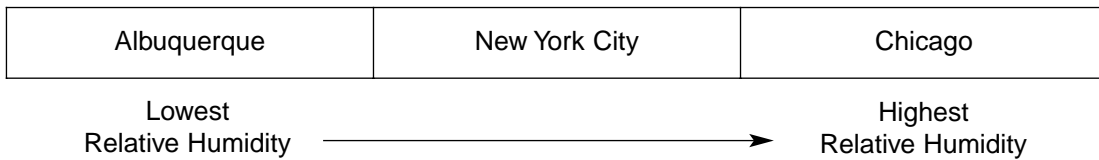


**67** [2] Allow a maximum of 2 credits, allocated as follows:

- Allow 1 credit for any value from 0.016 to 0.018.
- Allow 1 credit for the correct units. Acceptable responses include, but are not limited to:
  - millibars per kilometer
  - mb/km

- 68** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- The isobars are close together between Miles City and Pierre.
  - There is a large pressure gradient between Miles City and Pierre.
  - The feathers on the station models indicate strong winds in that area.

- 69** [1] Allow 1 credit.



- 70** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- inward
  - counterclockwise
  - counterclockwise and toward the center

- 71** [1] Allow 1 credit for 11 p.m. Do *not* allow credit for 11 or 11 a.m.

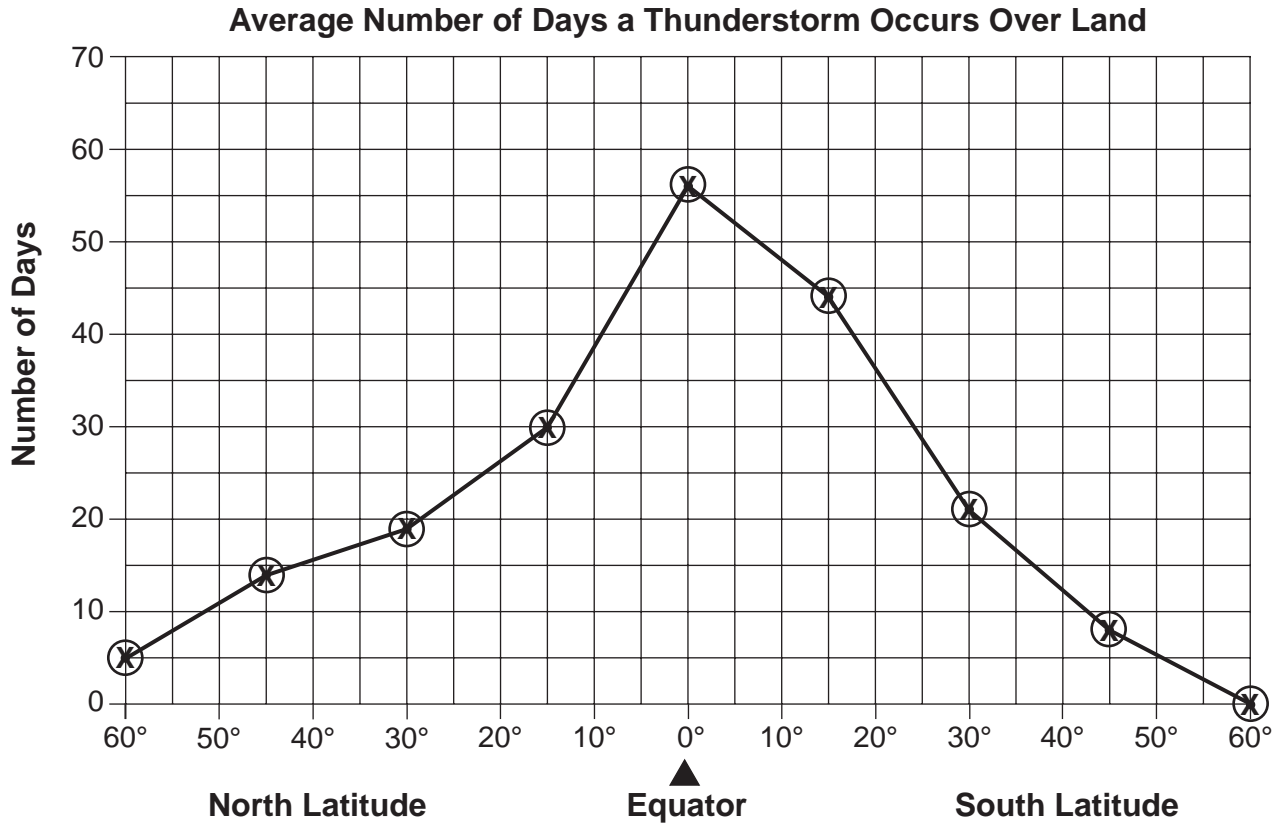
- 72** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- Earth rotates at a rate of  $15^\circ/\text{hr}$ .
  - Earth's period of rotation is 24 hours.
  - Earth spins  $360^\circ$  in 24 hours.



