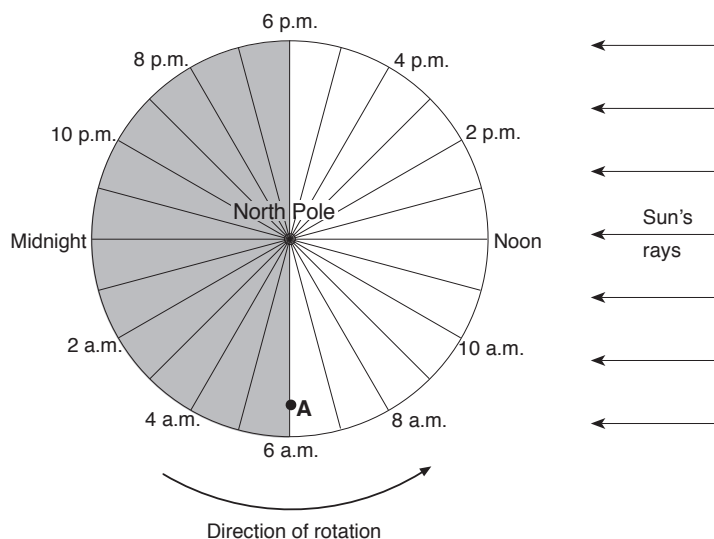


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Measuring Planet Earth Regents Review

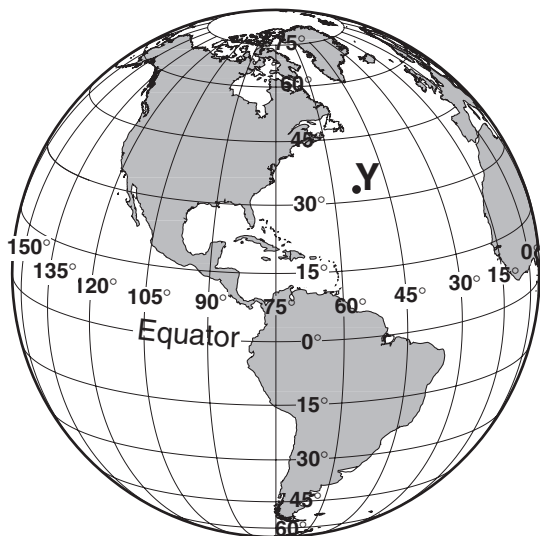
Base your answers to questions 1 through 3 on the diagram below, which represents a north polar view of Earth on a specific day of the year. Solar times at selected longitude lines are shown. Letter A represents a location on Earth's surface.



1. How many degrees apart are the longitude lines shown in the diagram?
2. State the altitude of *Polaris* as seen by an observer at the North Pole.
3. How many hours of daylight would an observer at location A experience on this day?

