Practice Questions

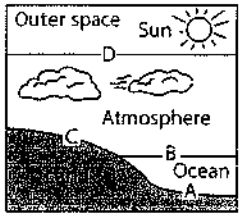
Name: Key Mapping Review Questions

Directions
Review the Test-Taking Strategies section of this book. Then answer the following questions. Read each question carefully and answer with a correct choice or response.

Part A

1 The latitude of an observer on Earth's surface can be determined by measuring the altitude of Polaris because Earth has a
(1) nearly spherical shape
(2) nearly circular orbit around the sun
(3) variable length of day
(4) fairly constant period of revolution

2 Which line best identifies the interface of the lithosphere and the troposphere?



(Not to scale.)

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

3 The following data table shows the altitude of Polaris as recorded by four observers at different locations on Earth.

Observer	Altitude of Polaris
A	90°
B	30°
C	30°
D	20°

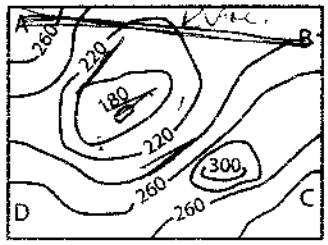
Which statement is best supported by the information in the table?
(1) Observer A was at the equator.
(2) Observers A and B measured the altitude during daytime hours.
(3) Observers B and C measured the altitude at the same latitude.
(4) Observers B, C, and D were in the Southern Hemisphere.

4 Which latitude and longitude coordinates represent a location on the continent of Australia?
(1) 20° N, 135° E (3) 20° S, 135° E
(2) 20° N, 135° W (4) 20° S, 135° W

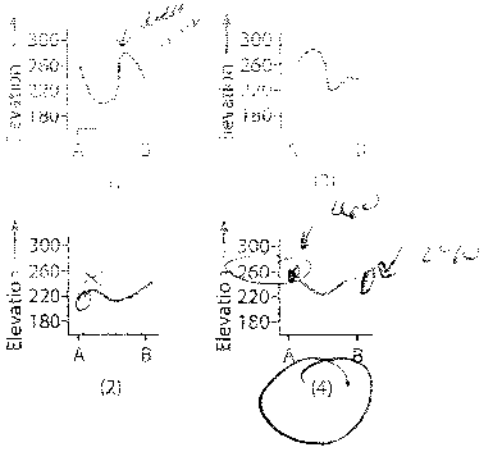
5 Which statement is true about an isoline on an air temperature field map?
(1) It represents an interface of high and low barometric pressures.
(2) It indicates the direction of maximum insolation.
(3) It increases in magnitude as it bends southward.
(4) It connects points of equal air temperature.

6 Which of the following items is a model?
(1) a globe (3) a hand lens
(2) a ruler (4) a mineral specimen

7 The following map represents an elevation field.

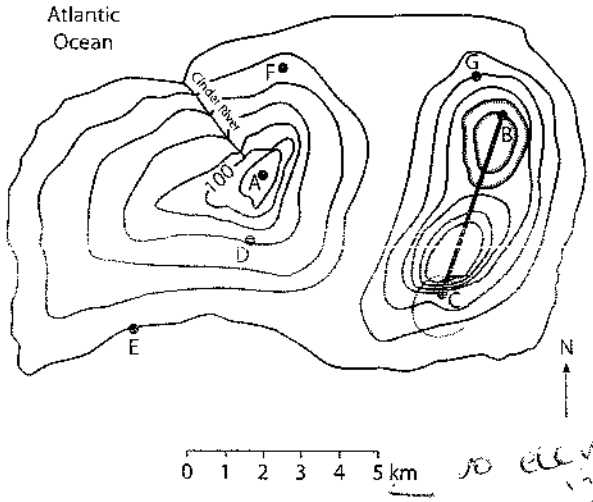


Which graph best represents the elevation profile along a straight line from point A to point B?



2 Measuring Earth

Base your answers to questions 8 through 12 on the following topographic map of an island. Points A through G represent locations on the island. Elevations are in meters.



