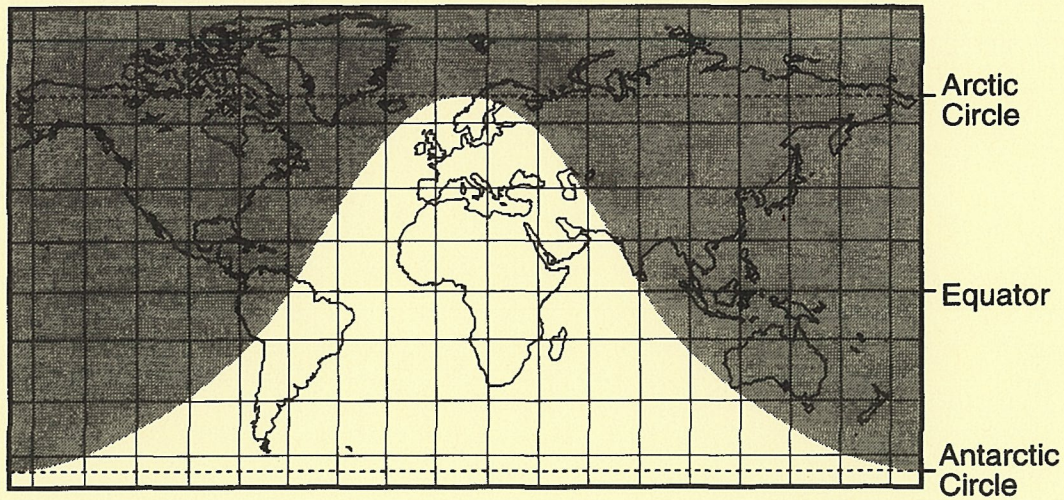


1. The shaded portion of the map below indicates areas of night and the unshaded portion indicates areas of daylight.



What day of the year is best represented by the map?

- (1) March 21 (2) June 21 (3) September 21 (4) December 21

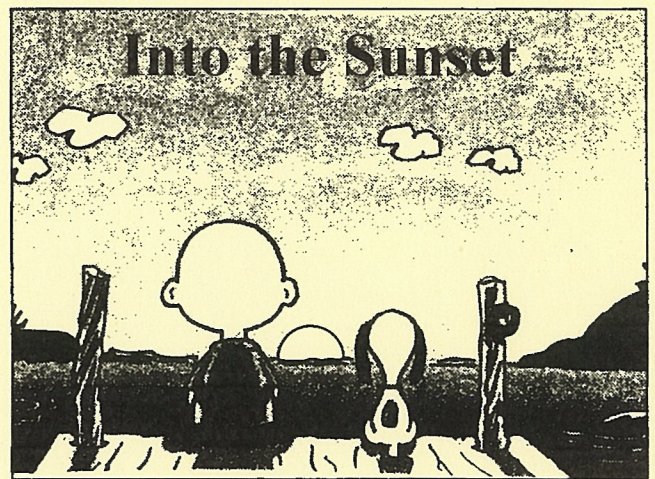
2. Why do the locations of sunrise and sunset vary in a cyclical pattern throughout the year?

- (1) The Earth rotates on a tilted axis while revolving around the Sun.
- (2) The Sun rotates on a tilted axis while revolving around the Earth.
- (3) The Earth's orbit around the Sun is an ellipse.
- (4) The Sun's orbit around the Earth is an ellipse.

3. Which location on the Earth would the Sun's vertical rays strike on December 21?

- (1) Tropic of Cancer ($23\frac{1}{2}^{\circ}$ N)
- (2) Equator (0°)
- (3) Tropic of Capricorn ($23\frac{1}{2}^{\circ}$ S)
- (4) South Pole (90° S)

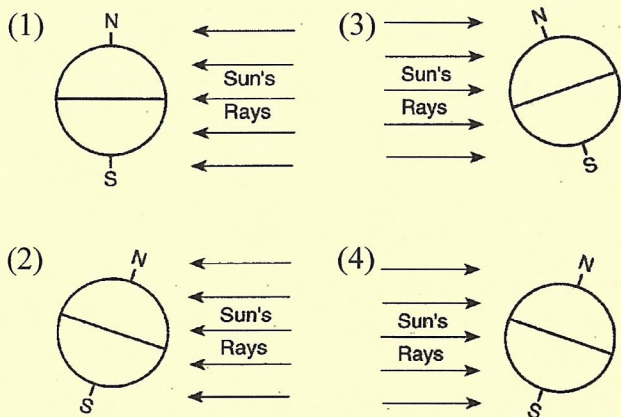
4. The cartoon characters below are watching the Sun set.



