Coordinate System

Used to locate points on earth
Need 2 numbers (a.k.a.: coordinates)
Measured in degrees (°) and minutes (')
60'= 1°

Latitude (rungs on a ladder)

Distance north (N) or south (S) of equator

Equator = 0°

Must include N or S when writing latitude

Baldwin latitude is about 41°N

Tropic of Cancer (23.5°N)
Tropic of Capricorn (23.5°S)

Parallels: circles of latitude parallel to each other

Longitude (L O N G L I N E S)

Distance east (E) or west (W) of prime meridian

Prime meridian = 0°

Meridian: semi-circles on earth connecting North and South poles.

Must include E or W when writing longitude

Baldwin longitude is about 73°W

International Date Line = 180°

Name: _____ Date: _____Period: _____

Latitude and Longitude (calculating minutes)

Latitude: run east to west, but measure north and south

*** New York State (NYS) is NORTH LATITDUE! ***

		Latitude Line	Minutes
----------		**42° N**	60 or 0
	B	41° 45' N	45
	E ---	41° 30' N	30
D		41° 15' N	15
----------A----------		**41° N**	0 or 60
		40° 45' N	45
	C	40° 30' N	30

What is the latitude for the points below?

A: 41° N B: C: D: E:

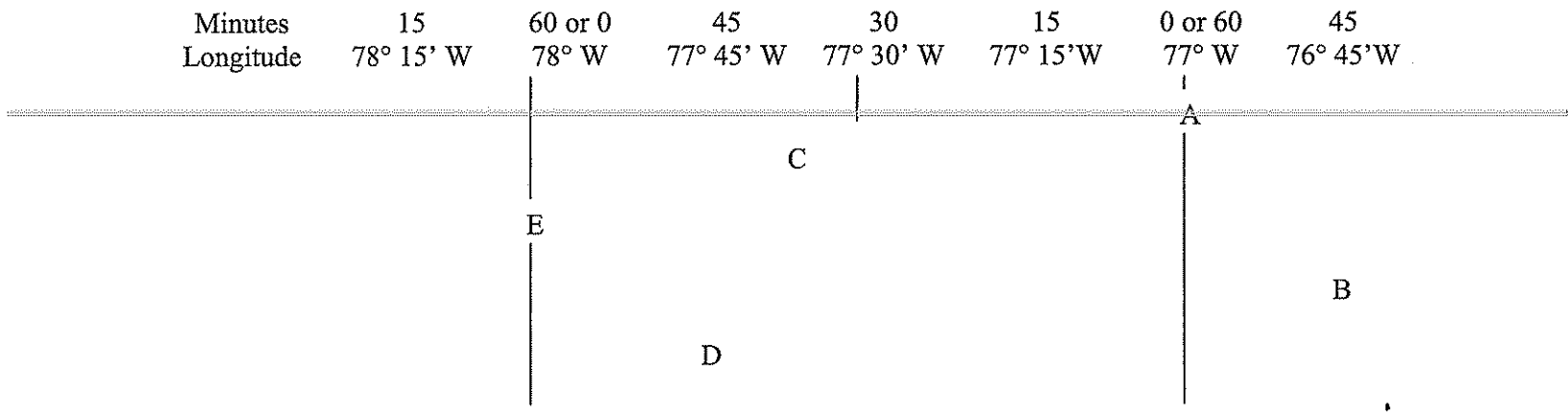
		Latitude Line	Minutes
----------		**44° N**	
Y			
	W ---		
----------X----------		**43° N**	
	Z		

Fill in the latitude and minutes column then calculate the latitude for the points below?

W: X: Y: Z:

Longitude Lines: run north to south and measure east to west

*** New York State (NYS) is WEST LONGITUDE! ***



What is the longitude for the points below?