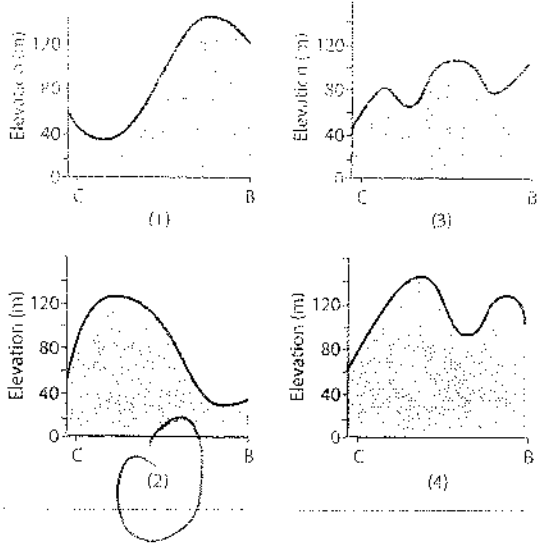
8 Which point is located on the steepest slope?
(1) F (2) B (3) C (4) D

9 In which direction does the Cinder River flow?
(1) southeast (3) northeast
(2) southwest (4) northwest

10 What is the contour interval for this map?
(1) 10 m (2) 15 m (3) 20 m (4) 25 m

11 Which two points have the same elevation?
(1) C and A (3) C and D
(2) B and D (4) C and E

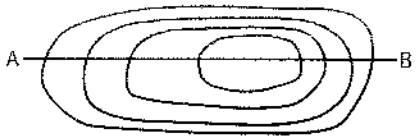
12 Which diagram best represents the topographic profile between location C and location B?



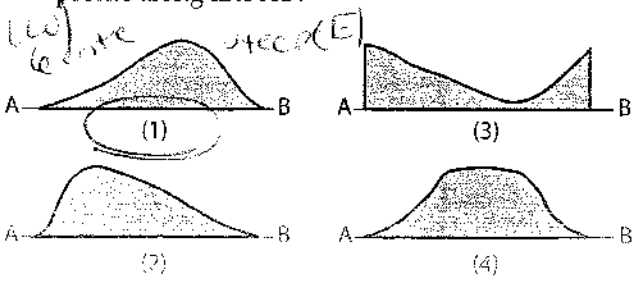
13 A movement of volcanic ash occurred at an altitude of 1.5 kilometers. In which layer of Earth's atmosphere did the ash cloud travel?
(1) troposphere (3) mesosphere
(2) stratosphere (4) thermosphere

14 What is the distance in degrees east or west of the prime meridian called?
(1) longitude (3) equator
(2) latitude (4) altitude

15 The following diagram represents contour lines on a topographic map with cross-section line AB.



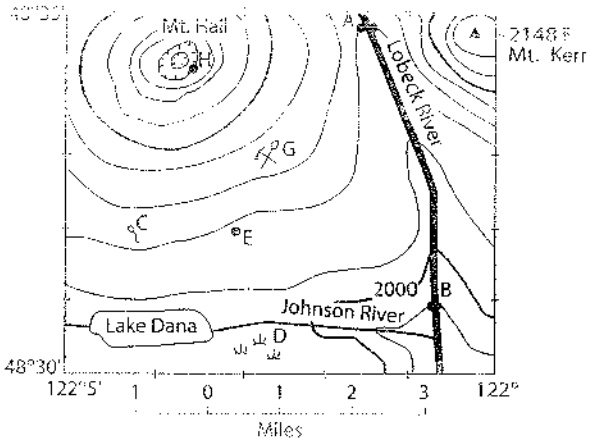
Which diagram best represents the topographic profile along line AB?



Part B

The following topographic map shows a portion of an area of interior volcanoes in the United States. The contour interval is 20 feet. Base your answers to questions 16 through 20 on this diagram.

REMEMBER: State directions or units of measure when appropriate.



16 What is the latitude of point E to the nearest minute? [2] 48° 32' N

17 What is the longitude of point E to the nearest minute? [2] 122° 3' W

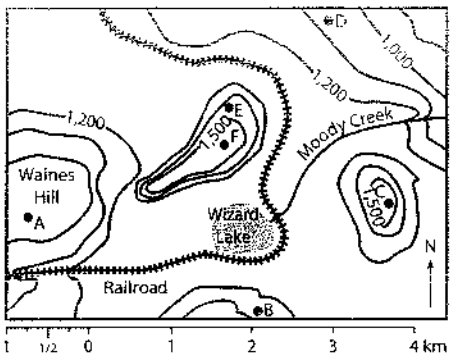
18 In which direction does Johnson River generally flow? [1] East

