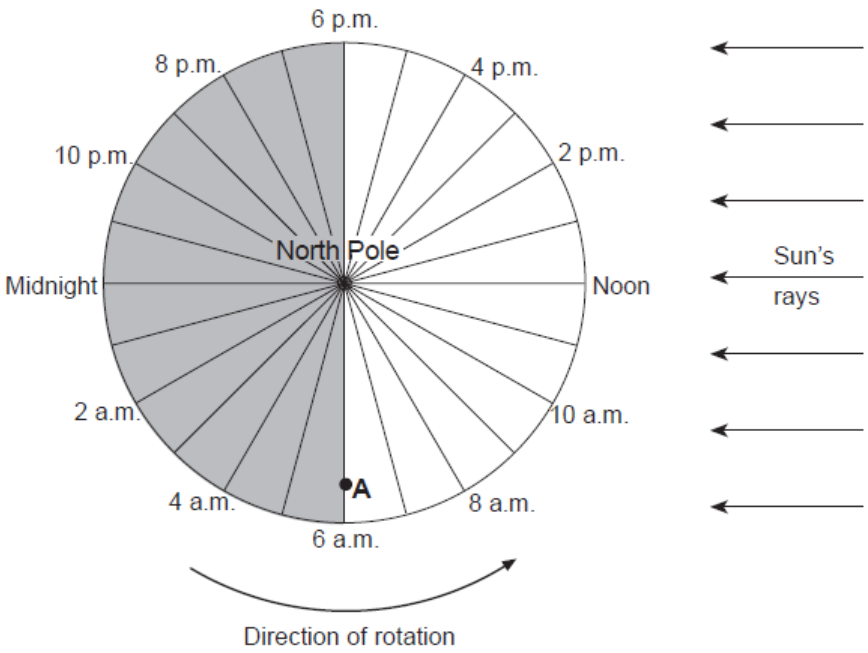
Midterm Review #4 -FR - 2018

Base your answers to questions **1** through **3** on the diagram below, which represents a north polar view of Earth on a specific day of the year. Solar times at selected longitude lines are shown. Letter *A* represents a location on Earth's surface.



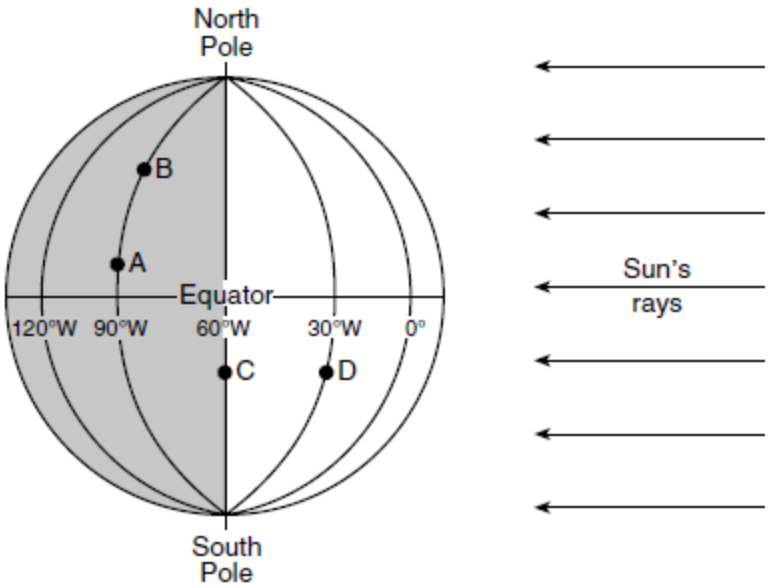
____ 1. State the altitude of *Polaris* as seen by an observer at the North Pole.

____ 2. How many degrees apart are the longitude lines shown in the diagram?

____ 3. How many hours of daylight would an observer at location *A* experience on this day?

Midterm Review #4 -FR - 2018

Base your answers to questions **4** through **6** on the diagram below and on your knowledge of Earth Science. The diagram represents Earth on the first day of a season. The equator, several lines of longitude, and the North and South Poles have been labeled. Letters *A* through *D* represent locations on Earth's surface.

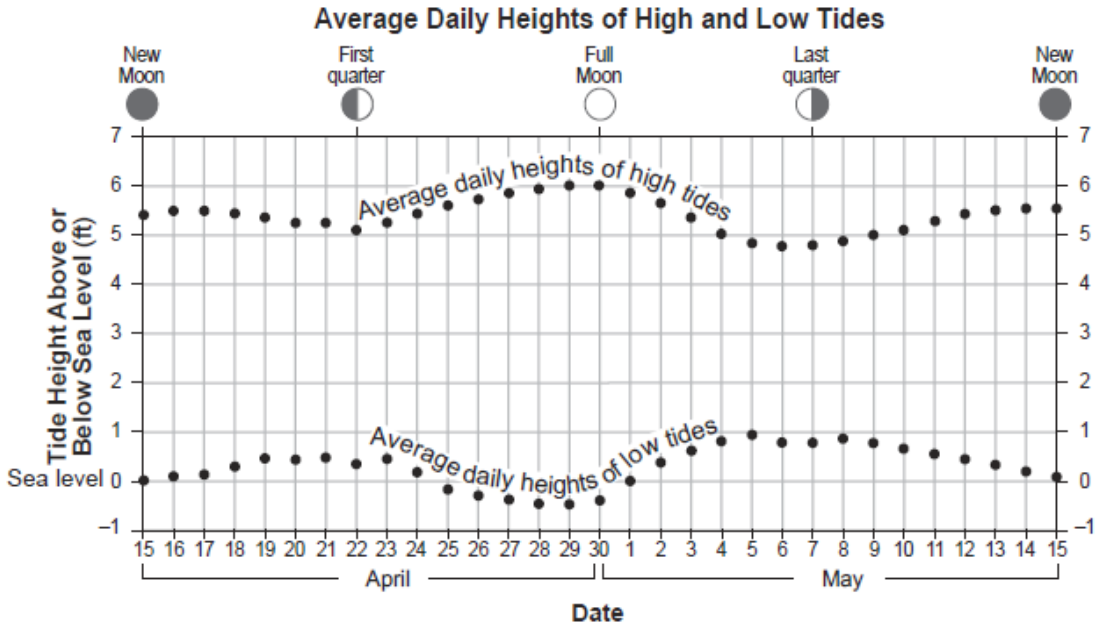


____ 4. State whether the relative altitude of *Polaris* at location *A* is lower or higher than at location *B*. Explain why this difference is observed.