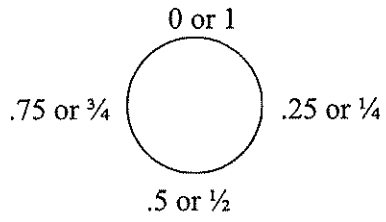
A: 77° W B: C: D: E:

Minutes							
Longitude		74° W				73° W	

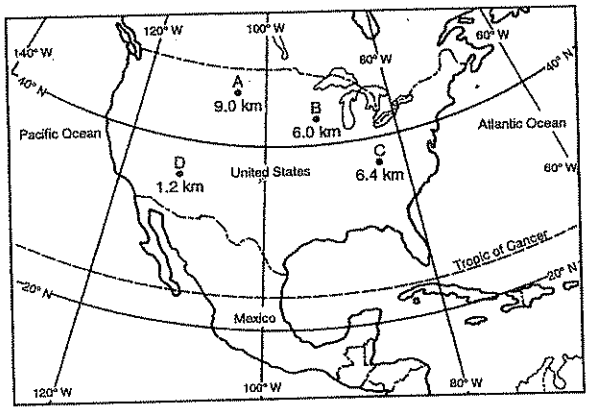
Y
W
Z
X

Fill in the longitude and minutes column then calculate the latitude for the points below?

W: X: Y: Z:



1. 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 1 _____

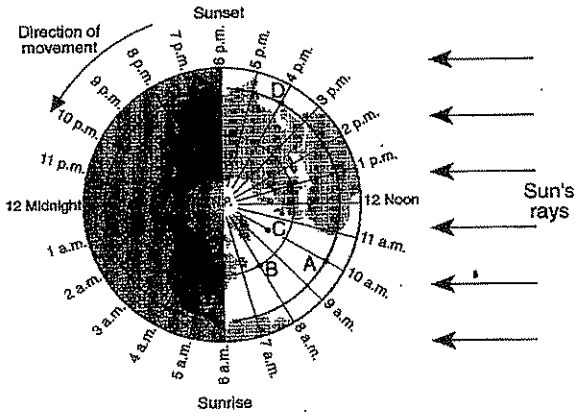
2. When the time of day for a certain ship at sea is 12 noon, the time of day at the Prime Meridian (0° longitude) is 5 p.m. What is the ship's longitude?

(1) 45° W (3) 75° W
(2) 45° E (4) 75° E 2 _____

3. Of the following choices, the maximum a longitude reading with its correct compass direction is

(1) 90° N (3) 180° N
(2) 90° E (4) 180° E 3 _____

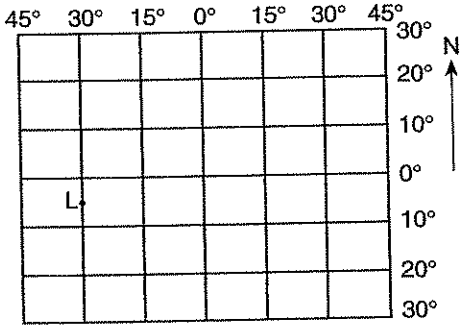
4. The map represents a view of the Earth looking down from above the North Pole, showing the Earth's 24 standard time zones. The Sun's rays are striking the Earth from the right. Points *A*, *B*, *C*, and *D* are locations on the Earth's surface.



Areas within a time zone generally keep the same standard clock time. In degrees of longitude, approximately how wide is one standard time zone?

(1) $7\frac{1}{2}°$ (3) $23\frac{1}{2}°$
(2) 15° (4) 30° 4 _____

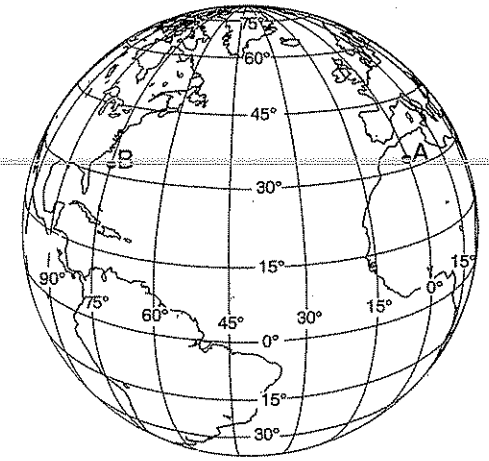
5. The diagram below represents part of Earth's latitude-longitude system.