19 What is the elevation of point H on the rim of the crater of Mt. Hall in feet? [1] 2160 ft

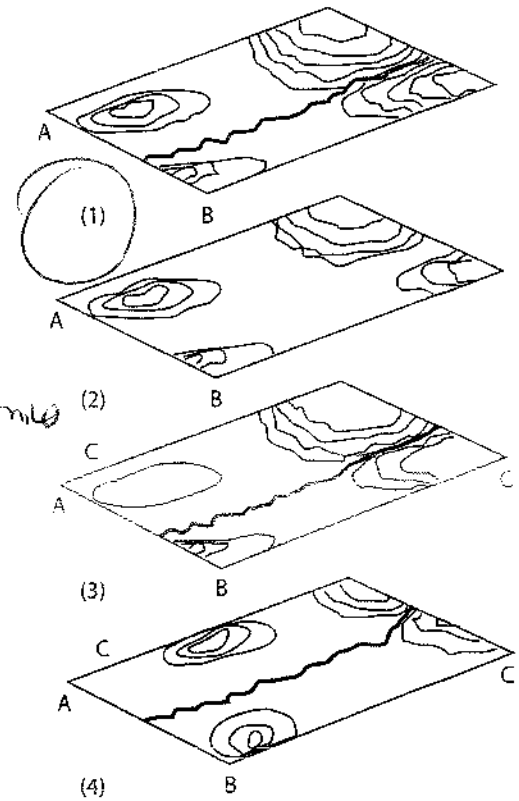
20 What is the distance along Lobeck River from point A to point B to the nearest quarter-mile? [1]

4 - 4 25 mi

21 The following is a topographic map.

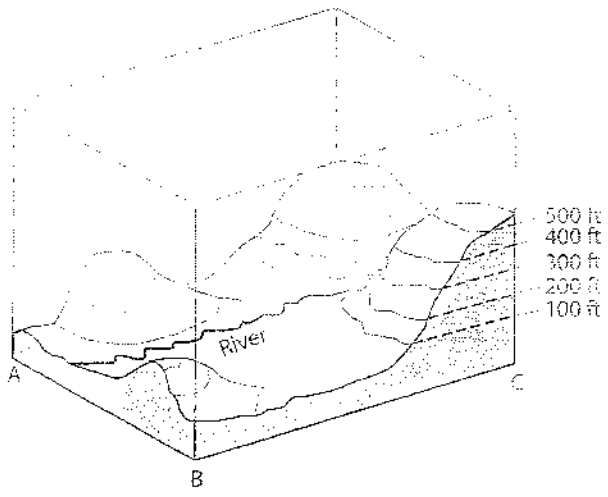


What is the approximate length in kilometers of the railroad tracks shown on the map? [1] 7.5 - 8.5 km

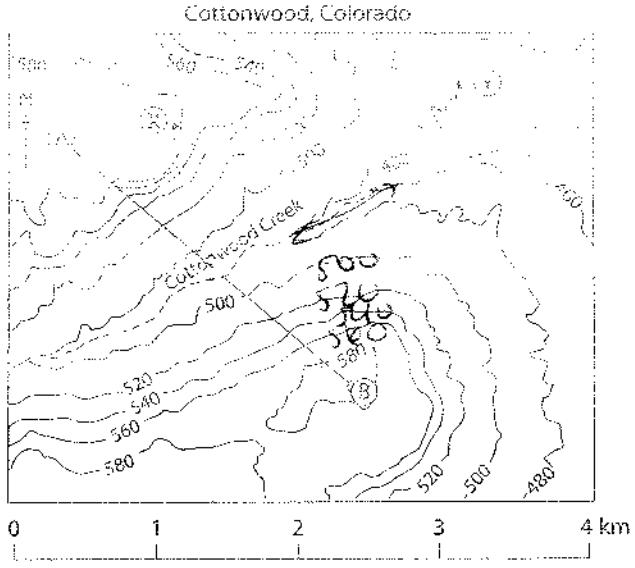


Which map view best represents the topography of this region? [1]

22 The following diagram shows a three-dimensional model of a landscape region.



Base your answers to questions 23 through 26 on the following topographic map of Cottonwood, Colorado. Points A, B, X, and Y are marked for reference.

