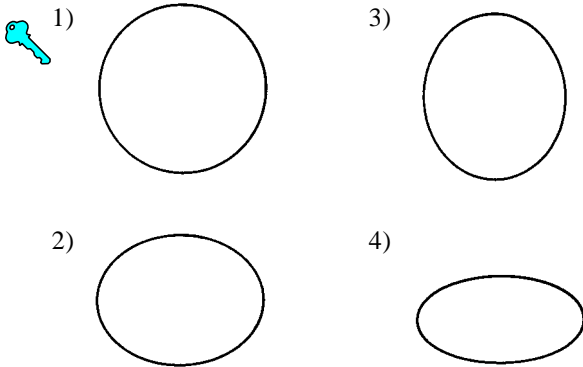


1. The best evidence of the Earth's nearly spherical shape is obtained through

- 1) telescopic observations of other planets
- 2) photographs of the Earth from an orbiting satellite
- 3) observations of the Sun's altitude made during the day
- 4) observations of the Moon made during lunar eclipses

2. Which diagram most accurately shows the cross-sectional shape of the Earth drawn to scale?



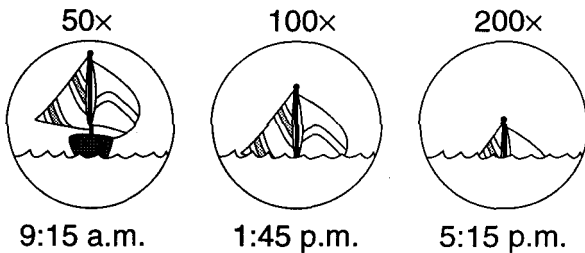
3. The polar circumference of the Earth is 40,008 kilometers. What is the equatorial circumference?

- 1) 12,740 km
- 2) 25,000 km
- 3) 40,008 km
- 4) 40,076 km

4. The Earth's actual shape is most correctly described as

- 1) a circle
- 2) a perfect sphere
- 3) an oblate spheroid
- 4) an eccentric ellipse

5. The diagrams below represent photographs of a large sailboat taken through a telescope over time as the boat sailed away from shore out to sea. Each diagram shows the magnification of the lenses and the time of day.



Which statement best explains the apparent sinking of this sailboat?

- 1) The sailboat is moving around the curved surface of Earth.
- 2) The sailboat appears smaller as it moves farther away.
- 3) The change in density of the atmosphere is causing refraction of light rays.
- 4) The tide is causing an increase in the depth of the ocean.

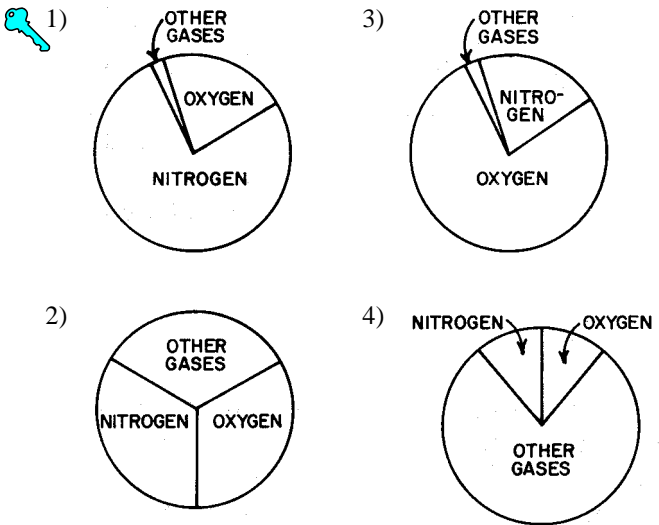
6. The greatest atmospheric pressure occurs in the