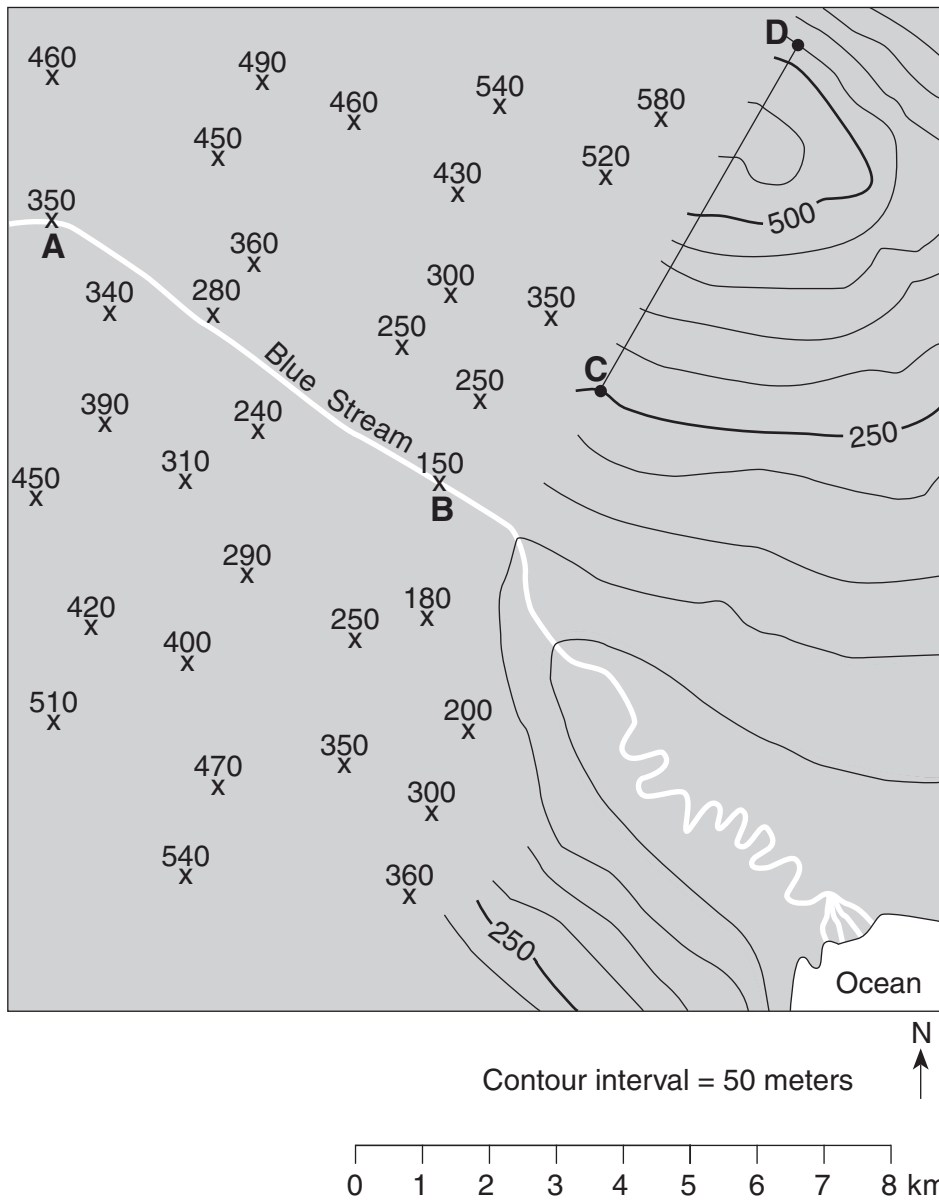
Base your answers to questions 4 and 5 on the diagram below, which shows the latitude-longitude grid on a model of Earth. Point Y is a location on Earth's surface.

4. On the diagram below, place an X at 15° S 30° W.



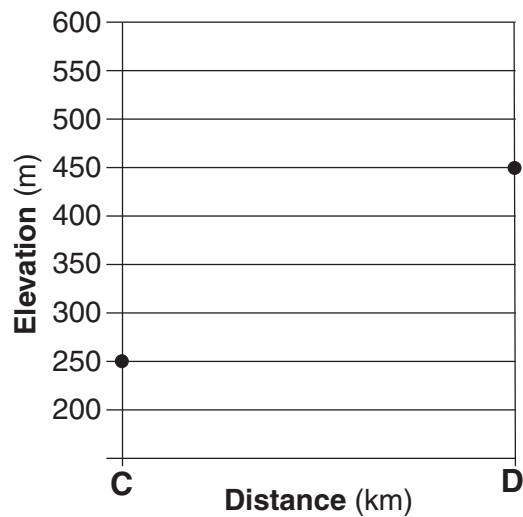
5. What is Earth's rate of rotation at point Y, in degrees per hour?

Base your answers to questions 6 through 9 on the map below, which shows partially drawn contour lines. X's indicate elevation in meters. Letters A, B, C, and D represent locations on the map.