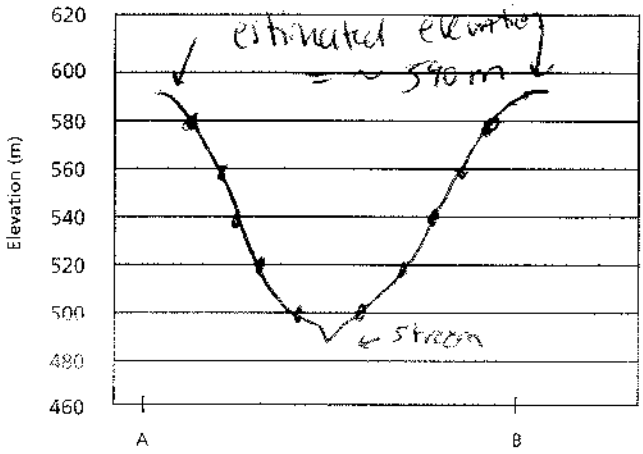


23 State the general direction in which Cottonwood Creek flows. [1] NE

399 m

24 State the highest possible elevation, to the nearest meter, for point B on the topographic map. [1]

25 On the following grid, draw a profile of the topography along line AB shown on the map. [2]



26 Use the following directions to calculate the gradient of the slope between points X and Y on the topographic map.

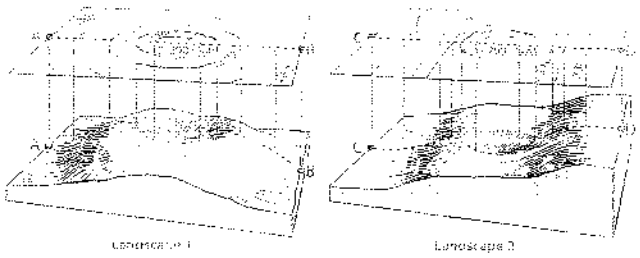
(a) Write the equation for gradient. [1]

(b) Substitute data from the map into the equation. [1]

(c) Calculate the gradient and label it with the proper units. [1]

50 m/km

Base your answers to questions 27 and 28 on the topographic maps and block diagrams of two landscape regions shown below. The block diagrams show a three-dimensional view of the topographic maps directly above them. Elevations are measured in feet. Points A, B, C, and D are locations on Earth's surface.