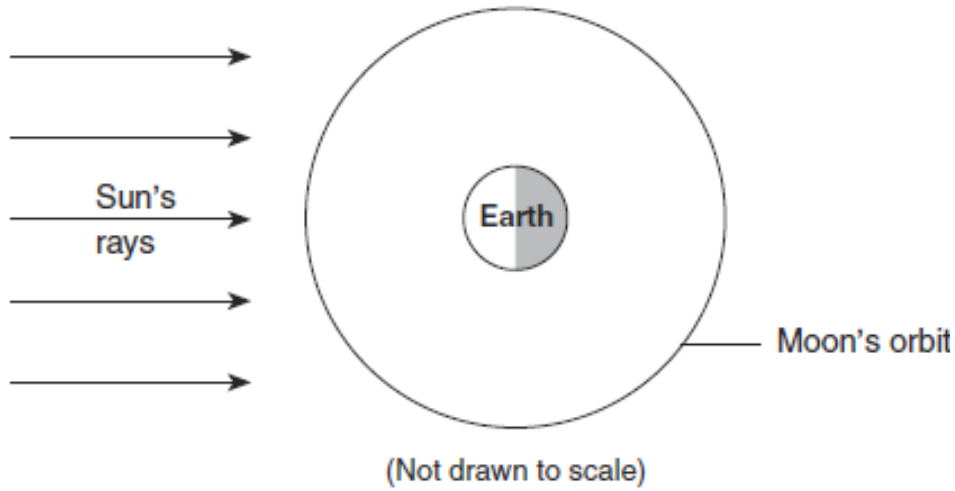
____ 5. State the solar time at location *D* if the solar time at location *C* is 6:00 a.m. Indicate a.m. or p.m. in your answer.

____ 6. Identify *one* possible date that is represented by the position of Earth in this diagram

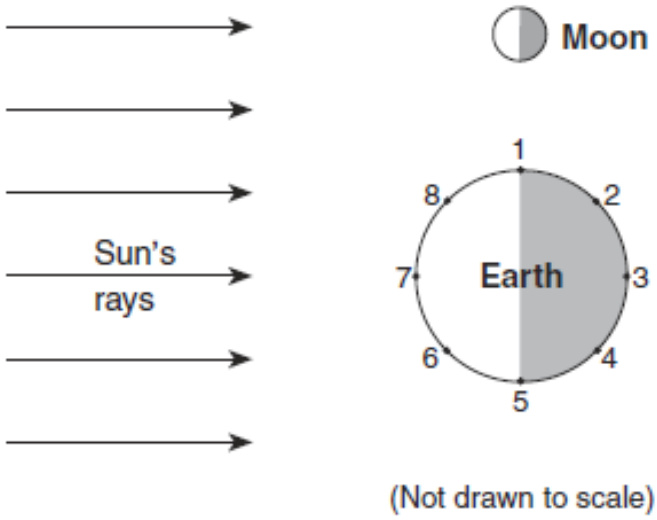
Base your answers to questions **7** and **8** on the graph below and on your knowledge of Earth science. The graph shows the average daily heights above or below sea level of high and low tides from April 15 to May 15, for a New York State location. Five Moon phases are indicated at the dates on which they occurred.



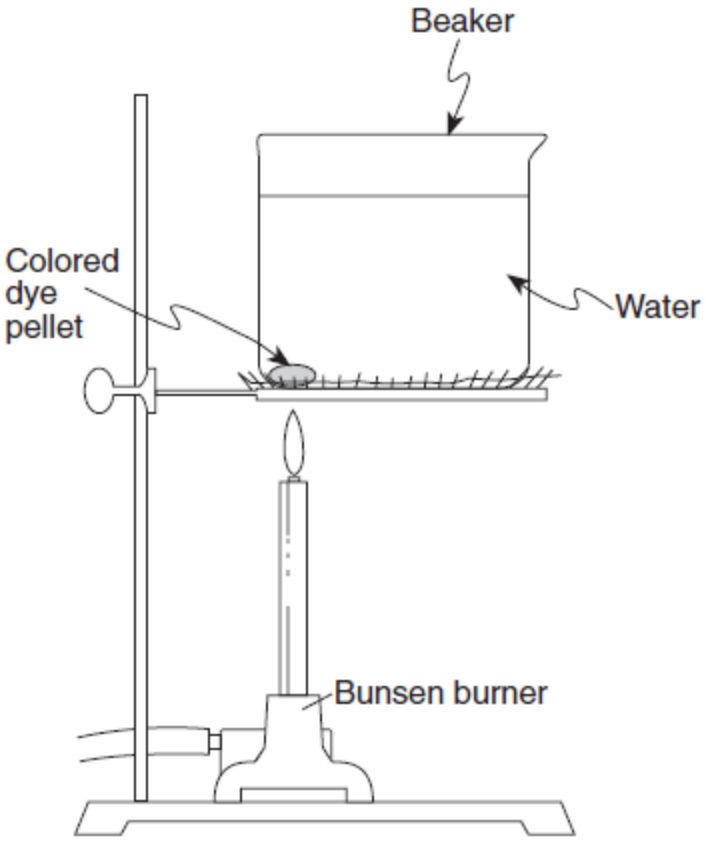
____ 7. On the diagram below, place an **X** on the Moon's orbit to indicate the Moon's position on April 15.