- 73 [1] Allow 1 credit if the centers of eight or nine **X**s are within the circles shown on the graph and are correctly connected with a line that passes through the circles.

**Note:** An overlay should be used to rate this graph.

**Example of a 1-credit response:**



- 74 [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- As latitude increases, the number of days with thunderstorms decreases.
  - Lower latitudes have more thunderstorms.
  - an inverse relationship between latitude and number of days with thunderstorms

**75** [1] Allow 1 credit for evaporation.

**76** [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— Condensation is the phase change from water vapor (gas) to water (liquid).

**77** [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— The soil is saturated.

— Rate of rainfall exceeds the rate of infiltration.

— The ground is frozen.

— The land has a steep slope.

**78** [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— Plants release water into the air by transpiration.

— Runoff is slowed by plants, so more infiltration can occur.

**79** [1] Allow 1 credit for 80 calories/gram.

**80** [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— moraines

— grooved bedrock

— scratched bedrock

— polished bedrock

— U-shaped valleys

**81** [1] Allow 1 credit for 24 hours.

**82** [1] Allow 1 credit if both latitude and longitude are correct.

Latitude: 80° S

Longitude: 120° W

**83** [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- unsorted
- mixed
- not in layers

**84** [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- snow removal by wind
- decreased rate of ice flow
- increased melting
- global warming
- iceberg formation
- decreased snowfall

## Regents Examination in Physical Setting/Earth Science

January 2008

### Chart for Converting Total Test Raw Scores to Final Examination Scores (Scaled Scores)

**The *Chart for Determining the Final Examination Score for the January 2008 Regents Examination in Physical Setting/Earth Science* will be posted on the Department's web site <http://www.emsc.nysed.gov/osa/> on Wednesday, January 23, 2008. Conversion charts provided for previous administrations of the Regents Examination in Physical Setting/Earth Science must NOT be used to determine students' final scores for this administration.**

### Submitting Teacher Evaluations of the Test to the Department

Suggestions and feedback from teachers provide an important contribution to the test development process. The Department provides an online evaluation form for State assessments. It contains spaces for teachers to respond to several specific questions and to make suggestions. Instructions for completing the evaluation form are as follows:

1. Go to [www.emsc.nysed.gov/osa/exameval](http://www.emsc.nysed.gov/osa/exameval).
2. Select the test title.
3. Complete the required demographic fields.
4. Complete each evaluation question and provide comments in the space provided.
5. Click the SUBMIT button at the bottom of the page to submit the completed form.

## Map to Core Curriculum

<b>January 2008 Physical Setting/Earth Science</b>			
<b>Question Numbers</b>			
Key Ideas/Performance Indicators	Part A	Part B	Part C
<b>Standard 1</b>			
Math Key Idea 1	18		67, 73
Math Key Idea 2	2, 7, 11, 16, 25, 26	50, 53, 61	72, 74
Math Key Idea 3	29	60	68
Science Inquiry Key Idea 1	15, 31	43, 56, 57, 58	81, 84
Science Inquiry Key Idea 2			
Science Inquiry Key Idea 3	2, 4, 9, 11, 26, 28, 30, 32		
Engineering Design Key Idea 1			
<b>Standard 2</b>			
Key Idea 1			
Key Idea 2			
Key Idea 3			
<b>Standard 6</b>			
Key Idea 1	12, 35	56, 57, 58, 65	75, 76, 77, 78, 79, 83
Key Idea 2	9, 12, 13, 18, 22, 23, 24, 32, 34, 35	36, 37, 38, 39, 40, 41, 42, 44, 45, 46, 47, 48, 49, 50, 51, 55, 57, 59, 61, 62, 63, 64, 65	66, 67, 68, 69, 71, 75, 80, 81, 82
Key Idea 3		54	67, 68, 69, 70
Key Idea 4			
Key Idea 5	13, 29	48, 50, 52, 57, 59	66, 70, 77, 84
Key Idea 6			
<b>Standard 7</b>			
Key Idea 1			
Key Idea 2			
<b>Standard 4</b>			
Key Idea 1	1, 2, 3, 4, 5, 6, 11, 28, 29, 30, 31, 32	43, 47, 48, 49, 50, 57, 58, 59, 60, 61, 62, 63, 64, 65	71, 72, 75, 76, 77, 78, 79, 82
Key Idea 2	7, 8, 9, 10, 12, 13, 14, 15, 16, 17, 20, 21, 23, 24, 25, 26, 27, 33, 34, 35	36, 37, 38, 39, 40, 41, 45, 46, 50, 52, 54, 55, 56	66, 67, 68, 69, 70, 73, 74, 80, 81, 83, 84
Key Idea 3	18, 19, 22	42, 43, 44, 51, 53, 63	
<b>Reference Tables</b>			
ESRT 2001 Edition	2, 4, 7, 9, 11, 15, 16, 17, 18, 19, 21, 22, 24, 25, 26, 28, 30, 31, 32	36, 37, 41, 42, 43, 44, 46, 51, 52, 53, 55, 56, 60, 61, 63	66, 67, 68, 69, 79