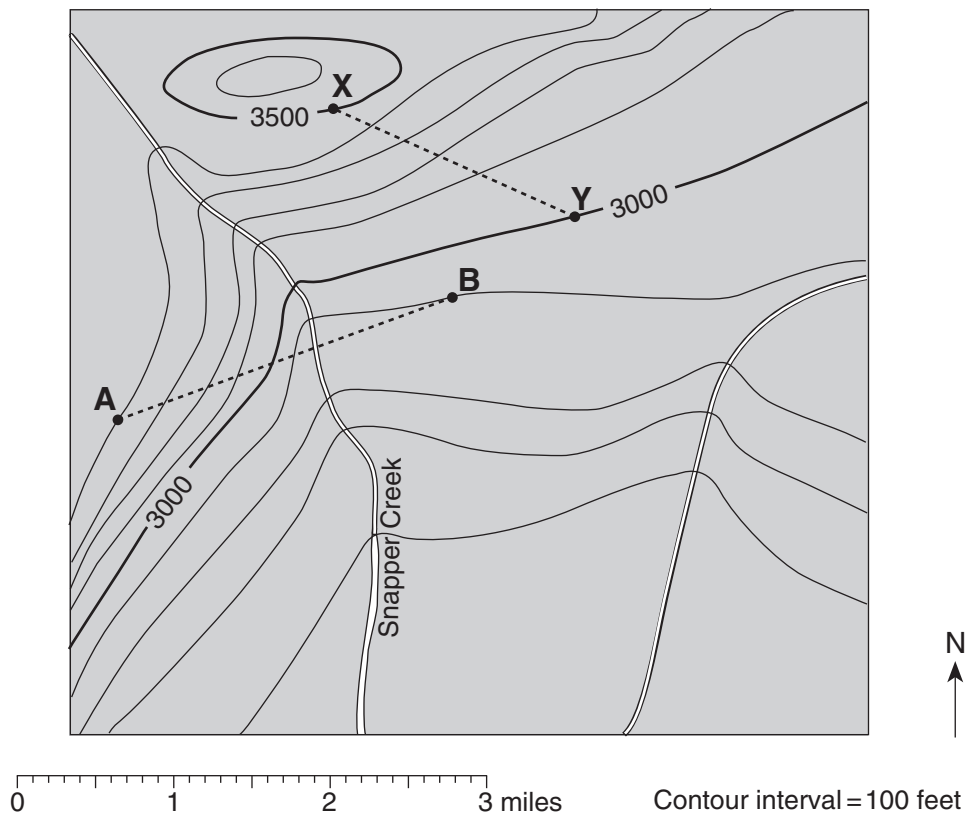


6. On the map above, complete the 250-meter contour line.
7. Place an **X** in the area where the elevation of 55 meters is located.
8. Calculate the stream gradient from elevation A to elevation B. Label your answer with the correct units.

9. On the grid below, construct a topographic profile along line CD. Plot with an X the elevation of *each* contour line that crosses line CD. Connect the **X's** from C to D with a smooth, curved line to complete the profile. Elevations C and D have already been plotted.

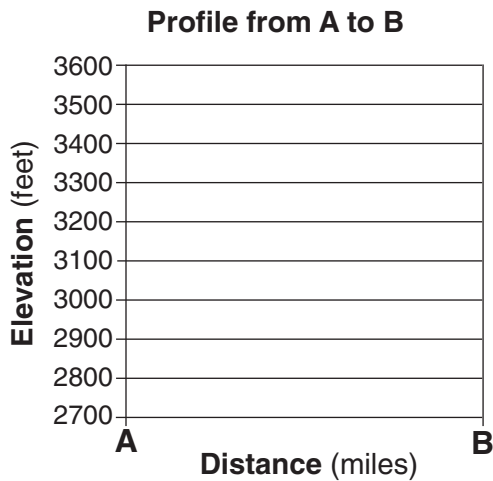


Base your answers to questions 10 through 12 on the topographic map below. Points A, B, X, and Y are locations on Earth's surface.



10. Toward which compass direction is Snapper Creek flowing?
11. Calculate the gradient between points X and Y. Units must be included in your answer.