What is the latitude and longitude of point L?

(1) 5° E 30° N (3) 5° N 30° E
(2) 5° W 30° S (4) 5° S 30° W 5 _____

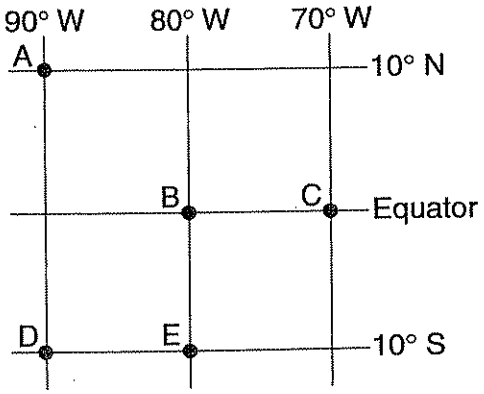
6. The diagram below shows the latitude-longitude grid on an Earth model. Points *A* and *B* are locations on the surface.



On Earth, the solar time difference between point *A* and point *B* would be

(1) 1 hour (3) 12 hours
(2) 5 hours (4) 24 hours 6 _____

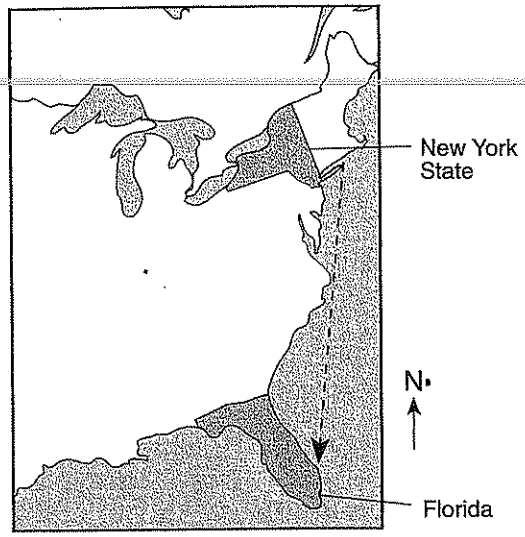
7. The map below, shows the latitude and longitude of five observers, *A*, *B*, *C*, *D*, and *E*, on Earth.



What is the altitude of Polaris (the North Star) above the northern horizon for observer *A*?

(1) 0° (3) 80°
(2) 10° (4) 90° 7 _____

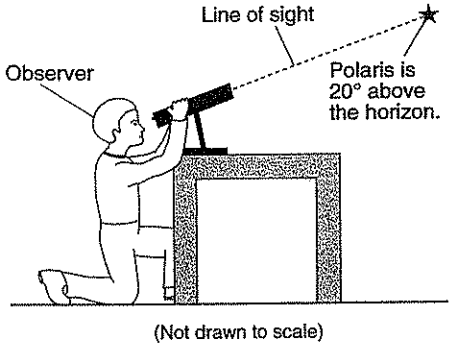
8. The dashed line on the map below shows a ship's route from Long Island, New York, to Florida. As the ship travels south, the star Polaris appears lower in the northern sky each night.



Showing the map of the Eastern part of the United States, the best explanation for this observation is that Polaris

(1) rises and sets at different locations each day
(2) has an elliptical orbit around Earth
(3) is located directly over Earth's Equator
(4) is located directly over Earth's North Pole 8 _____