# Regents Examination in Physical Setting/Earth Science – January 2008

## Chart for Converting Total Test Raw Scores to Final Examination Scores (Scaled Scores)

To determine the student's final score, locate the student's Total Performance Test Score across the top of the chart and the Total Written Test Score down the side of the chart. The point where the two scores intersect is the student's final examination score. For example, a student receiving a Total Performance Test Score of 10 and Total Written Test Score of 72 would receive a final examination score of 86.

		Total Performance Test Score																							
		23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Total Written Test Score	85	100	99	98	97	97	97	97	96	96	95	95	94	94	93	92	92	91	90	89	89	88	87	86	85
	84	99	98	97	97	96	96	96	95	95	94	94	93	93	92	92	91	90	89	89	88	87	86	85	84
	83	99	98	97	97	96	96	96	95	95	94	94	93	93	92	92	91	90	89	89	88	87	86	85	84
	82	98	97	96	96	96	95	95	94	94	94	93	93	92	91	91	90	89	89	88	87	86	85	84	83
	81	98	97	96	96	96	95	95	94	94	94	93	93	92	91	91	90	89	89	88	87	86	85	84	83
	80	97	96	95	95	95	94	94	94	94	93	93	92	92	91	90	90	89	88	88	87	86	85	84	83
	79	97	96	95	95	95	94	94	94	94	93	93	92	92	91	90	90	89	88	88	87	86	85	84	83
	78	97	96	94	94	94	93	93	93	93	92	92	91	91	90	90	89	88	88	87	86	85	84	83	82
	77	97	96	94	94	94	93	93	93	93	92	92	91	91	90	90	89	88	88	87	86	85	84	83	82
	76	96	95	94	93	93	93	92	92	91	91	91	90	89	89	88	87	87	86	85	84	84	83	82	81
	75	95	94	93	92	92	92	91	91	91	90	90	89	89	88	87	87	86	85	84	84	83	82	81	80
	74	95	94	93	92	92	92	91	91	91	90	90	89	89	88	87	87	86	85	84	84	83	82	81	80
	73	94	93	92	92	91	91	91	90	90	89	89	88	88	87	86	86	85	84	84	83	82	81	80	79
	72	93	92	91	91	90	90	90	89	89	88	88	87	87	86	86	85	84	83	83	82	81	80	79	78
	71	93	92	91	91	90	90	90	89	89	88	88	87	87	86	86	85	84	83	83	82	81	80	79	78
	70	92	91	90	90	90	89	89	88	88	88	87	87	86	85	85	84	83	83	82	81	80	79	78	77
	69	92	90	89	89	89	88	88	88	87	87	86	86	85	85	84	83	83	82	81	80	79	78	77	76
	68	91	90	88	88	88	88	87	87	86	86	85	85	84	84	83	82	82	81	80	79	78	78	77	76
	67	91	90	88	88	88	88	87	87	86	86	85	85	84	84	83	82	82	81	80	79	78	78	77	76
	66	90	89	88	87	87	87	86	86	86	85	85	84	83	83	82	82	81	80	79	78	78	77	76	75
	65	89	88	87	86	86	86	85	85	85	84	84	83	83	82	81	81	80	79	78	78	77	76	75	74
	64	88	87	86	86	85	85	85	84	84	83	83	82	82	81	80	80	79	78	78	77	76	75	74	73
	63	88	87	86	86	85	85	85	84	84	83	83	82	82	81	80	80	79	78	78	77	76	75	74	73
62	87	86	85	85	84	84	84	83	83	82	82	81	81	80	80	79	78	78	77	76	75	74	73	72	
61	86	85	84	84	84	83	83	83	82	82	81	81	80	79	79	78	77	77	76	75	74	73	72	71	
60	86	85	83	83	83	82	82	82	81	81	80	80	79	79	78	77	77	76	75	74	73	72	71	70	
59	85	84	82	82	82	82	81	81	80	80	79	79	78	78	77	76	76	75	74	73	72	72	71	70	
58	84	83	82	81	81	81	80	80	80	79	79	78	77	77	76	75	74	73	72	72	71	70	69	68	
57	83	82	81	80	80	80	80	79	79	78	78	77	77	76	75	75	74	73	72	72	71	70	69	68	
56	82	81	80	80	79	79	79	78	78	77	77	76	76	75	75	74	73	72	72	71	70	69	68	67	
55	81	80	79	79	79	78	78	77	77	77	76	76	75	74	74	73	72	72	71	70	69	68	67	66	
54	80	79	78	78	78	77	77	77	76	76	75	75	74	73	73	72	71	71	70	69	68	67	66	65	
53	80	79	77	77	77	76	76	76	75	75	74	74	73	73	72	71	71	70	69	68	67	66	65	65	
52	79	78	77	76	76	76	75	75	74	74	74	73	72	72	71	70	70	69	68	67	67	66	65	64	
51	78	77	76	75	75	75	74	74	74	73	73	72	72	71	70	70	69	68	67	67	66	65	64	63	
50	77	76	75	75	74	74	74	73	73	72	72	71	71	70	69	69	68	67	67	66	65	64	63	62	
49	76	75	74	74	73	73	73	72	72	71	71	70	70	69	69	68	67	66	66	65	64	63	62	61	
48	75	74	73	73	73	72	72	71	71	71	70	70	69	68	68	67	66	66	65	64	63	62	61	60	
47	75	73	72	72	72	71	71	71	70	70	69	69	68	68	67	66	66	65	64	63	62	61	60	60	
46	74	73	71	71	71	71	70	70	69	69	68	68	67	67	66	65	65	64	63	62	61	61	60	59	
45	73	72	71	70	70	70	69	69	69	68	68	67	66	66	65	65	64	63	62	61	61	60	59	58	
44	72	71	70	69	69	69	68	68	68	67	67	66	66	65	64	64	63	62	61	61	60	59	58	57	