- 1) troposphere
- 2) stratosphere
- 3) mesosphere
- 4) thermosphere

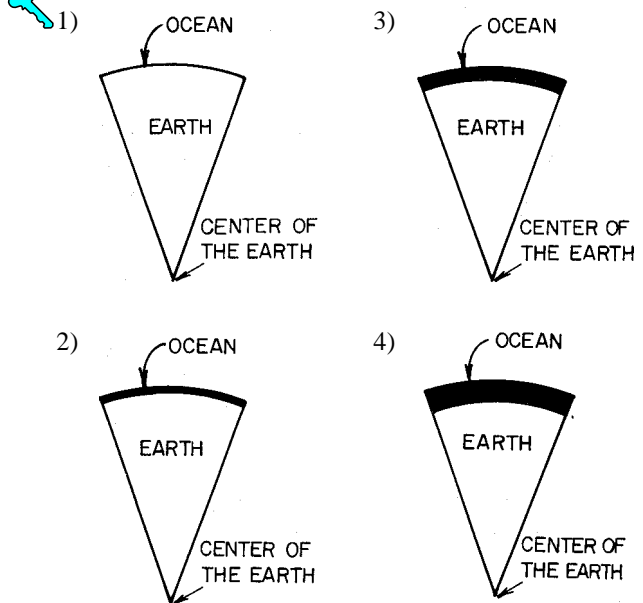
7. What is the approximate elevation of the stratopause?

- 1) 10 km
- 2) 30 km
- 3) 50 km
- 4) 80 km

8. Which circle graph best represents the volume of gases in the troposphere?



9. In the diagrams below, the dark zone at the surface of each wedge-shaped segment of the Earth represents average ocean depth. Which segment is drawn most nearly to scale?



10. The layer of bedrock near the Earth's surface that forms a continuous shell around the Earth is called the

- 1) troposphere
- 2) stratosphere
- 3) lithosphere
- 4) hydrosphere

11. Which element is most abundant in Earth's lithosphere?

- 1) oxygen
- 2) silicon
- 3) hydrogen
- 4) nitrogen

12. A person knows the solar time on the Prime Meridian and the local solar time. What determination can be made?

- 1) the date
- 2) the altitude of Polaris
- 3) the longitude at which the person is located
- 4) the latitude at which the person is located

13. What could be the approximate location of an observer if he measured the altitude of Polaris to be 41 degrees above the horizon?

- 1) Watertown
- 2) Massena
- 3) Buffalo
- 4) New York City

14. At which latitude will *Polaris* be overhead?

- 1) 0°
- 2) 23 1/2°N.
- 3) 90° S.
- 4) 90° N.

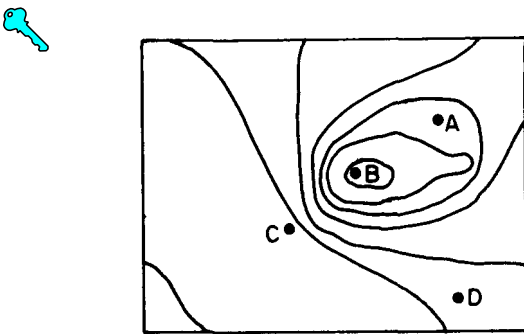
15. An observer on a moving ship notices that the altitude of *Polaris* increases each night. Local solar noon occurs at the same time each day. In what direction is the ship moving?