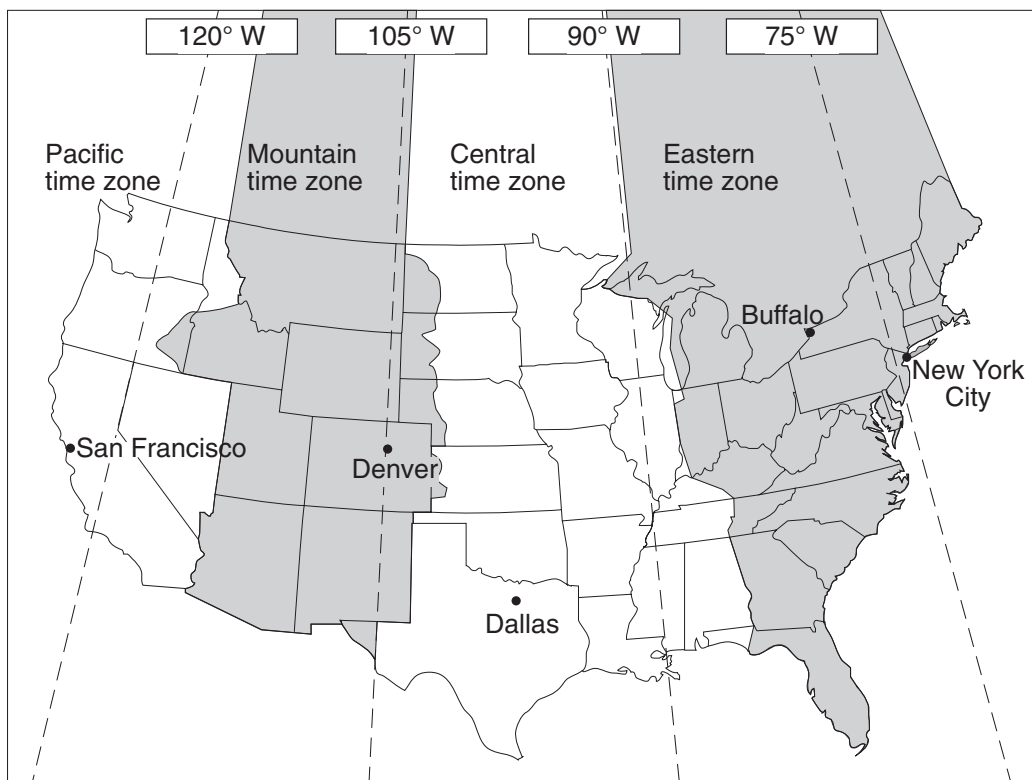
12. On the grid below, construct a topographic profile of the land surface along line AB by plotting an **X** for the elevation of each contour line that crosses line AB. Connect the **X**'s with a smooth, curved line to complete the profile.



Base your answers to questions 13 and 14 on the passage and time zones map shown below.

Time Zones

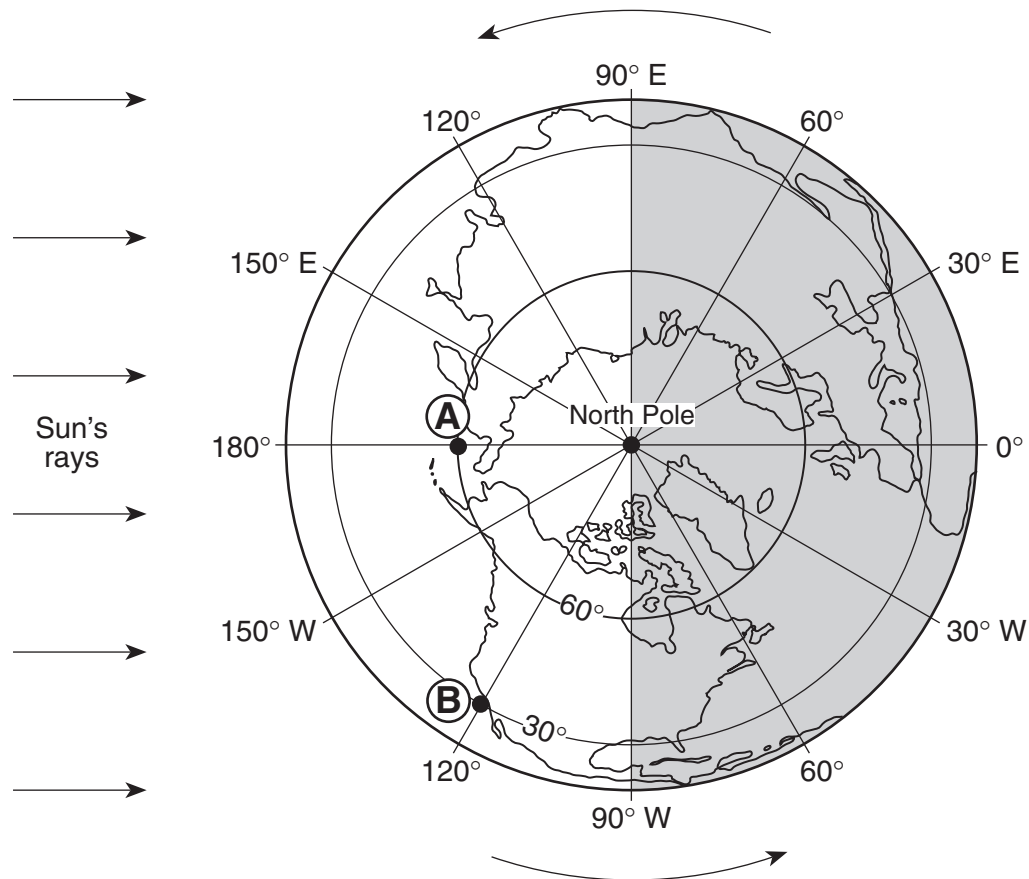
In 1883, Earth was divided into 24 time zones. The United States (excluding Alaska and Hawaii) has four time zones, which are indicated by different shadings on the map. Each zone is roughly centered on lines of longitude that are 15° apart. These lines are shown as dashed lines on the map. Most locations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



