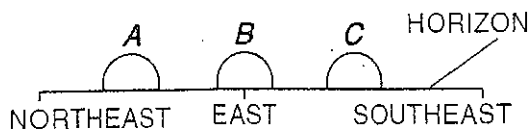


ame:

1) Which of the following statements *best* describes the position of the Sun at sunrise and sunset as seen by an observer in New York State on June 21?

- 1) The Sun rises south of due east and sets north of due west.
- 2) The Sun rises south of due east and sets south of due west.
- 3) The Sun rises north of due east and sets north of due west.
- 4) The Sun rises north of due east and sets south of due west.

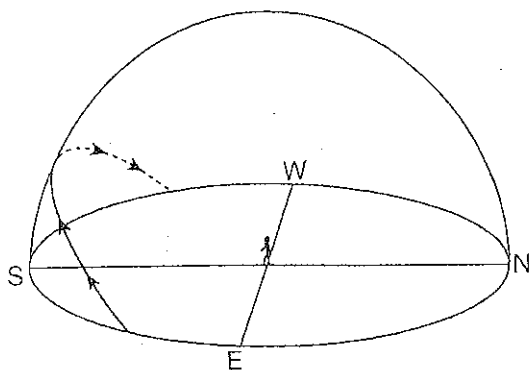
A student in New York State looked toward the eastern horizon to observe sunrise at three different times during the year. The student drew the following diagram that shows the positions of sunrise, A, B, and C, during this one-year period.



Which list correctly pairs the location of sunrise to the time of the year?

- 1) A \ddagger March 21 3) A \ddagger December 21
- 2) B \ddagger June 21 4) B \ddagger March 21
- 3) C \ddagger December 21 5) C \ddagger June 21
- 4) A \ddagger June 21 6) A \ddagger June 21
- 5) B \ddagger December 21 7) B \ddagger March 21
- 6) C \ddagger March 21 8) C \ddagger December 21

3) The model below shows the Sun's apparent path across the sky for an observer in New York State.



On what day of the year was this path observed?

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

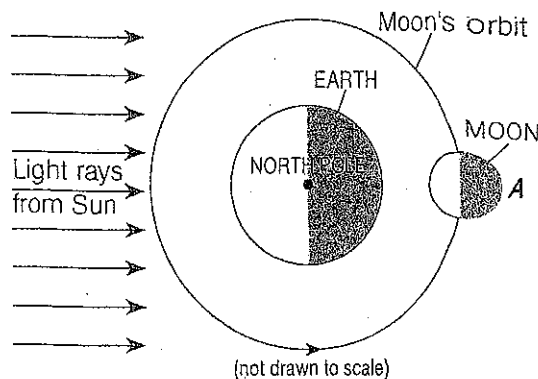
4) The spinning of Earth on its axis causes the apparent rising and setting of the

- 1) Sun, only
- 2) Sun, the Moon, and some stars
- 3) Sun and the Moon, only
- 4) Moon and some stars, only

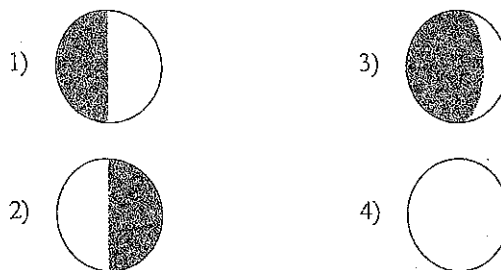
5) How many days are required for the Moon to go from one full-Moon phase to the next full-Moon phase when viewed from Earth?

- 1) 365 3) 24
- 2) 29.5 4) 27.3

6) The diagram below shows the Moon, Earth, and the Sun's rays as viewed from space. Letter A indicates a certain position of the Moon in its orbit.



Which diagram below represents the phase of the Moon, as seen by an observer on Earth, when the Moon is located at position A in its orbit?



10.

11.

12.

13.

14.

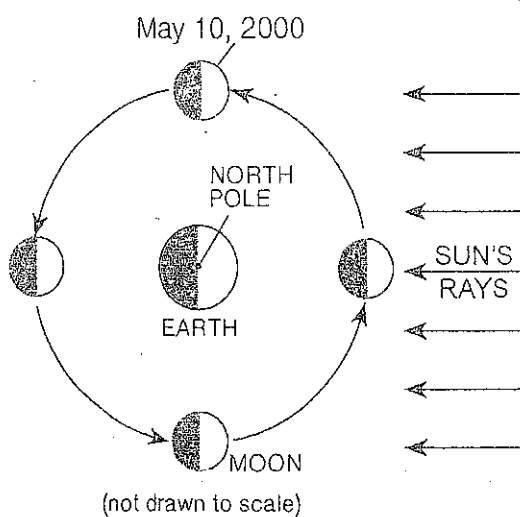
15.

16.

NAME

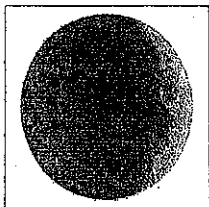
Topic 4 Homework

- 7) The diagram below shows the Moon at four positions in its orbit around Earth as viewed from above the North Pole. The date of one of the four positions has been labeled.