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

16. Cities located on the same meridian (longitude) must have the same

- 1) altitude
- 2) latitude
- 3) length of daylight
- 4) solar time

17. The diagram below is a contour map. Between which two points is the slope of the hill steepest?



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

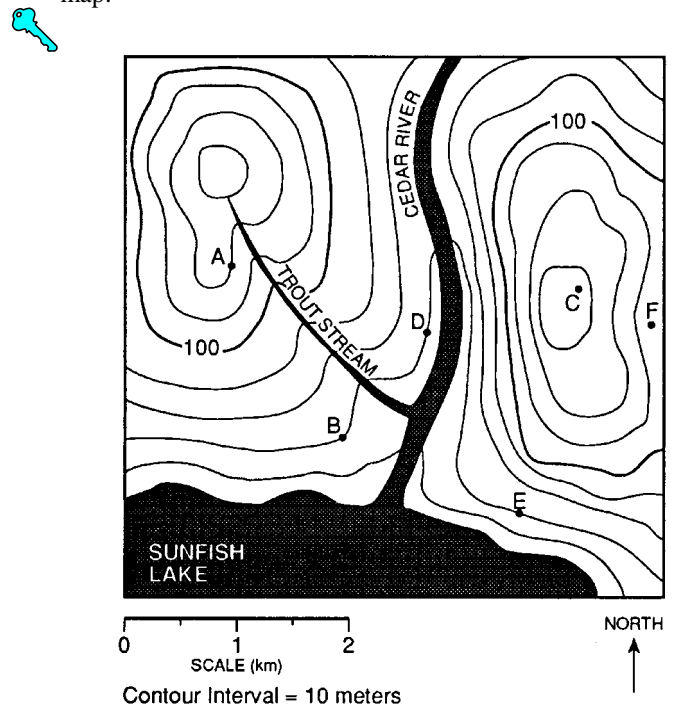
18. As a person travels northward from the Equator, the altitude of *Polaris* will appear to

- 1) decrease
- 2) increase
- 3) remain the same

19. As a person travels due west across New York State, the altitude of *Polaris* will

- 1) decrease
- 2) increase
- 3) remain the same

20. Base your answer to the following question on the contour map below. Points A through F represent locations on the map.



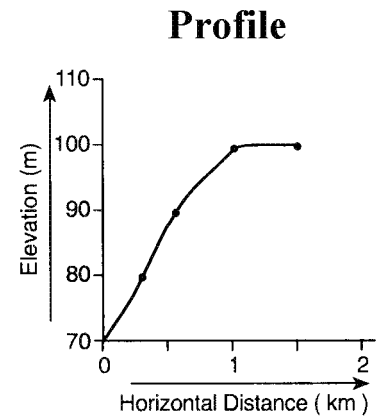
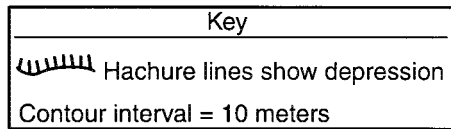
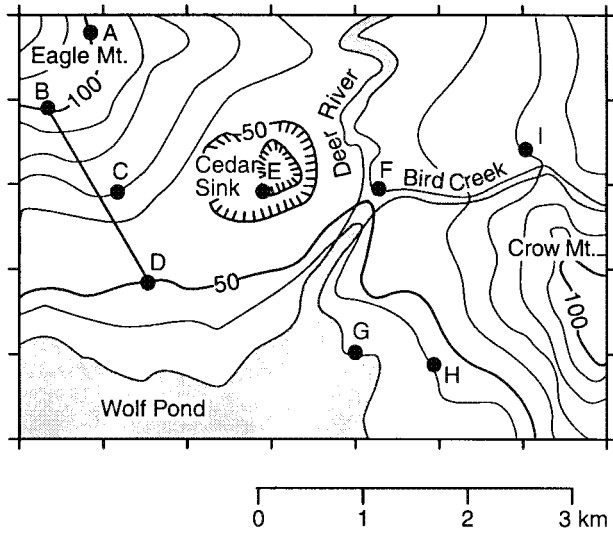
Which diagram best represents the topographic profile from location A to location F?

- 1)
- 2)
- 3)
- 4)

21. Which latitude and longitude coordinates represent a location on the continent of Australia?

- 1) 20° N, 135° E
- 2) 20° N, 135° W
- 3) 20° S, 135° E
- 4) 20° S, 135° W

Base your answers to questions 22 and 23 on the topographic map below. Points A through I are locations on the map. Elevations are shown in meters.



22. In which section of the map is the highest elevation located?



- 1) northeast                      2) northwest                      3) southeast                      4) southwest