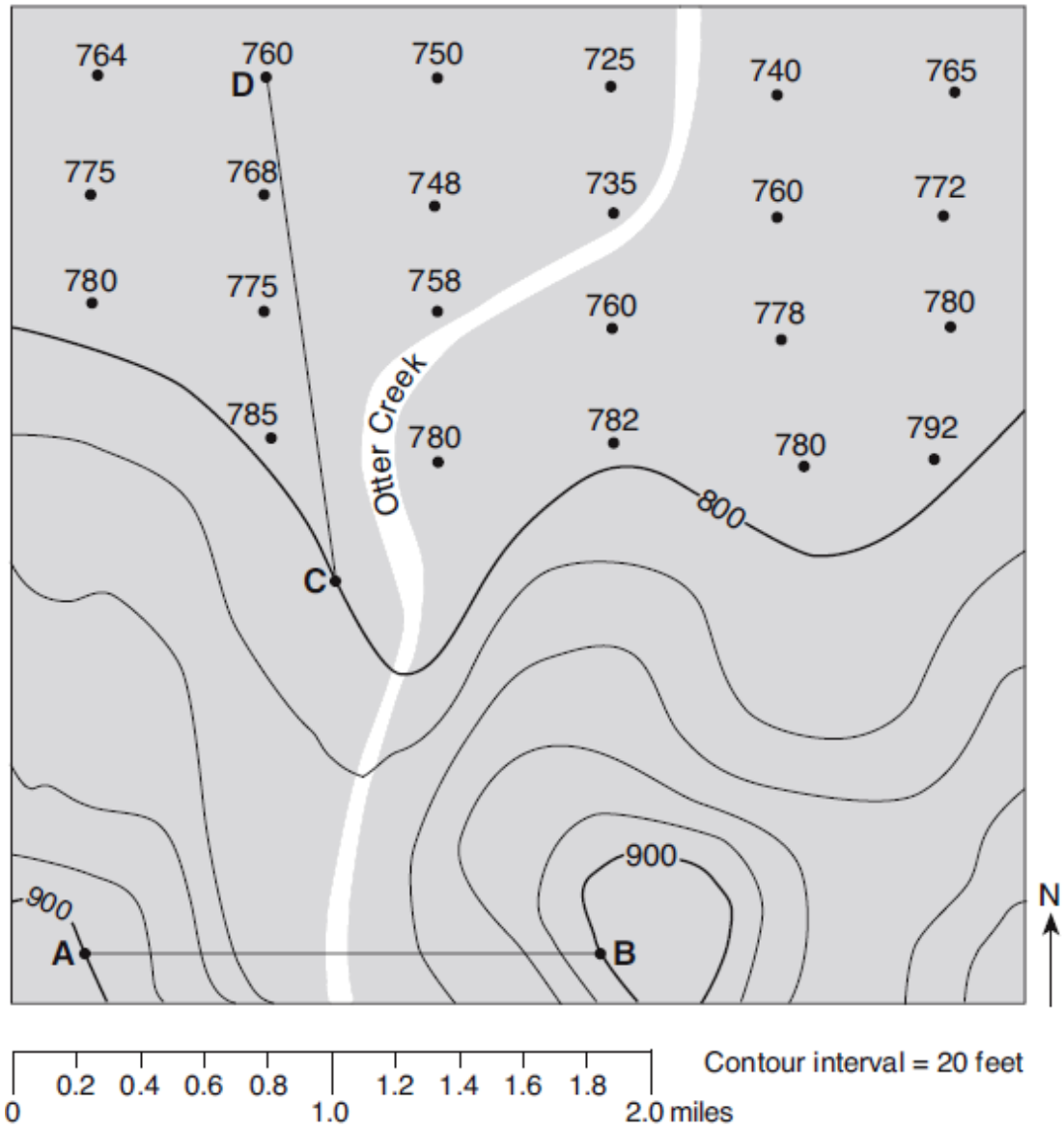
8. On the diagram,circle the *two* numbers on Earth's surface that best represent the locations of high tide when the Moon is in the position shown on the diagram.



9. The diagram below represents a beaker of water that is being heated. As the colored dye pellet dissolves, the dye will show the movement of water in the beaker. On the diagram, draw arrows in the water to show the direction the colored dye will move when the water is heated as shown.



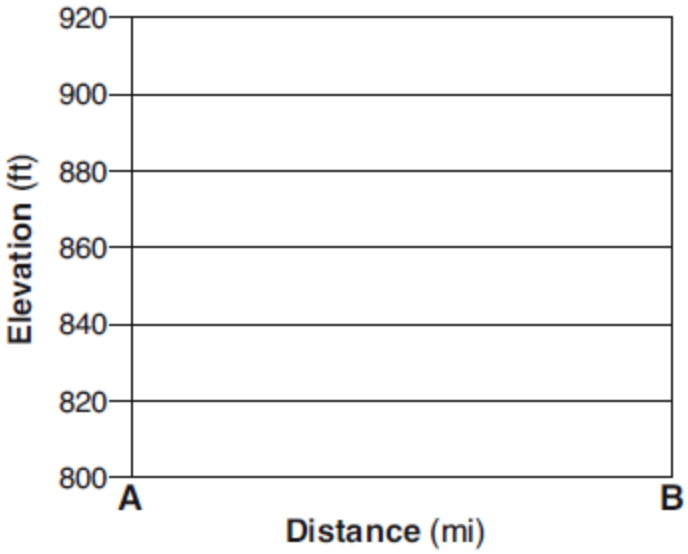
Base your answers to questions **10** through **13** on the map below, which shows elevations in feet at various points. The southern part of the map has contour lines representing elevations at 20-foot intervals. Lines *AB* and *CD* are reference lines on the map.