9. The diagram below shows an observer measuring the altitude of Polaris.

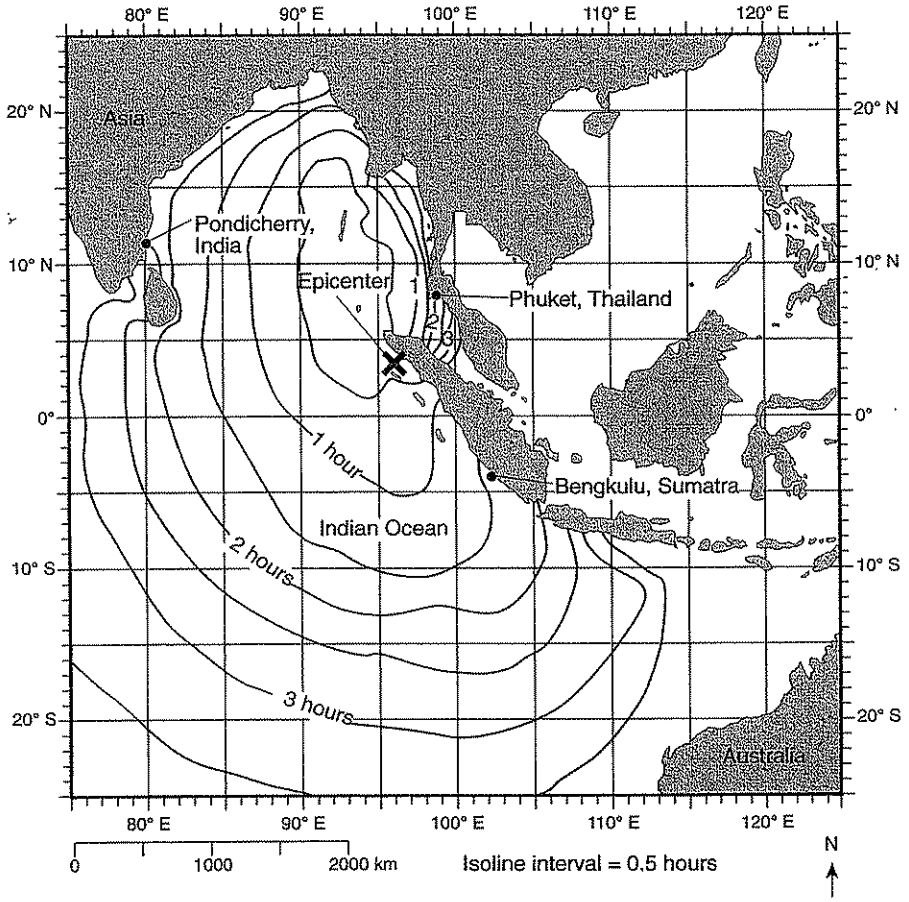


(Not drawn to scale)

What is the latitude of the observer?

(1) 20° N (3) 70° N
(2) 20° S (4) 70° S 9 _____

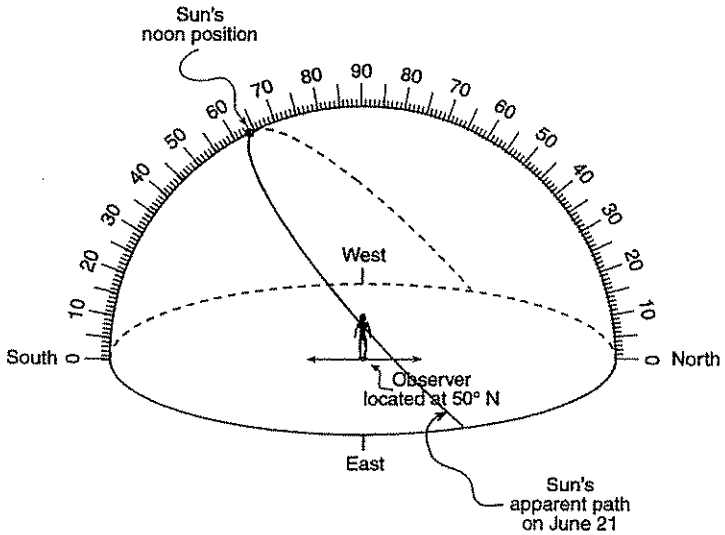
Base your answer to question 10 on the map below. The map shows a portion of the Indian Ocean and surrounding landmasses. The location of the epicenter of a large undersea earthquake that occurred on December 26, 2004, is shown by an **X**. The isolines surrounding the epicenter show the approximate location of the first tsunami wave produced by this earthquake in half-hour intervals after the initial earthquake.



10. State the latitude and longitude of the epicenter of this earthquake. Include the units and compass directions in your answer.