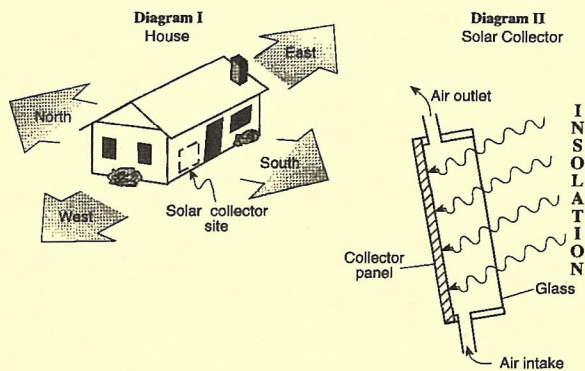
Toward which general direction are the characters looking?

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

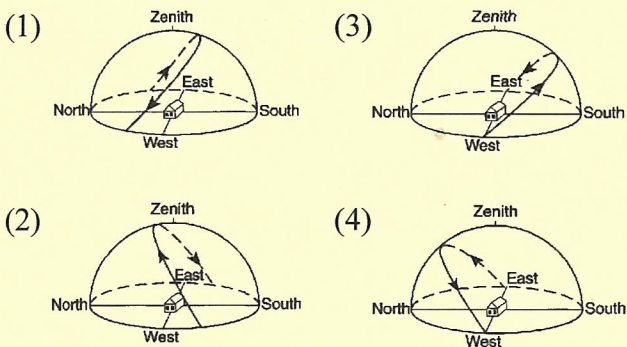
5. Which diagram shows the position of the Earth relative to the Sun's rays during a winter day in the Northern Hemisphere?



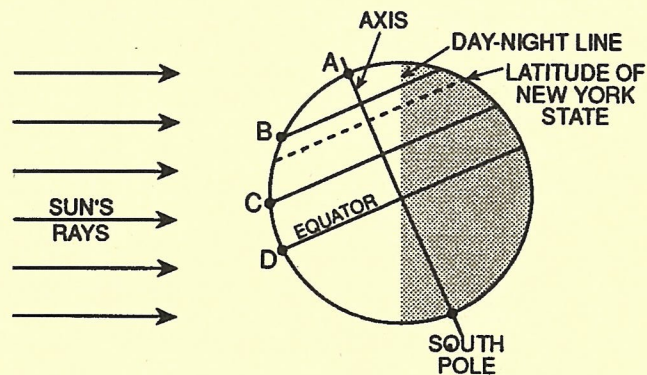
6. Base your answer on the *Earth Science Reference Tables* and the diagrams below. Diagram I shows a house located in New York State. Diagram II shows a solar collector that the homeowner is using to help heat the house.



Which diagram best represents the apparent path of the Sun on June 21 for this location?



Base your answers to questions 7 and 8 on the diagram below which shows the Earth as viewed from space. The shaded side represents the nighttime side of the Earth.