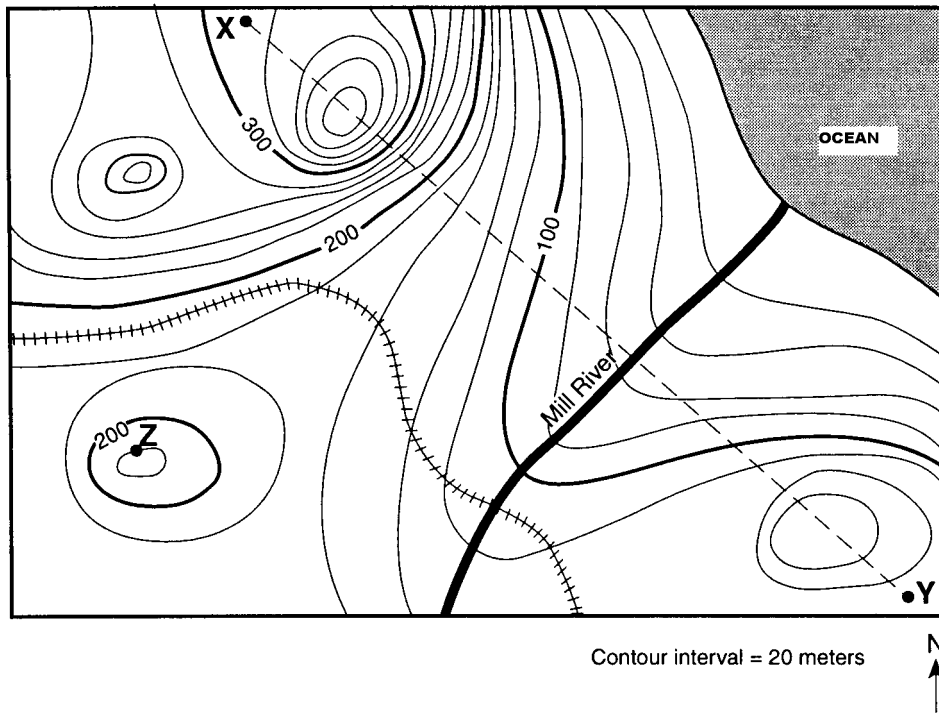
23. Which locations have the same elevation?



- 1) A and C                      2) B and E                      3) C and I                      4) F and G

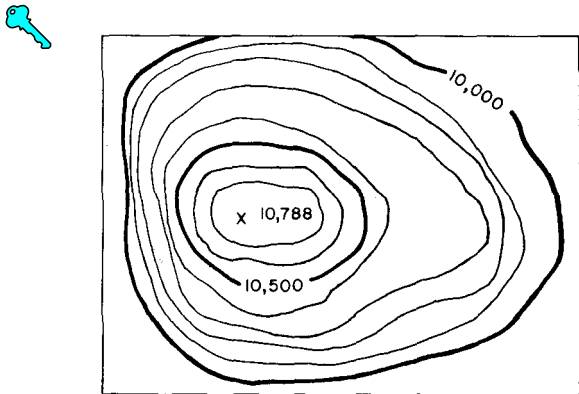
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Base your answers to questions 24 and 25 on the topographic map below. Points X, Y, and Z are locations on the map. Elevations are expressed in meters.



24. Mill River generally flows toward the
- 1) southeast                      2) southwest                      3) northeast                      4) northwest
25. What is the elevation of point Z?
- 1) 190 m                      2) 220 m                      3) 240 m                      4) 250 m

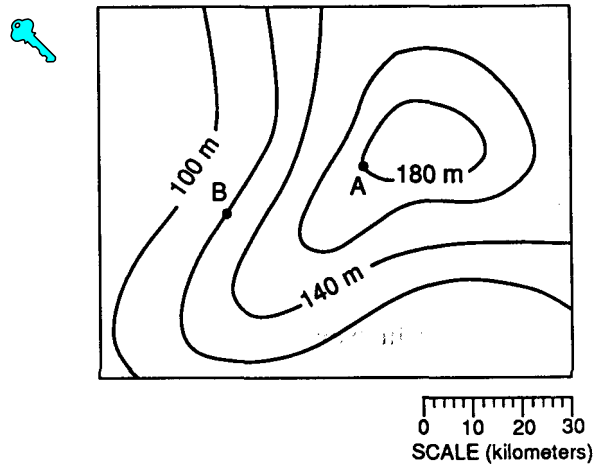
26. What is the elevation of the highest contour line shown on the map below?