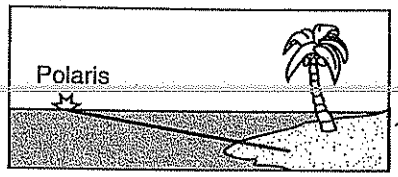
_____

11. On the accompanying diagram, mark with a dot the position of Polaris as viewed by the observer. Label this dot "Polaris."

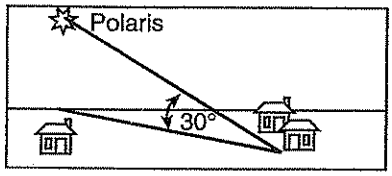


12. Which statement about *Polaris* is best illustrated by the diagrams shown below?

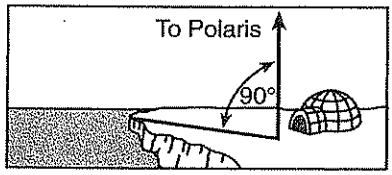
At Equator



At New Orleans, Louisiana



At North Pole

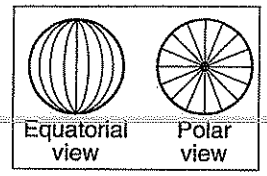


(1) *Polaris* is located in a winter constellation.
(2) *Polaris* is located at the zenith at each location.
(3) *Polaris'* apparent movement through the sky follows a south-to-north orientation.
(4) *Polaris'* altitude is equal to a location's latitude. 12 _____

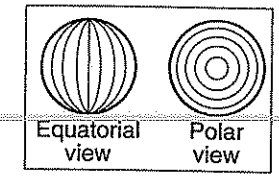
13. Earth's rate of rotation is approximately

(1) 1° per day
(2) 15° per day
(3) 180° per day
(4) 360° per day 13 _____

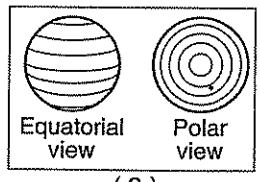
14. The lines on which set of views best represent Earth's latitude system?



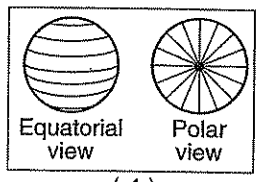
(1)



(3)



(2)



(4)

14 _____

15. As a ship crosses the Prime Meridian, an observer on the ship measures the altitude of Polaris at 60°. What is the ship's location?