**Total Performance Test Score  
January 2008 Examination in Physical Setting/Earth Science – continued**

**Total Performance Test Score**

	<b>23</b>	<b>22</b>	<b>21</b>	<b>20</b>	<b>19</b>	<b>18</b>	<b>17</b>	<b>16</b>	<b>15</b>	<b>14</b>	<b>13</b>	<b>12</b>	<b>11</b>	<b>10</b>	<b>9</b>	<b>8</b>	<b>7</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>0</b>
<b>43</b>	70	69	68	68	67	67	67	66	66	65	65	64	64	63	63	62	61	61	60	59	58	57	56	55
<b>42</b>	69	68	67	67	67	66	66	66	65	65	64	64	63	62	62	61	60	60	59	58	57	56	55	54
<b>41</b>	69	68	66	66	66	65	65	65	64	64	63	63	62	62	61	60	60	59	58	57	56	55	55	54
<b>40</b>	68	67	65	65	65	65	64	64	63	63	62	62	61	61	60	59	59	58	57	56	55	55	54	53
<b>39</b>	67	66	65	64	64	64	63	63	63	62	62	61	60	60	59	59	58	57	56	55	55	54	53	52
<b>38</b>	65	64	63	63	62	62	61	61	60	60	59	59	58	58	57	56	55	55	54	53	52	51	50	
<b>37</b>	64	63	62	62	62	61	61	60	60	59	59	58	57	57	56	55	55	54	53	52	51	50	49	
<b>36</b>	63	62	61	61	61	60	60	60	59	59	58	58	57	56	56	55	54	54	53	52	51	50	49	48
<b>35</b>	62	61	60	59	59	59	58	58	57	57	57	56	55	55	54	53	53	52	51	50	50	49	48	47
<b>34</b>	61	60	59	58	58	58	57	57	57	56	56	55	55	54	53	53	52	51	50	50	49	48	47	46
<b>33</b>	60	59	58	58	57	57	57	56	56	55	55	54	54	53	52	52	51	50	50	49	48	47	46	45
<b>32</b>	58	57	56	56	56	55	55	54	54	54	53	53	52	51	51	50	49	49	48	47	46	45	44	43
<b>31</b>	58	56	55	55	55	54	54	54	53	53	52	52	51	51	50	49	49	48	47	46	45	44	43	43
<b>30</b>	57	56	54	54	54	54	53	53	52	52	51	51	50	50	49	48	48	47	46	45	44	44	43	42
<b>29</b>	55	54	53	52	52	52	51	51	51	50	50	49	49	48	47	47	46	45	44	44	43	42	41	40
<b>28</b>	54	53	52	52	51	51	51	50	50	49	49	48	48	47	46	46	45	44	44	43	42	41	40	39
<b>27</b>	52	51	50	50	50	49	49	49	48	48	47	47	46	45	45	44	43	43	42	41	40	39	38	37
<b>26</b>	52	51	49	49	49	48	48	48	47	47	46	46	45	45	44	43	43	42	41	40	39	38	38	37
<b>25</b>	51	50	48	48	48	48	47	47	46	46	45	45	44	44	43	42	42	41	40	39	38	38	37	36
<b>24</b>	49	48	47	46	46	46	46	45	45	44	44	43	43	42	41	41	40	39	38	38	37	36	35	34