10. Explain how the contour lines indicate the direction of flow of Otter Creek.

___

___ 11. On the grid below, construct a topographic profile along line *AB* by plotting the elevation of *each* contour line that crosses line *AB*. Connect the plots with a line to complete the profile.

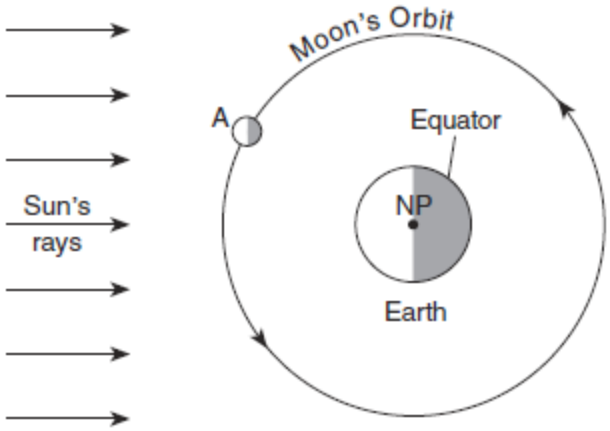


___ 12. On the map, draw contour lines for the 780-ft, 760-ft, and 740-ft elevations. Extend your contour lines to the edges of the map.

___ 13. Calculate the gradient along line *CD* and label your answer with the correct units.

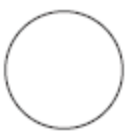
___

___ 14. Base your answer to the following question on the diagram below and on your knowledge of Earth science. The diagram represents the Moon's orbit around Earth as viewed from space above Earth's North Pole (NP). Letter *A* represents one position of the Moon in its orbit.



(Not drawn to scale)

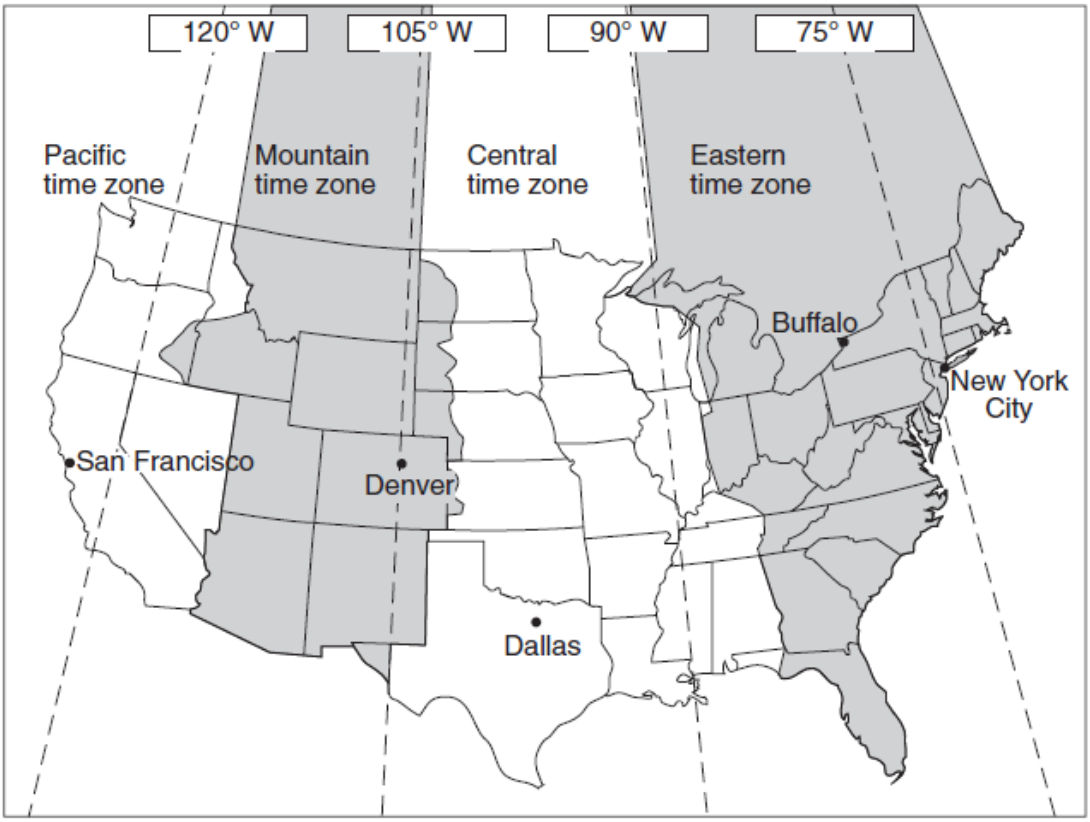
On the diagram below, shade the portion of the Moon that is in darkness as viewed from New York State when the Moon is at position *A*.



Base your answers to questions **15** and **16** on passage and time zones map shown below.

