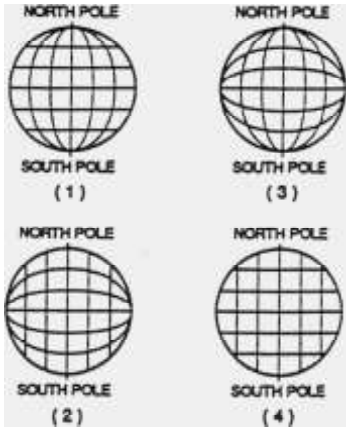
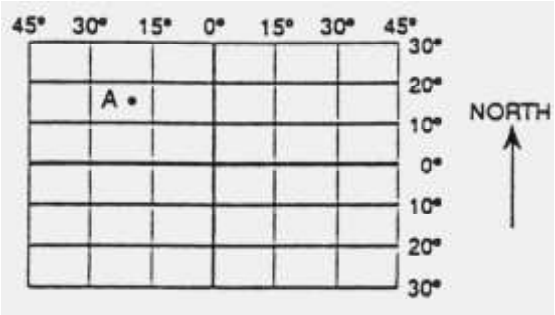
Latitude, Longitude, and the Altitude of Polaris,

1. The diagrams to the right represent four systems of imaginary lines that could be used to locate positions on a planet. Which system is most similar to the latitude-longitude system used on the Earth?



2. 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
(2) 15°N, 20°E
(3) 15°N, 20°W
(4) 15°S, 20°E

3. According to the *Earth Science Reference Tables*, which city is located closest to 44° N latitude, 76° W longitude?

(1) Massena
(2) Binghamton
(3) Buffalo
(4) Watertown

4. What is the location of Binghamton, New York?

(1) 42° 06' N, 75° 55' W
(2) 42° 06' N, 76° 05' W
(3) 42° 54' N, 76° 05' W
(4) 42° 54' N, 75° 55' W

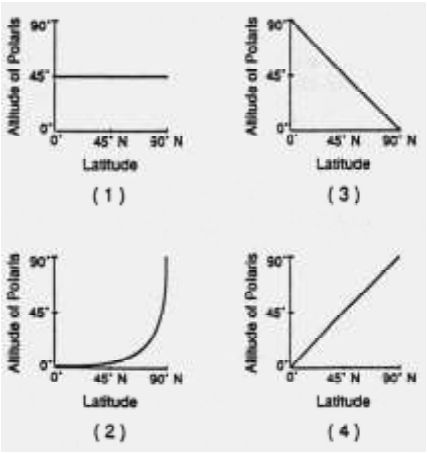
5. An observer on Earth measures the altitude of Polaris and finds it to be 90 degrees. The observer must be at the

(1) North Pole
(2) Arctic Circle
(3) Tropic of Cancer
(4) Equator

6. On June 21, the altitude of Polaris is observed from New York City and is found to be 41°. If the altitude is observed again on December 21, it will be

(1) 23 ½°
(2) 41°
(3) 49°
(4) 64 ½°

7. Which graph best represents the relationship between the latitude of an observer and the observed altitude of Polaris above the northern horizon?

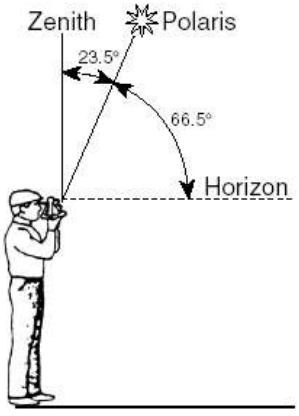


8. An observer on a moving ship notices that the altitude of Polaris decreases each night. In what direction is the ship moving?
   (1) due east
   (2) due south
   (3) due west
   (4) due north

9. An observer on Earth measures the altitude of Polaris and finds it to be 0^o. This observer must be at the
   (1) North Pole
   (2) Arctic Circle
   (3) Tropic of Cancer
   (4) Equator

10. As a ship crosses the Prime Meridian, the altitude of Polaris is 65^o. What is the ship's location?
   (1) 0^o latitude, 65^o East longitude
   (2) 0^o latitude, 65^o West longitude
   (3) 65^o North latitude, 0^o longitude
   (4) 65^o South latitude, 0^o longitude

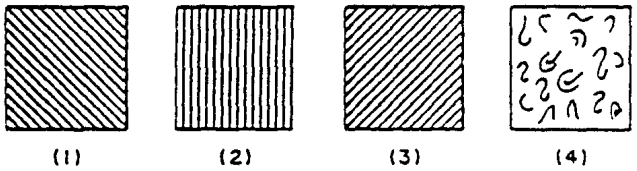
11. The diagram below shows an observer on Earth measuring the altitude of *Polaris*.