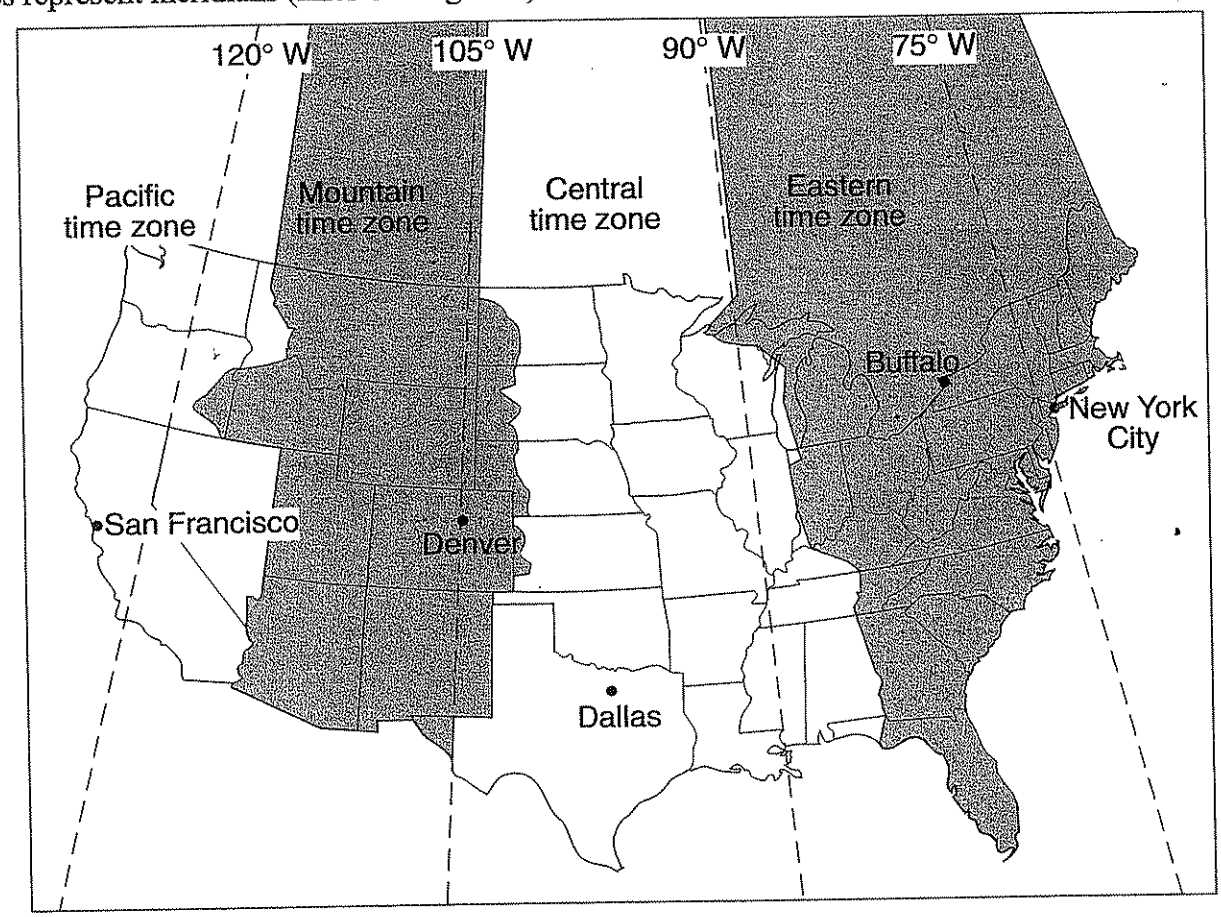
(1) 60° south latitude and 0° longitude
(2) 60° north latitude and 0° longitude
(3) 0° latitude and 60° east longitude
(4) 0° latitude and 60° west longitude

15 _____

16. What time is it in Greenwich, England (at 0° longitude), when it is noon in Massena, New York having a longitude of 75° W?

(1) 7 a.m. (3) 5 p.m.
(2) noon (4) 10 p.m. 16 _____

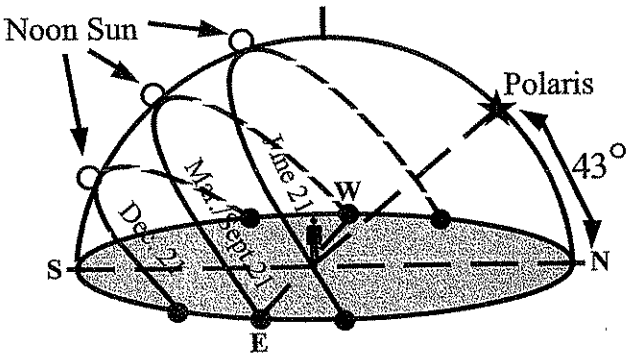
Base your answer to question 17 on the United States time zone map shown below. The dashed lines represent meridians (lines of longitude).