7. Which point on the Earth's surface is receiving the greatest intensity of insolation?

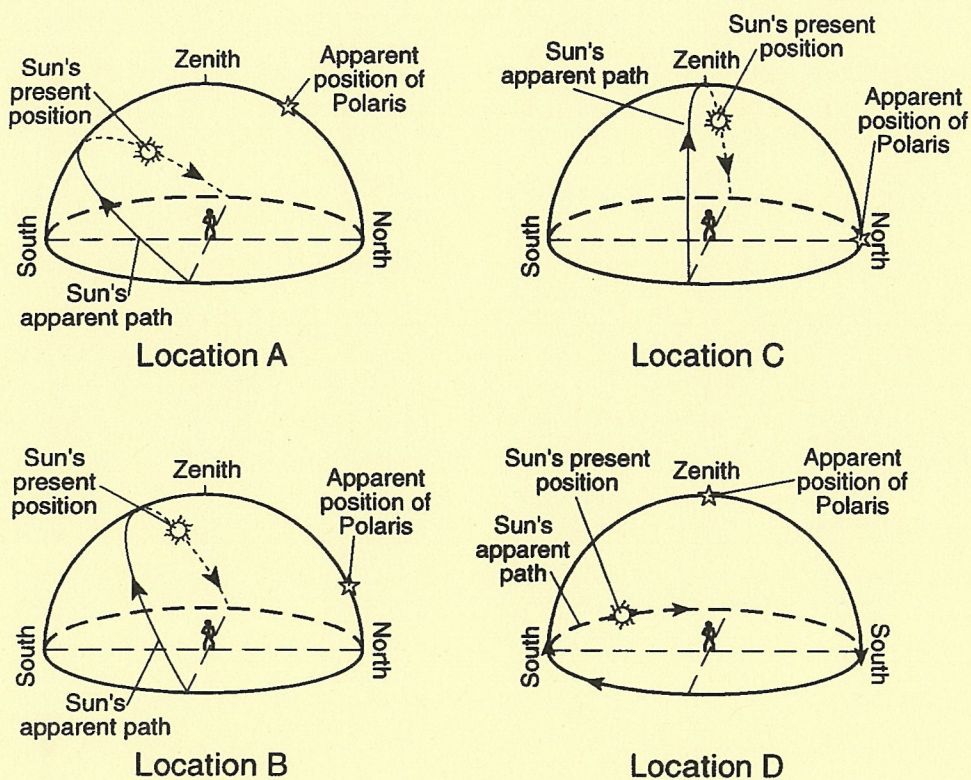
- (1) A
- (2) B
- (3) C
- (4) D

8. The total number of hours of daylight received by New York State on the date represented in the diagram is closest to

- (1) 9 hr
- (2) 12 hr
- (3) 15 hr
- (4) 20 hr

Review: The Seasons

Base your answers to questions 9 through 11 on the diagram below. The diagram represents the apparent path of the Sun observed at four locations on Earth's surface on March 21. The present positions of the Sun, Polaris, and the zenith (position directly overhead) are shown for an observer at each location.



9. The observer at location *A* casts a shadow at the time represented in the diagram.

a State the compass direction in which the observer at location *A* must look to view her shadow.

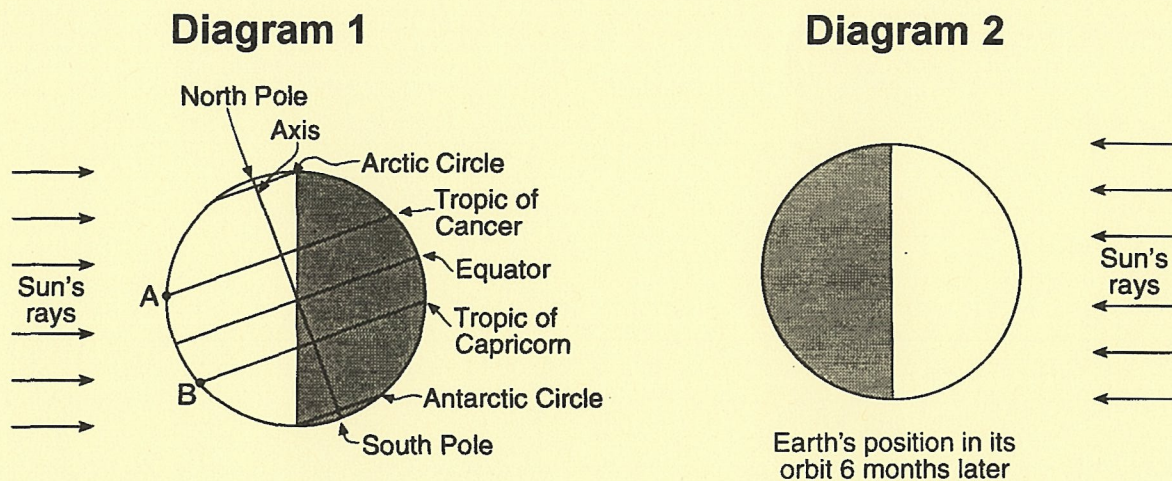
b Describe the change in the length of the shadow that will occur between the time shown and sunset.

10. The observer at location *D* is located at a higher latitude than the other three observers. State *one* way that this conclusion can be determined from the diagram.

11. State the other day of the year when the Sun's apparent path is exactly the same as that shown for these four locations on March 21.

Review: The Seasons

Base your answers to questions 12 through 14 on the diagram below, which represents Earth at a specific position in its orbit as viewed from space. The shaded area represents nighttime. Points *A* and *B* are locations on Earth's surface.



12. *a* State the month in which Earth is at the position shown in the diagram.
b State the latitude that receives the most intense radiation from the Sun when Earth is at this position in its orbit.
13. Describe the length of daylight at point *A* compared to the length of daylight at point *B* on the day represented by the diagram.
14. The model of Earth provided in **Diagram 2** represents Earth in its orbit *6 months later*. On the model shown
 - draw the position of Earth's axis and label the axis
 - label the North Pole
 - draw the position of Earth's Equator and label the Equator