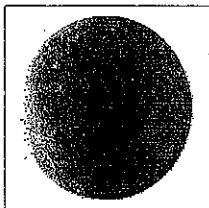


Which photograph shows the appearance of the Moon as viewed by an observer in New York State on May 17, 2000?

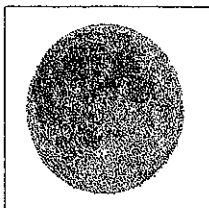
1)



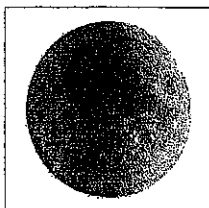
2)



3)

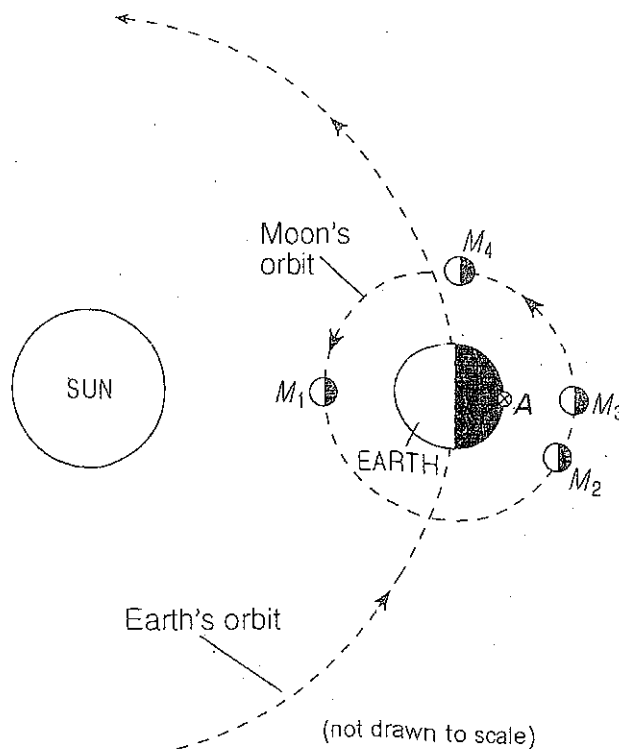


4)



Questions 8 and 9 refer to the following:

The diagram below shows Earth in orbit around the Sun, and Moon in orbit around Earth. M_1 , M_2 , M_3 , and M_4 indicate positions of the Moon in its orbit. Letter A indicates a location on Earth's surface.



- 8) An observer at location A in the given Earth diagram views the Moon when it is at position M_3 . Which phase of the Moon will the observer see?

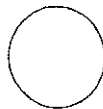
1)



3)



2)



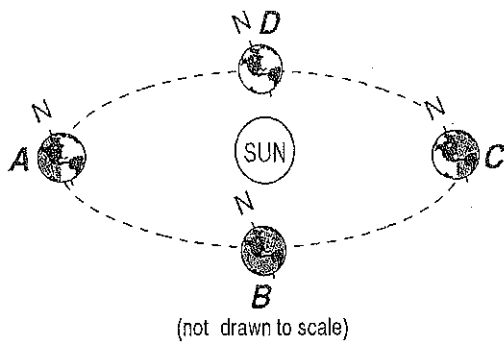
4)



- 9) At which Moon position in the given diagram could a solar eclipse be seen from Earth?

1) M_1 3) M_2 2) M_4 4) M_3

- 10) The diagram below represents Earth in its orbit around the Sun. The position of Earth on the first day of each season is labeled A, B, C, and D.



Based on the given information, at which location are the Sun's noontime rays perpendicular to Earth's surface at the Tropic of Cancer (23.5°N)?

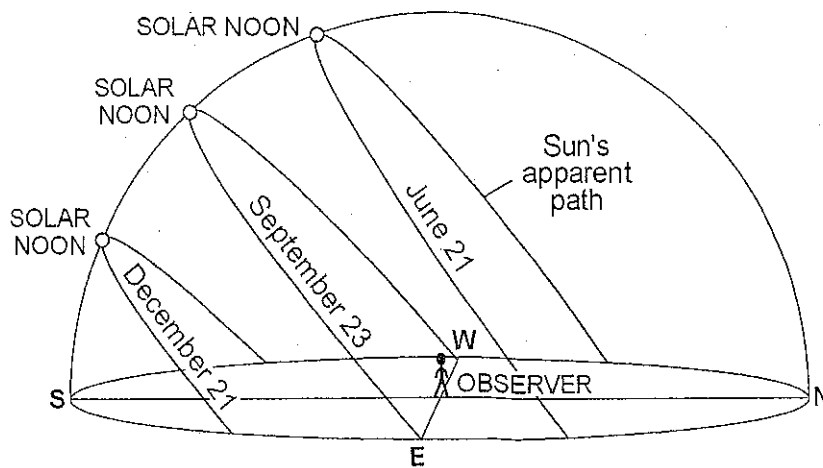
- 1) A 2) B 3) C 4) D

- 11) At which of the following latitudes is the Sun directly overhead on certain days of the year?