Time Zones

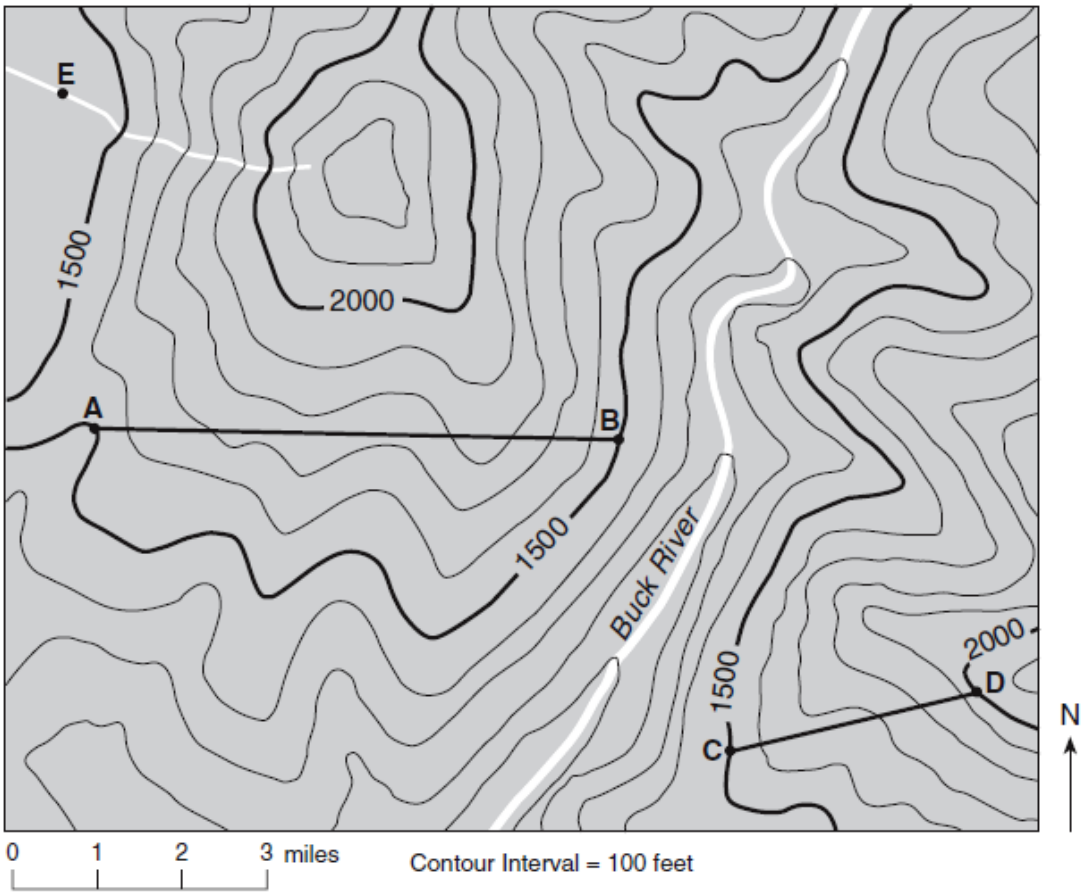
In 1883, Earth was divided into 24 time zones. The United States (excluding Alaska and Hawaii) has four time zones, which are indicated by different shadings on the map.Each zone is roughly centered on lines of longitude that are 15° apart. These lines are shown as dashed lines on the map. Most locations 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



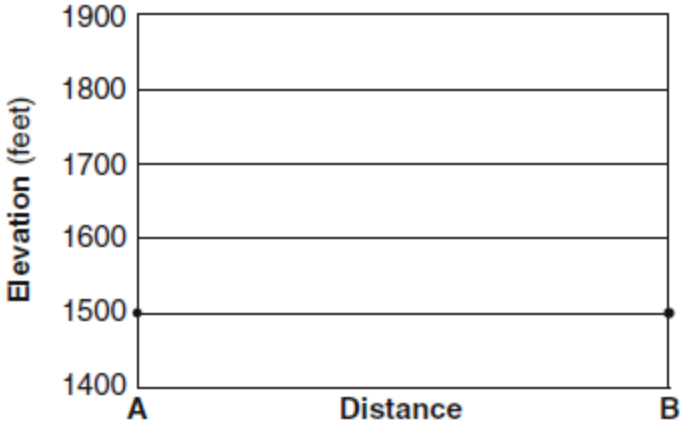
___ 15. Explain, in terms of Earth's rotation, why the time zones are 15° of longitude apart.

___ 16. When it is 1 a.m. in New York City, what time is it in Denver?

Base your answers to questions **17** through **19** on the topographic map below and on your knowledge of Earth science. Lines *AB* and *CD* are reference lines on the map. Letter *E* indicates a location in a stream.



17. Using the grid, construct a topographic profile along line *AB* by plotting the elevation of each contour line that crosses line *AB*. Point *A* and *B* have already been plotted on the grid. Connect all plots with a line from *A* to *B* to complete the profile.