17. If the time in Buffalo, New York, is 5 a.m., what time would it be in San Francisco, California?

_____

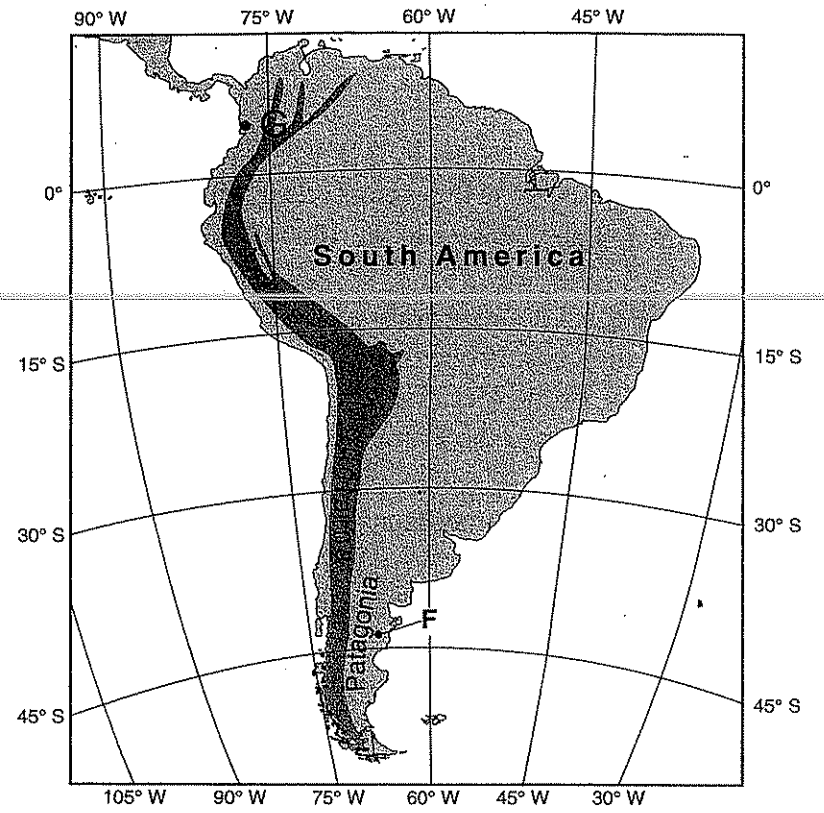
Base your answer to question 18 on the accompanying diagram and on your knowledge of Earth science. The diagram represents the apparent path of the Sun on the dates indicated for an observer in New York State. The diagram also shows the angle of Polaris above the horizon.



18. State the latitude of the location represented by the diagram to the nearest degree. Include the latitude direction in your answer.

_____

Base your answer to questions 19*a* and *b* on the accompanying map.



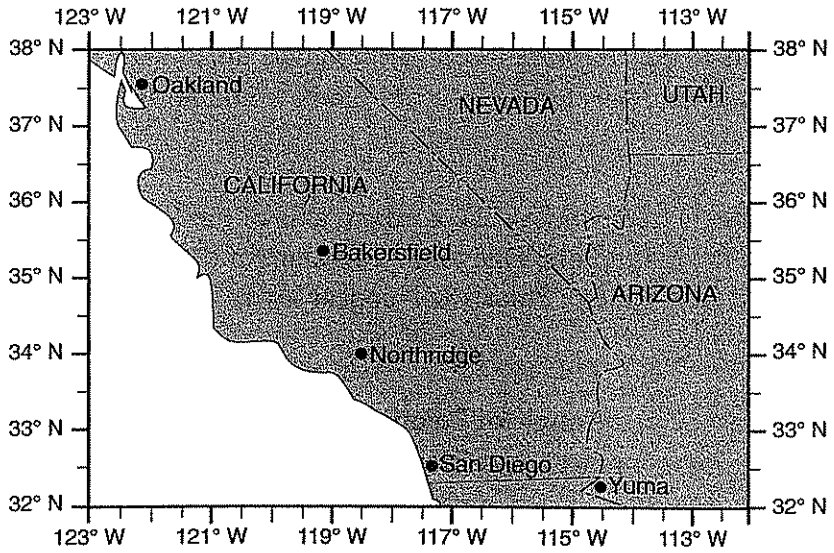
19. *a*) State the latitude and longitude of point ***F***, to the nearest degree. Include the correct units and compass directions in your answer.

_____

b) State the latitude and longitude of point ***G***, to the nearest degree. Include the correct units and compass directions in your answer.

_____

Base your answers to question 20 on the map below, which shows a portion of southwestern United States. On January 17, 1994, an earthquake occurred with an epicenter at Northridge, California.



20. State the latitude and longitude of Northridge, California. Include the correct units and compass directions in your answer.

_____