- 1) 10,000 feet                      3) 10,700 feet
- 2) 10,688 feet                      4) 10,788 feet
27. Approximately what are the coordinates of the Hawaii Hot Spot?

- 1) 50° N, 120° W                      3) 25° N, 158° W
- 2) 25° N, 158° E                      4) 25° S, 158° E

28. The map below represents an elevation field.



What is the approximate gradient between point A and point B?

- 1) 0.5 m/km                      3) 3.0 m/km
- 2) 2.0 m/km                      4) 4.0 m/km

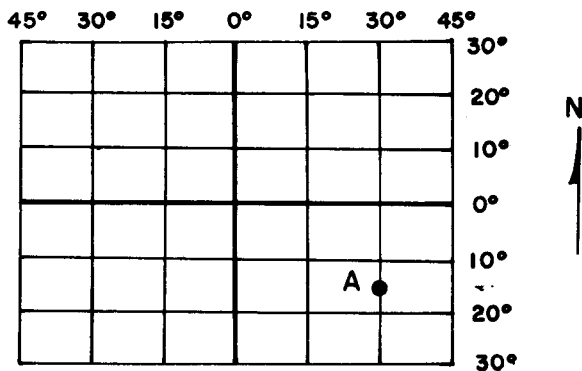
29. Base your answer to the following question on the isoline map below, which shows the average yearly precipitation, in inches, across New York State.



Approximately how many inches of average yearly precipitation does Rochester, New York, receive?

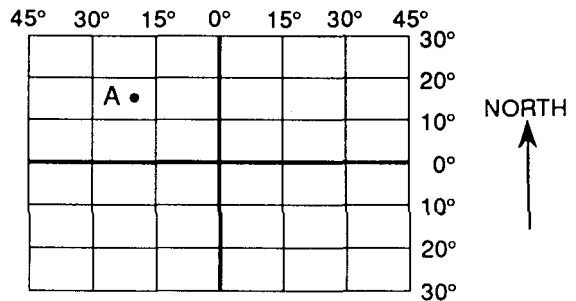
- 1) 26                                      2) 30                                      3) 38                                      4) 42

30. The diagram below represents a portion of a map of the Earth's grid system. What is the approximate latitude and longitude of point A?



- 1) 15°N. 30°W.                                      3) 15°N. 30°E.  
 2) 15°S. 30°W.                                      4) 15°S. 30°E.

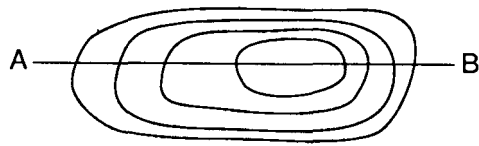
31. The diagram below represents a portion of the Earth's latitude and longitude system.



What are the approximate latitude and longitude of point A?

- 1) 15° S 20° W                                      3) 15° N 20° W  
 2) 15° S 20° E                                      4) 15° N 20° E

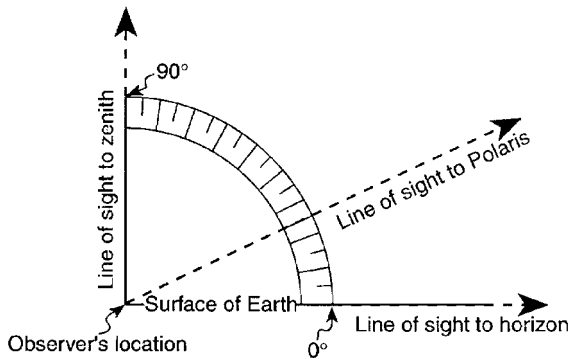
32. The diagram below represents contour lines on a topographic map with cross-section line *AB*.



Which diagram best represents the topographic profile along line *AB*?

- 1)
- 2)
- 3)
- 4)

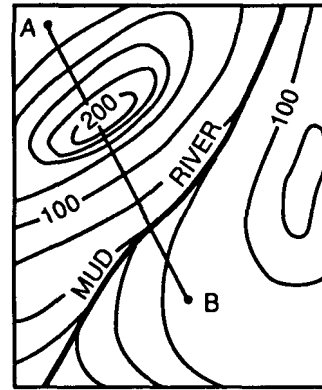
33. The diagram below shows the angular altitude of *Polaris* above the horizon at a certain location.