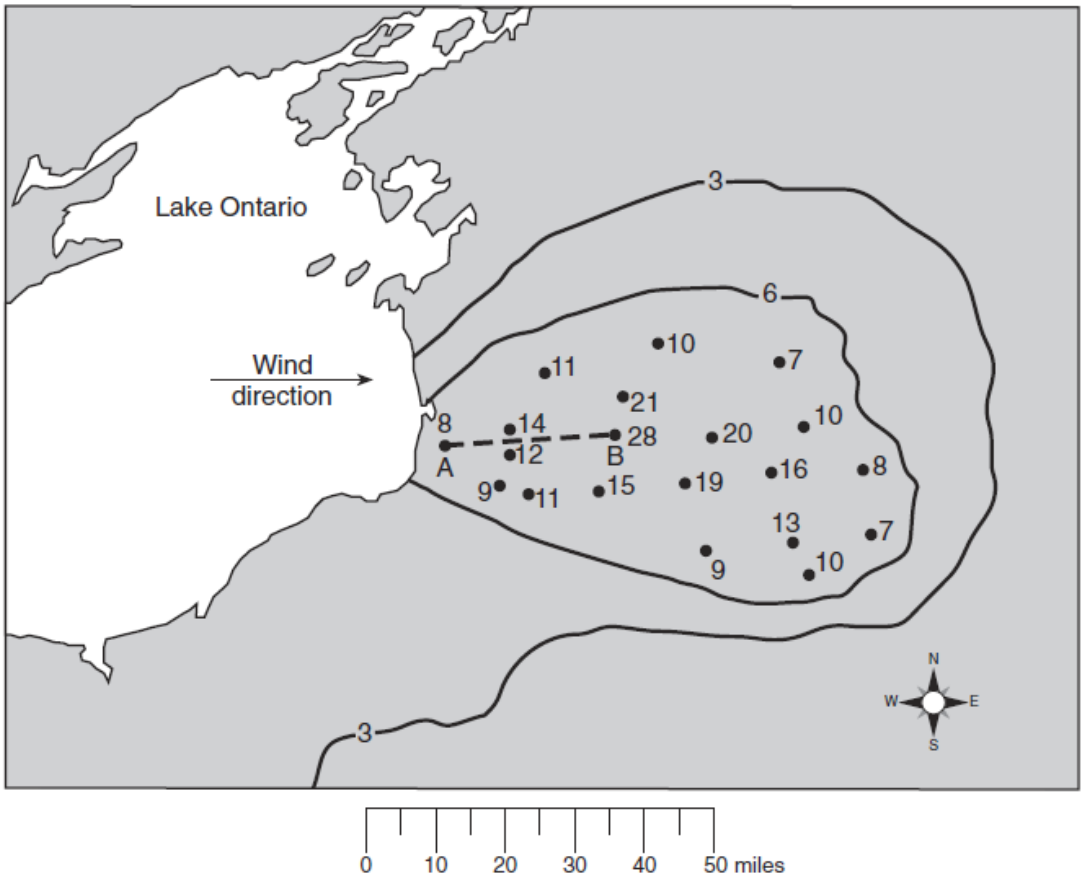


18. Describe how the contour lines indicate the direction in which Buck River flows.

19. Calculate the gradient along line *CD*.

Base your answers to questions **20** and **21** on the snowfall map of the Tug Hill Plateau region of New York State and your knowledge of Earth science. A lake-effect snowstorm occurred on November 16-19, 2008. Snow depths are indicated in inches at several points and by two labeled isoline. Dashed line *AB* is a reference line on the map between two recorded snow depths.

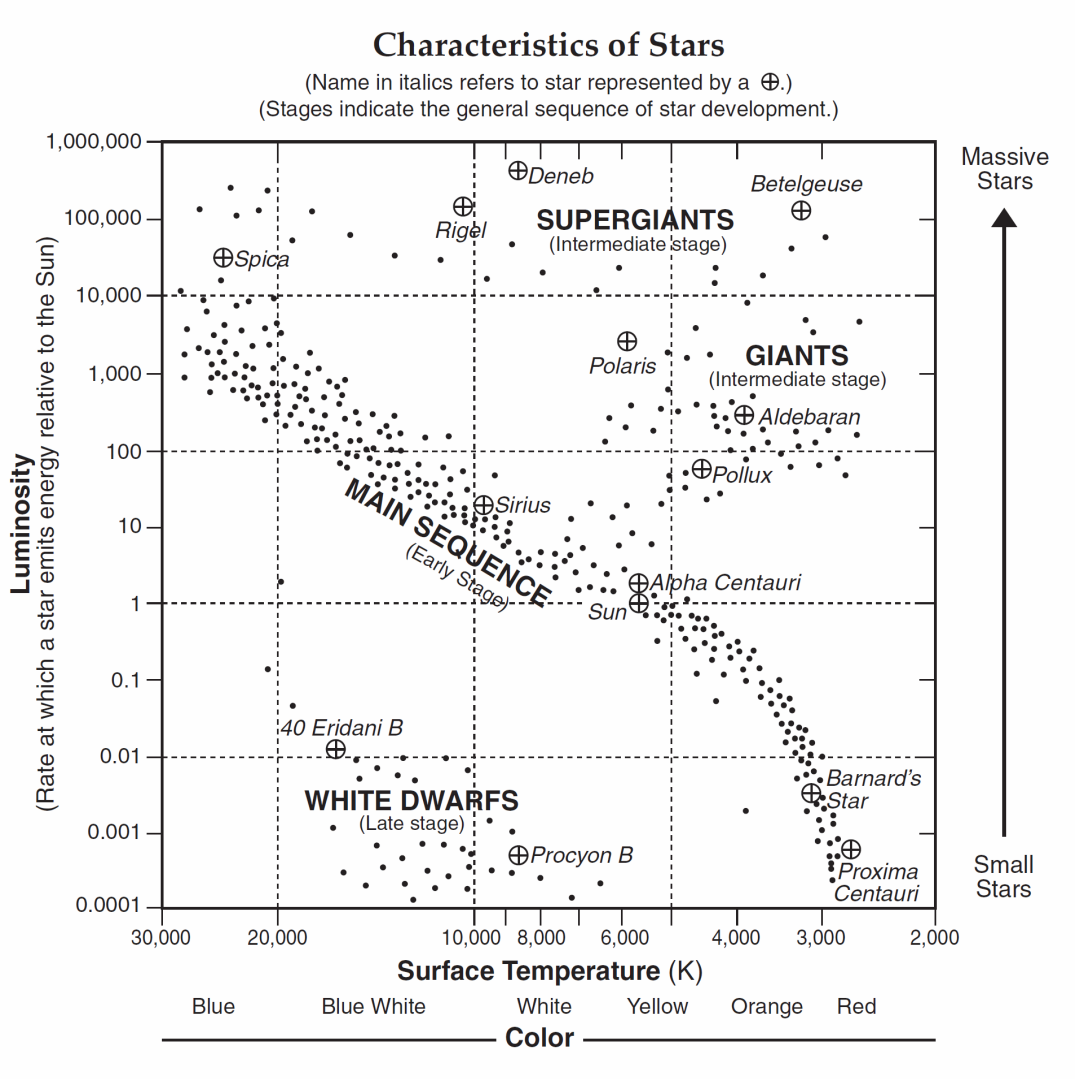
November 16–19, 2008, Storm Snow Depth (inches)



____ 20. Calculate the snow depth gradient between point *A* and point *B*, in inches per mile.

____ 21. On the map, draw the 9-inch and 12-inch snow depth isolines.

Base your answers to questions **22** through **25** on the Characteristics of Stars graph below and on your knowledge of Earth science.



22. The star *Canopus* has a surface temperature of 7400 K and a luminosity (relative to the Sun) of 1413. Use an **X** to plot the position of *Canopus* on the graph above, based on its surface temperature and luminosity.