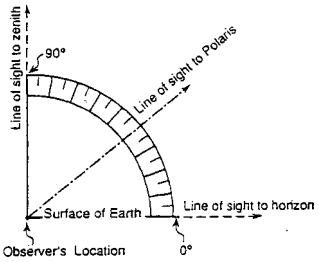
What is the latitude of this observer?
(1) 90° N
(2) 66.5° N
(3) 43° N
(4) 23.5° N

12. What is the approximate altitude of *Polaris* at Syracuse, New York?
   (1) 43°
   (2) 47°
   (3) 76°
   (4) 90°

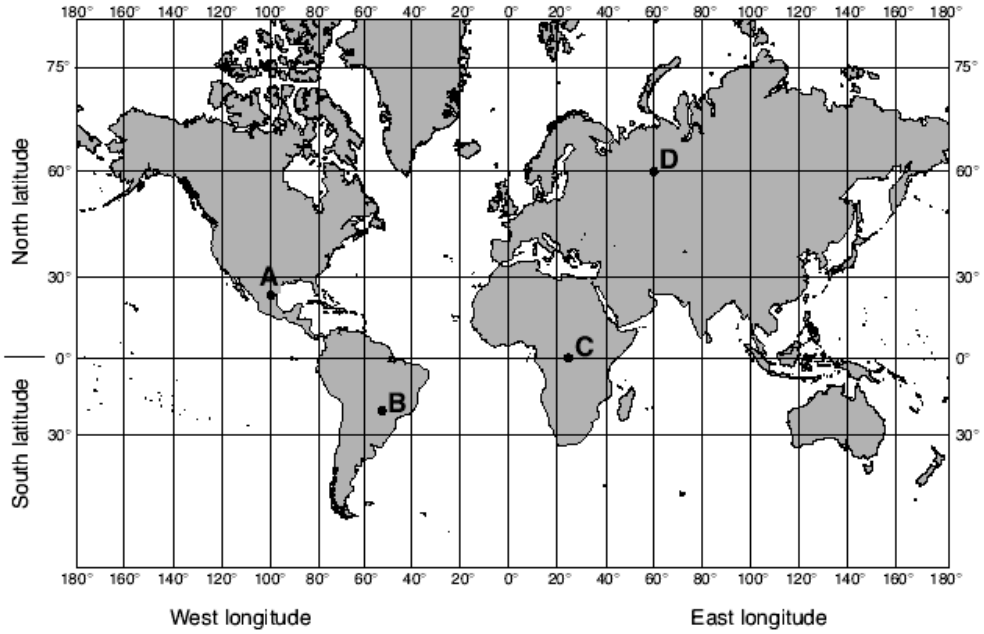
13. On the Generalized Bedrock Geology map of New York State what similar pattern is found at 44° 30' north latitude by 74°30' west longitude?



14. The diagram shows the altitude of Polaris above the horizon at a certain location. What is the latitude of the observer?
    (1) 10° N
    (2) 40° N
    (3) 50° N
    (4) 90° N



Use the world map to answer **questions 15-17**.

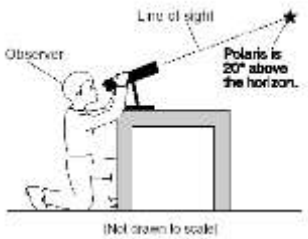


15. What is the latitude and longitude of point A? (don't forget directions) _____

16. What is the latitude and longitude of point B? (don't forget directions) _____

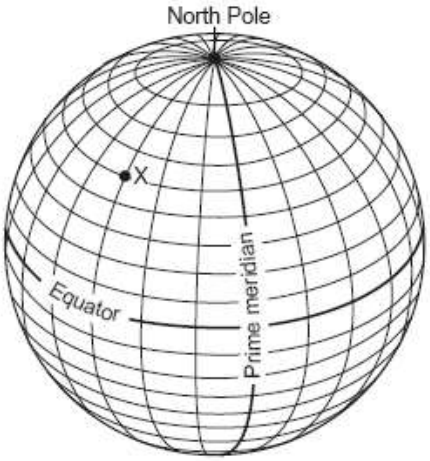
17. At which location could an observer *not* see *Polaris* in the night sky at any time during the year?
    (1) *A*
    (2) *B*
    (3) *C*
    (4) *D*

18. The diagram below shows an observer measuring the altitude of *Polaris.* What is the latitude of the observer?
(1) 20° N (3) 70° N
(2) 20° S (4) 70° S



19. From which New York State location would *Polaris* be observed to have an altitude closest to 45° above the northern horizon?
(1) Massena (3) Watertown
(2) Utica (4) New York City

The diagram below shows latitude measurements every 10 degrees and longitude measurements every 15 degrees.



20. What is the latitude and longitude of point *X*?
(1) 40° S 45° E (3) 60° S 30° W
(2) 50° N 45° W (4) 75° N 30° E

Base your answers to **questions 21 and 22** on the map below, which shows the latitude and longitude of five observers, *A, B, C, D,* and *E,* on Earth.

21. What are the coordinates of letter A?
(1) 0°, 90°W (3) 90°N, 10°W
(2) 10°N, 90°W (4) 10°W, 90°S

22. Which two observers would be able to observe Polaris at the same altitude?
(1) *A* and *C* (3) *B* and *E*
(2) *B* and *C* (4) *D* and *E*