What is the latitude of the observer?

- 1) 15° N
- 2) 25° N
- 3) 30° N
- 4) 65° N

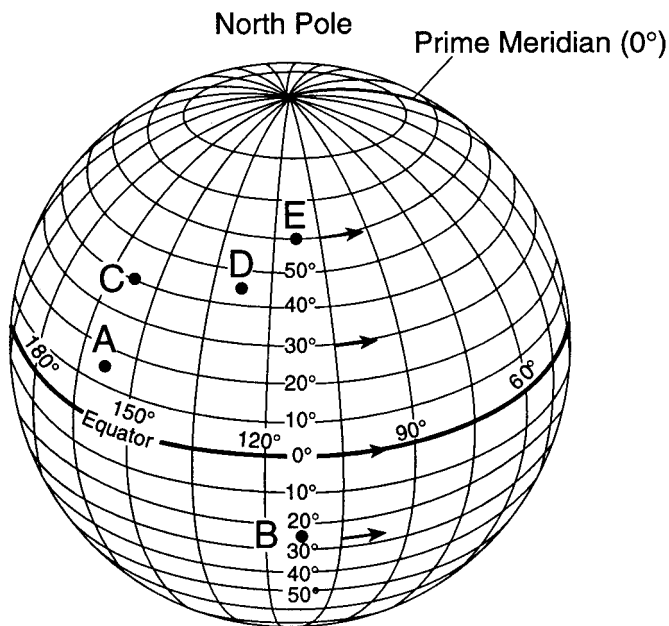
34. The isoline diagram below represents an elevation field.



Which profile best represents the topography along line *AB*?

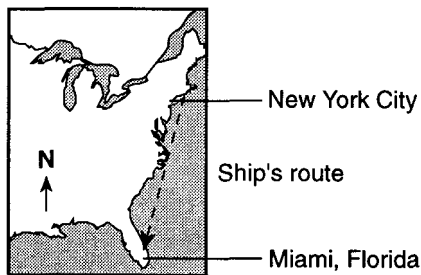
- 1)
- 2)
- 3)
- 4)

35. Base your answer to the following question on the diagram below, which represents latitude and longitude lines on Earth. Points A through E represent locations on Earth. Arrows represent direction of rotation.



What is the approximate latitude and longitude of location A?

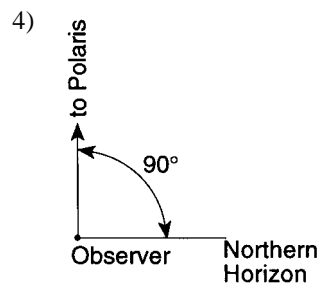
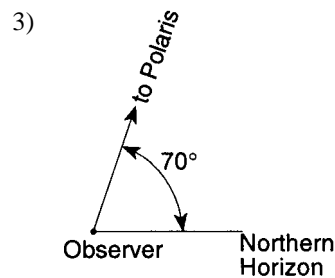
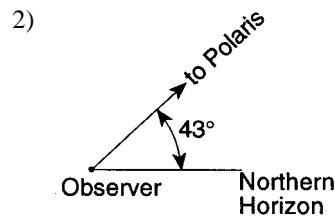
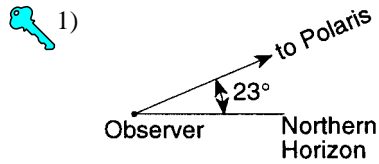
- 1)  $160^\circ$  N,  $15^\circ$  E      3)  $15^\circ$  N,  $160^\circ$  E  
 2)  $160^\circ$  S,  $15^\circ$  W      4)  $15^\circ$  N,  $160^\circ$  W
36. The diagram below represents the route of a ship traveling from New York City to Miami, Florida. Each night, a passenger on the ship observes *Polaris*.