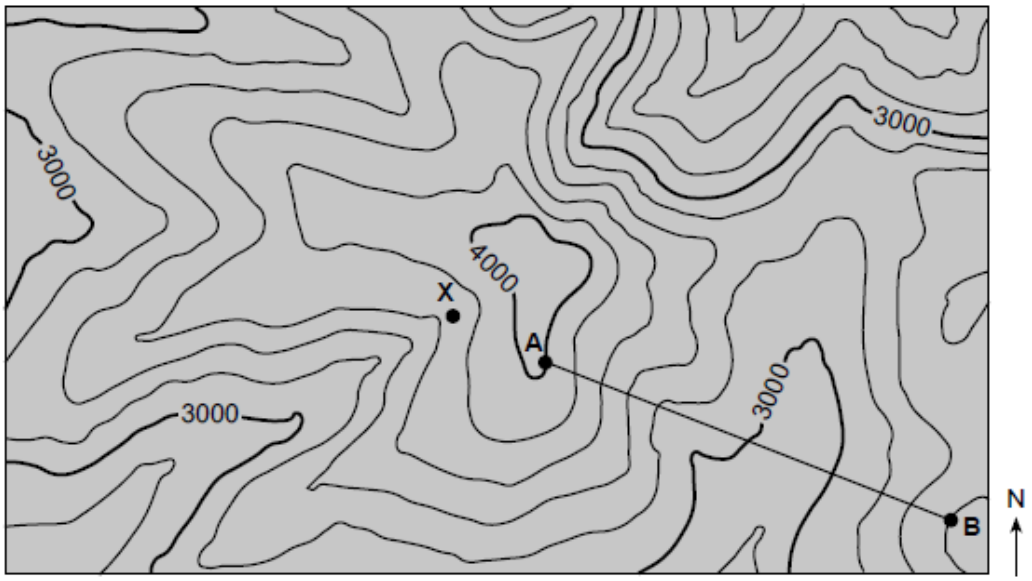
23. Identify *two* stars from the Characteristics of Stars graph that are at the same life-cycle stage as the Sun.

24. Describe how the relative surface temperature and the relative luminosity of *Aldebaran* would change if it collapses and becomes a white dwarf like *Procyon B*.

25. Describe *one* characteristic of the star *Spica* that causes it to have a greater luminosity than *Barnard's Star*.

Base your answers to questions **26** and **27** on the topographic map below and on your knowledge of Earth science. The map is centered on the peak of New York State's Slide Mountain at 42° North. Points *A*, *B*, and *X* represent locations on the map. Line *AB* is a reference line on the map. Elevations are shown in feet.