<b>23</b>	48	47	46	46	45	45	45	44	44	43	43	42	42	41	41	40	39	38	38	37	36	35	34	33
<b>22</b>	46	45	44	44	44	43	43	43	42	42	41	41	40	39	39	38	37	37	36	35	34	33	32	31
<b>21</b>	45	44	43	42	42	42	41	41	40	40	40	39	38	38	37	36	36	35	34	33	33	32	31	30
<b>20</b>	44	43	42	41	41	41	40	40	40	39	39	38	38	37	36	36	35	34	33	33	32	31	30	29
<b>19</b>	42	41	40	40	39	39	39	38	38	37	37	36	36	35	35	34	33	32	32	31	30	29	28	27
<b>18</b>	41	40	39	39	39	38	38	37	37	37	36	36	35	34	34	33	32	31	30	29	28	27	26	26
<b>17</b>	40	39	37	37	37	37	36	36	35	35	34	34	33	33	32	31	31	30	29	28	27	27	26	25
<b>16</b>	39	38	37	36	36	36	35	35	35	34	34	33	32	32	31	31	30	29	28	27	27	26	25	24
<b>15</b>	37	36	35	35	34	34	34	33	33	32	32	31	31	30	29	29	28	27	27	26	25	24	23	22
<b>14</b>	35	34	33	33	33	32	32	32	31	31	30	30	29	28	28	27	26	26	25	24	23	22	21	20
<b>13</b>	35	34	32	32	32	31	31	31	30	30	29	29	28	28	27	26	26	25	24	23	22	21	21	20
<b>12</b>	33	32	31	30	30	30	29	29	29	28	28	27	26	26	25	25	24	23	22	21	21	20	19	18
<b>11</b>	31	30	29	29	28	28	28	27	27	26	26	25	25	24	24	23	22	21	21	20	19	18	17	16
<b>10</b>	29	28	27	27	27	26	26	26	25	25	24	24	23	22	22	21	20	20	19	18	17	16	15	14
<b>9</b>	29	28	26	26	26	25	25	25	24	24	23	23	22	22	21	20	20	19	18	17	16	15	15	14
<b>8</b>	27	26	25	24	24	24	23	23	23	22	22	21	21	20	19	19	18	17	16	16	15	14	13	12
<b>7</b>	25	24	23	23	22	22	22	21	21	20	20	19	19	18	18	17	16	15	15	14	13	12	11	10
<b>6</b>	24	23	22	22	22	21	21	20	20	19	19	18	17	17	16	15	15	14	13	12	11	10	9	9
<b>5</b>	23	22	20	20	20	20	19	19	18	18	17	17	16	16	15	14	14	13	12	11	10	10	9	8
<b>4</b>	21	20	19	18	18	18	17	17	17	16	16	15	15	14	13	13	12	11	10	10	9	8	7	6
<b>3</b>	19	18	17	17	16	16	16	15	15	14	14	13	13	12	12	11	10	10	9	8	7	6	5	4
<b>2</b>	18	17	16	16	16	15	15	15	14	14	13	13	12	11	11	10	9	9	8	7	6	5	4	3
<b>1</b>	17	16	14	14	14	14	13	13	12	12	11	11	10	10	9	8	8	7	6	5	4	4	3	2
<b>0</b>	15	14	13	12	12	12	12	11	11	10	10	9	9	8	7	7	6	5	4	4	3	2	1	0

**Total Written Test Score**