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

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

Base your answers to questions 15 through 18 on the diagram in your answer booklet, which shows Earth seen from the North Pole. The curved arrows show the direction of Earth's motion. The shaded portion represents the nighttime side of Earth. Some latitude and longitude lines have been labeled. Points A and B represent locations on Earth's surface.



15. On the diagram above, draw a curved arrow, starting at point B, showing the general direction that planetary surface winds flow between 30° N and 60° N latitude.

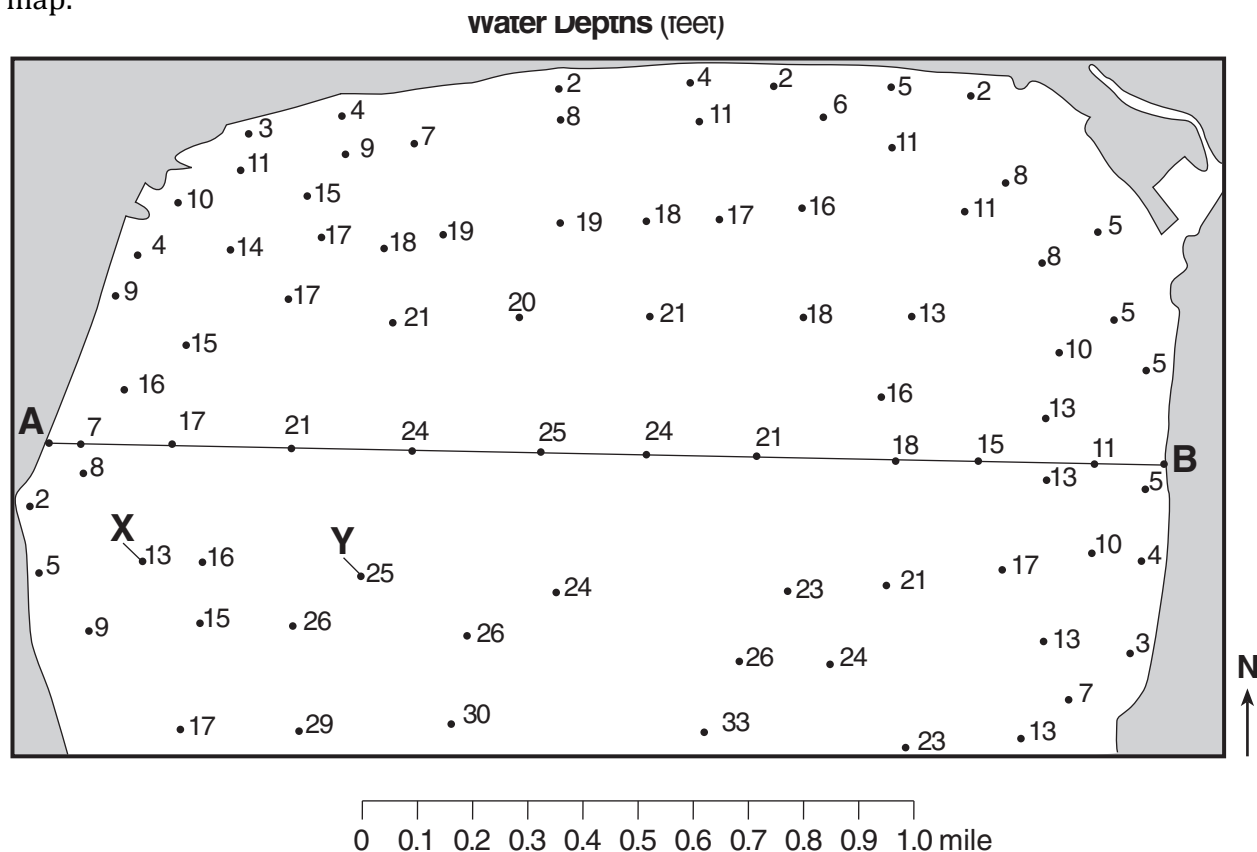
16. If it is 4:00 p.m. at point B, what is the time at point A?