- 1) 42°N 3) 23.5°N
2) 66.5°N 4) 90°N

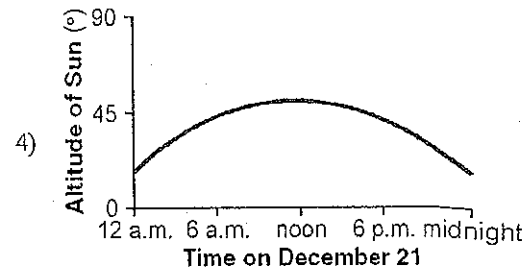
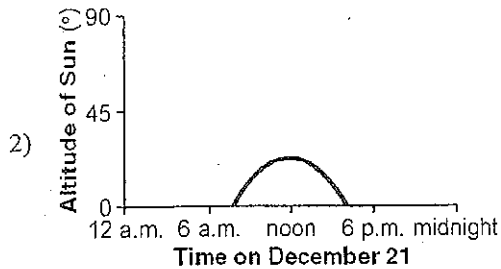
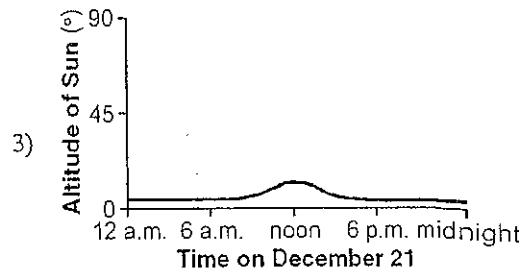
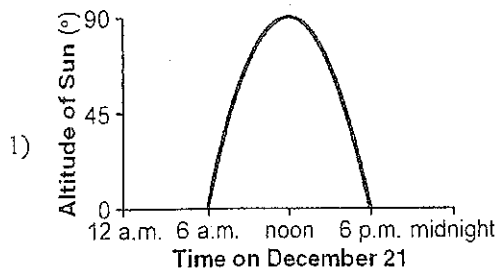
Questions 12 through 14 refer to the following:

The diagram below represents the Sun's apparent paths and the solar noon positions for an observer at 42°N latitude on December 21, September 23, and June 21.

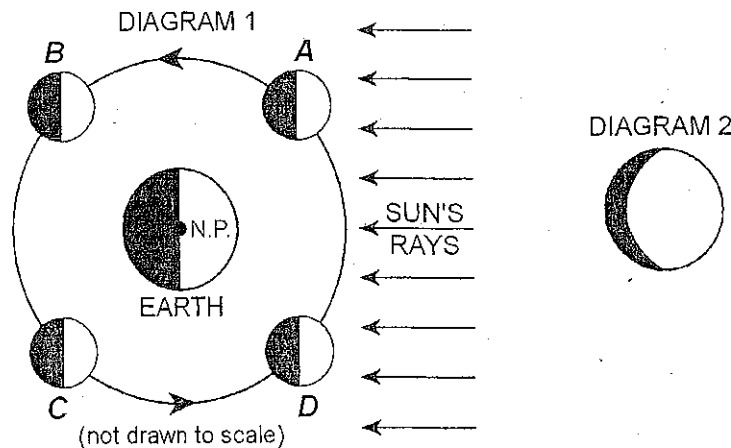


- 12) According to the given diagram, in which direction will sunrise occur on June 21?
- 1) north of due east 2) north of due west 3) south of due east 4) south of due west

- 13) Which graph *best* shows the altitude of the Sun, as measured by the observer located at 42°N, at various times on December 21?

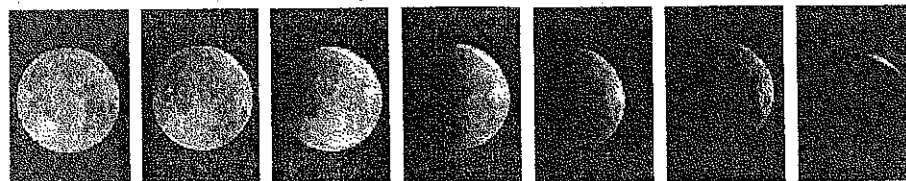


- 14) How many hours occurred between sunrise and solar noon on September 23 in the given diagram?
- 1) 8 2) 12 3) 6 4) 24
- 15) Diagram 1 shows the Moon in its orbit at four positions labeled A, B, C, and D. Diagram 2 shows a phase of the Moon as viewed from New York State.



At which labeled Moon position would the phase of the Moon shown in diagram 2 be observed from New York State?

- 1) A 2) B 3) C 4) D
- 16) The photographs below show the surface of the Moon as seen from Earth over an 80-minute period during a single night.



What motion is responsible for this changing appearance of the Moon?

- 1) The Sun moves into the shadow of Earth. 3) The Sun moves into the shadow of the Moon.
- 2) The Moon moves into the shadow of the Sun. 4) The Moon moves into the shadow of Earth.