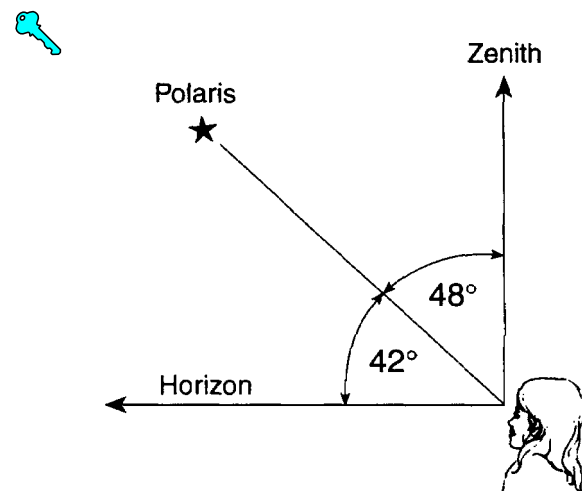
Which statement best describes the observed changes in the altitude of *Polaris* made by the passenger during the voyage?

- 1) Each night the altitude decreases in the northern sky.  
 2) Each night the altitude decreases in the southern sky.  
 3) Each night the altitude increases in the northern sky.  
 4) Each night the altitude increases in the southern sky.

37. Which diagram best shows the altitude of *Polaris* observed near Buffalo, New York?



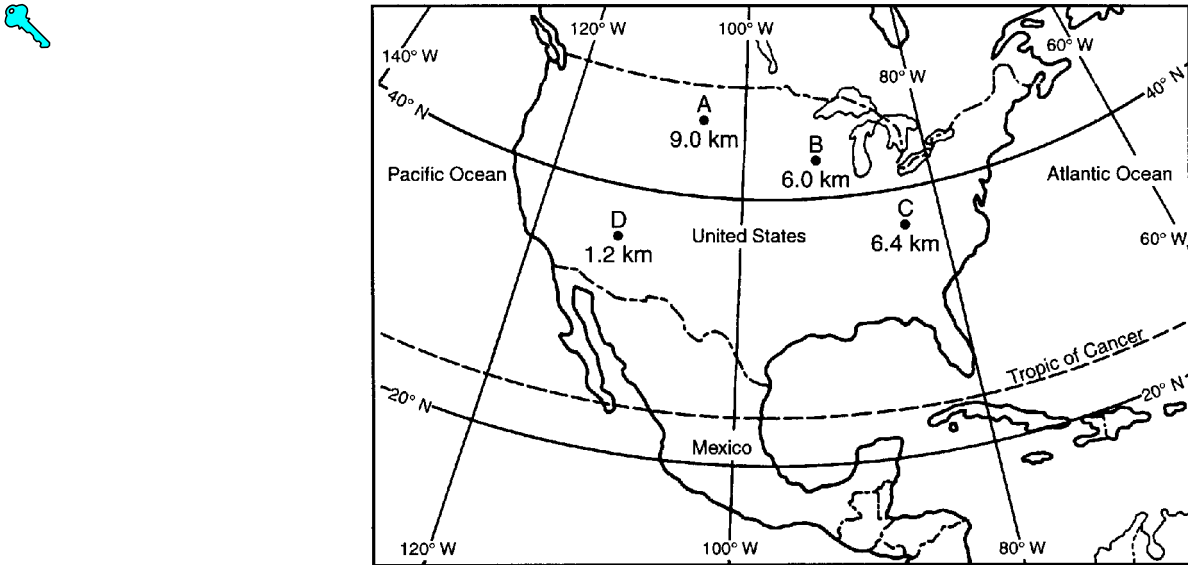
38. The diagram below shows a student in New York State observing *Polaris*.



The student is located nearest to which city in New York State?

- 1) Plattsburgh      3) New York City  
 2) Albany      4) Kingston

39. The map below shows the location and diameter, in kilometers, of four meteorite impact craters, A, B, C, and D, found in the United States.



What is the approximate latitude and longitude of the largest crater?

- 1) 35° N 111° W      2) 39° N 83° W      3) 44° N 90° W      4) 47° N 104° W

40. Which graph best represents the altitude of *Polaris* observed at northern latitude positions on the Earth's surface?