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

18. Explain why the angle of insolation at solar noon is greater at point B than at point A.

Base your answers to questions 19 through 21 on the map below. The map shows the water depth, measured in feet, at the north end of one of the Finger Lakes. Points A and B are locations at the lake's shoreline. Points X and Y are locations on the bottom of the lake.

19. On the map below, draw the 20-foot-depth isoline. The isoline must extend to the edge of the map.

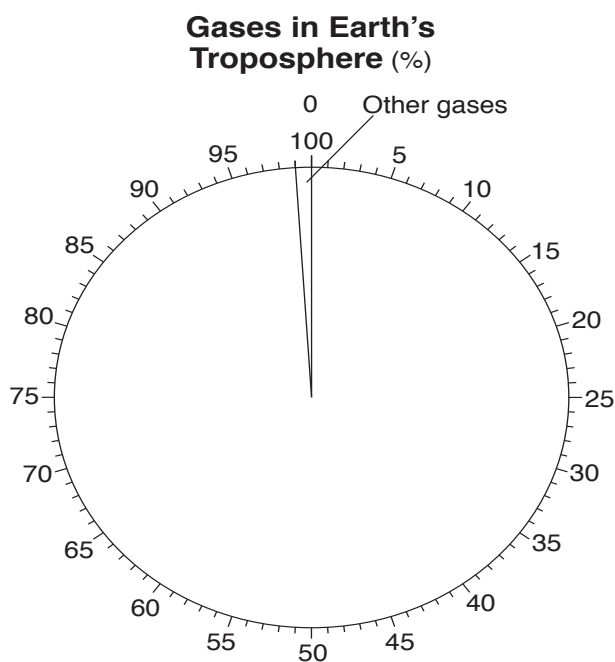


Base your answers to questions 22 through 25 on the passage below.

Earth's Early Atmosphere

Early in Earth's history, the molten outer layers of Earth released gases to form an early atmosphere. Cooling and solidification of that molten surface formed the early lithosphere approximately 4.4 billion years ago. Around 3.3 billion years ago, photosynthetic organisms appeared on Earth and removed large amounts of carbon dioxide from the atmosphere, which allowed Earth to cool even faster. In addition, they introduced oxygen into Earth's atmosphere, as a by-product of photosynthesis. Much of the first oxygen that was produced reacted with natural Earth elements, such as iron, in the lithosphere and produced new varieties of rocks and minerals. Eventually, photosynthetic organisms produced enough oxygen so that it began to accumulate in Earth's atmosphere. About 450 million years ago, there was enough oxygen in the atmosphere to allow for the development of an ozone layer 30 to 50 kilometers above Earth's surface. This layer was thick enough to protect organisms developing on land from the ultraviolet radiation from the Sun.

22. State *one* reason why the first rocks on Earth were most likely igneous in origin.
23. Identify *one* mineral with a red-brown streak that formed when oxygen in Earth's early atmosphere combined with iron.
24. Identify the temperature zone of the atmosphere in which the ozone layer developed.
25. Complete the pie graph below to show the percent by volume of nitrogen and oxygen gases currently found in Earth's troposphere. Label each section of the graph with the name of the gas. The percentage of other gases is shown.



Base your answers to questions 26 and 27 on the field map. The field map shows temperatures, in degrees Fahrenheit, taken at several locations on a blacktop parking lot in New York State. The temperatures were recorded at 11:00 a.m. in early June.

26. On the field map below, draw the 70°F and 80°F isotherms. The isotherms should be extended to the edges of the map

77 ●	75 ●	73 ●	71 ●	68 ●	65 ●	63 ●
78 ●	78 ●	77 ●	73 ●	69 ●	65 ●	62 ●
82 ●	80 ●	78 ●	74 ●	70 ●	68 ●	65 ●
81 ●	80 ●	77 ●	75 ●	70 ●	67 ●	64 ●
79 ●	77 ●	76 ●	73 ●	68 ●	66 ●	62 ●
75 ●	75 ●	72 ●	69 ●	65 ●	63 ●	61 ●

37. Explain why the surface of this parking lot usually becomes warmer from 11-12 noon each day.