27 Which contour interval is used on both topographic maps?

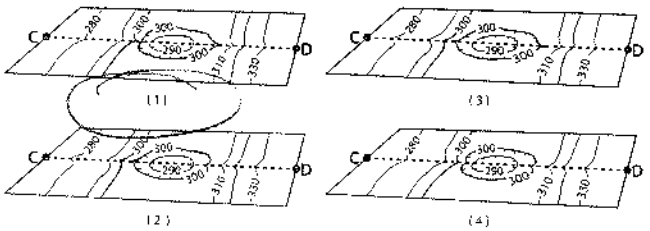
(1) 10 ft

(2) 20 ft

(3) 30 ft

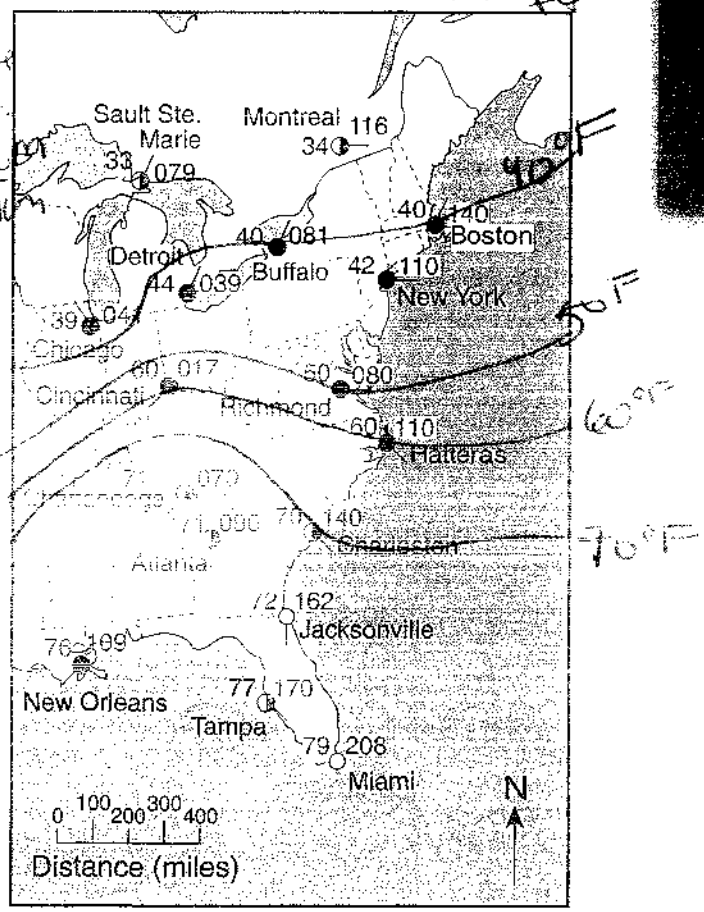
(4) 40 ft

28 A stream begins to flow downhill from point *D* toward the depression. After a period of time, the depression fills with water. Overflowing water from the depression moves downhill toward point *C*. Which topographic map shows the most likely resulting change in the contour lines?



Base your answers to questions 29 through 32 on the weather map provided below which shows partial weather station data for several cities in eastern North America.

Temp reported for each



29 On the weather map provided, draw isotherms every 10°F, starting with 40°F and ending with 70°F. Isotherms must extend to the edges of the map. [2]

30 Calculate the temperature gradient between Richmond, Virginia, and Hatteras, North Carolina, by following the directions below.

(a) Write the equation for gradient.
(b) Substitute data from the map into the equation. [1]
(c) Calculate the average gradient and label your answer with the correct units. [1]

31 In which city is the temperature gradient the smallest?

(1) Cincinnati
(2) New Orleans
(3) Richmond
(4) Detroit

32 State the general relationship between air temperature and latitude for locations shown on the map. [1]

Part C

The planet in the following paragraph is fictional. Use the information in the paragraph and your knowledge of earth science to answer questions 33 through 38.

Glick is a planet in a solar system very similar to our own. Planet Glick is very similar to Earth except for the following differences. Glick's axis of rotation has no tilt. It rotates from east to west, approximately twice as fast as Earth. Zelda is a star that is visible directly over Glick's South Pole and Glotch is a star visible directly over Glick's North Pole. A latitude longitude system such as that on Earth has been established for Glick.

33 Why would a [illegible] on Glick be considered a model? [1]

34 If planet Glick has a hydrosphere, what two chemical elements is it primarily composed of? [1]

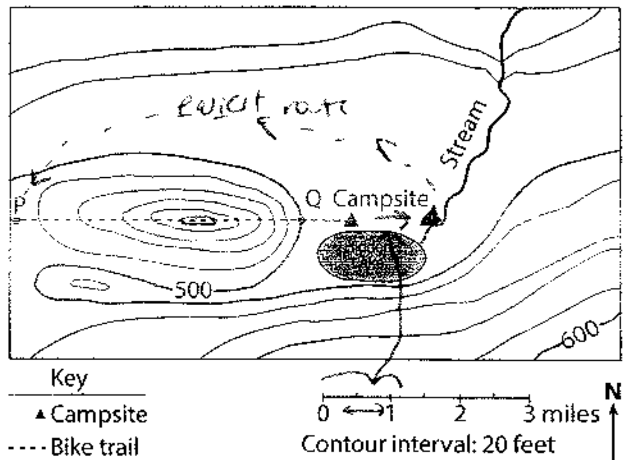
35 In relationship to Glick's atmosphere and lithosphere, what would be the relative location of its hydrosphere? [1]

36 Where would a majority of Glick's most dense substances be located in the planet? [1]

37 At a certain location on Glick, the star Zelda is observed at 37° above the horizon. From this information, what conclusion can you draw about the latitude and longitude of this location? [2]

38 If you traveled due west in the northern hemisphere of Glick at night, what changes might you observe in the altitude of the star Glotch? [1]

Base your answers to questions 39 through 42 on the topographic map below. The map shows a location where a series of students went camping using mountain bicycles on July 1, 2003.



39 State the evidence shown on the map that indicates that the area directly north of Hidden Lake is relatively flat. [1]

40a State the general compass direction in which the stream is flowing. [1]

40b State how the contour lines provide the evidence for determining this direction. [1]

41 On July 2, 2003 the students decided to move their campsite 1 mile directly east of their original campsite that is located on the map above. On the map above place another campsite symbol to indicate the location of the July 2 campsite. [1]

42 The students decided to take a route home to avoid riding their bicycles up the steep hill. Plan a route that will take the campers back to point P from their July 2 campsite that will involve the least change in elevation. On the map above draw a line that shows this route. Place arrows on the route line to show the direction that the students will be traveling. [1]