Slide Mountain

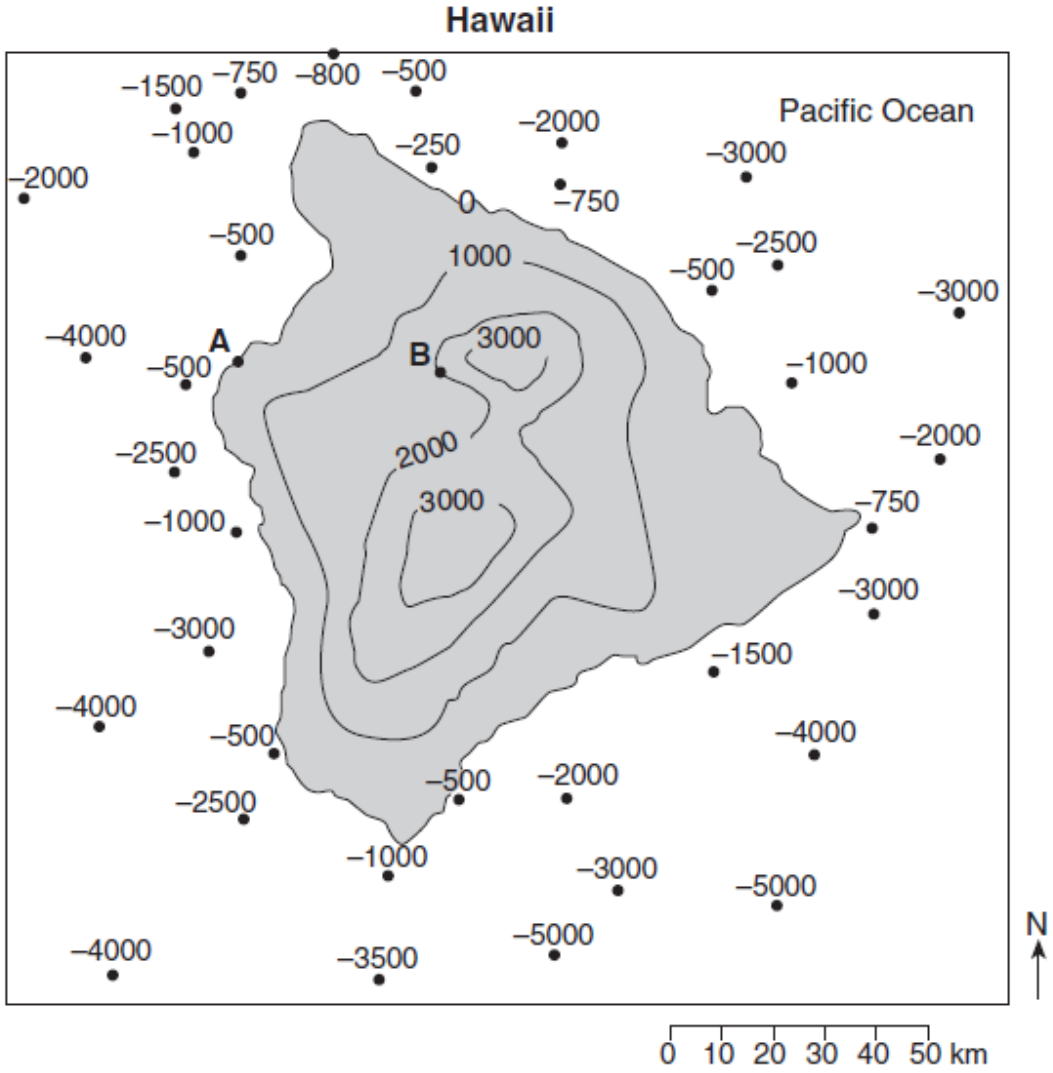


Contour interval = 200 feet

____ 26. Determine *one* possible elevation of point *X*.

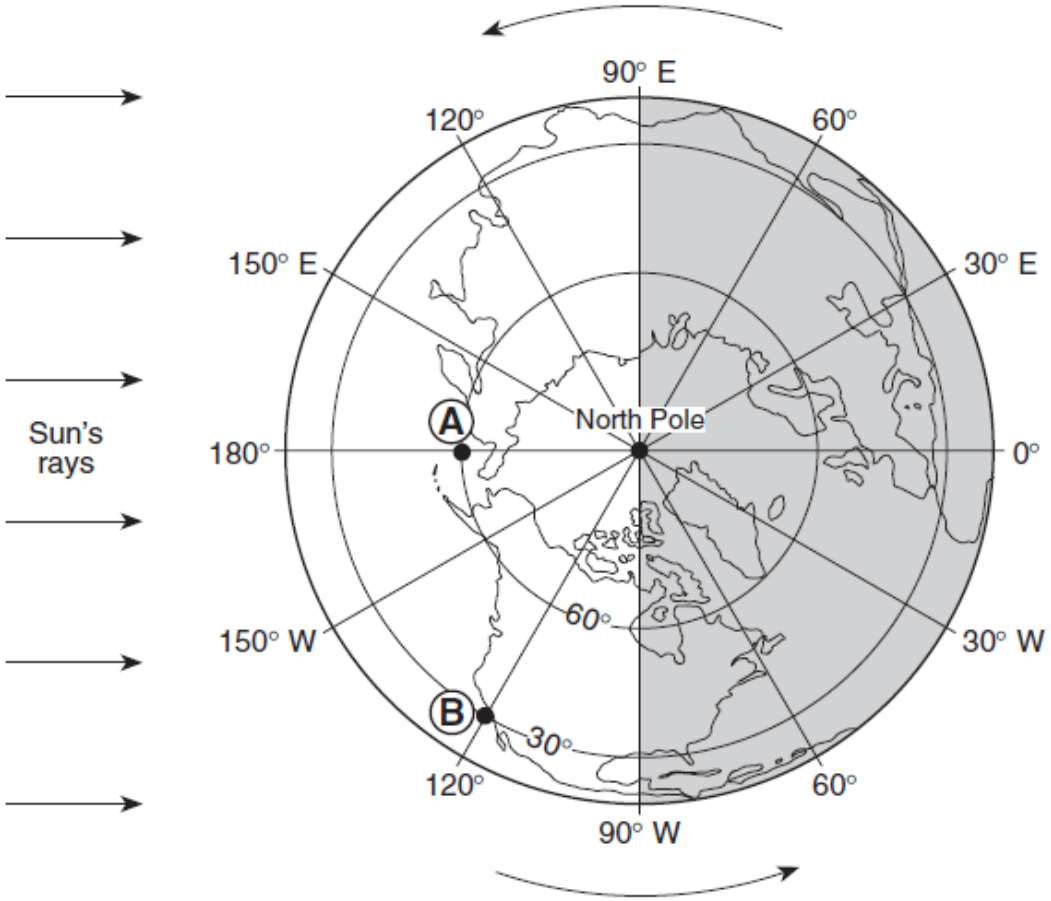
____ 27. On the grid below, construct a topographic profile along line *AB* by plotting the elevation of each contour line that crosses line *AB*. Points *A* and *B* have already been plotted. Connect all ten plots with a line, starting at *A* and ending at *B*, to complete the profile.

____ 28. Base your answer to the following question on the topographic map of Hawaii below and on your knowledge of Earth Science. Points *A* and *B* represent surface locations on the island. Land elevations and Pacific Ocean depths are shown in meters.



On the map, draw the –1000-meter ocean-depth isoline. Extend the isoline to the edge of the map.

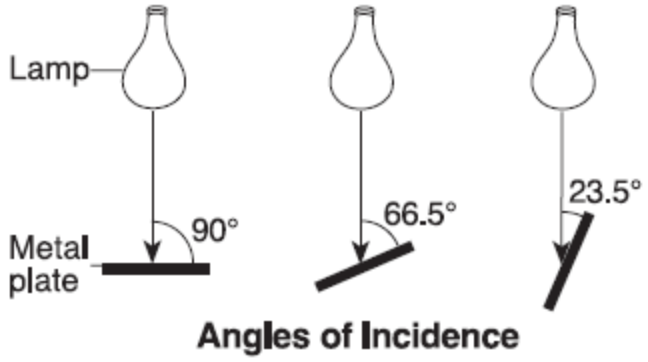
____ 29. Base your answer to the following question on the diagram below, which shows Earth as seen from above the North Pole. The curved arrows show the direction of Earth's motion. The shaded portion represents the nighttime side of Earth. Some of the latitude and longitude lines have been labeled. Points *A* and *B* represent locations on Earth's surface.



Identify *one* possible date that is represented by the diagram.

____ 30. Base your answer to the following question on the experiment description and diagram below.

A student was interested in how the angle of insolation affects absorption of radiation. The student took three black metal plates, each containing a built-in thermometer, and placed them at the same distance from three identical lamps. The plates were tilted so that the light from the lamps created three different angles of incidence with the center of the plates, as shown in the diagram. The starting temperatures of the plates were recorded. The lamps were turned on for 10 minutes. Then the final temperatures were recorded.



Angles of Incidence

Explain why the metal plate at a 90° angle of incidence had a final temperature higher than the other two plates.