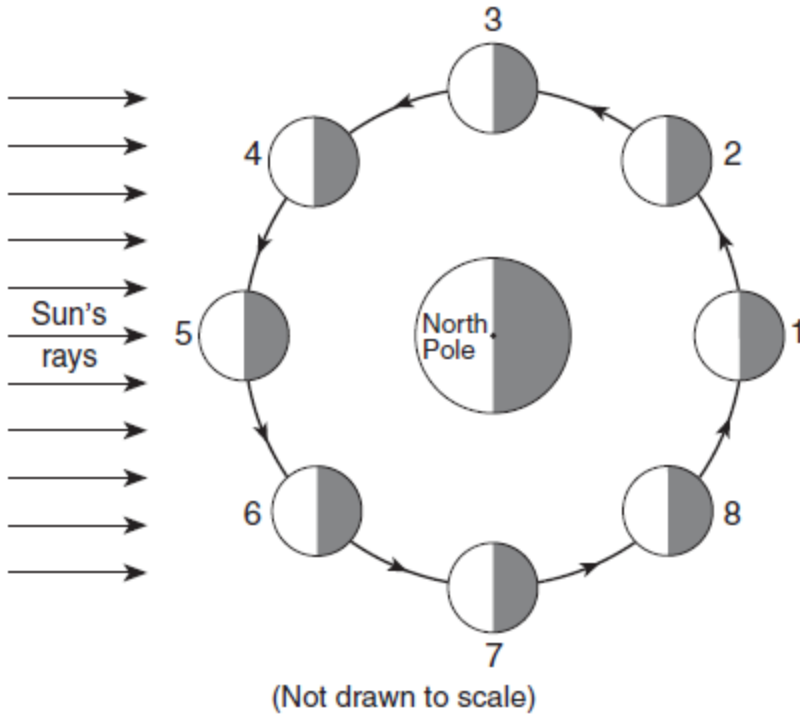
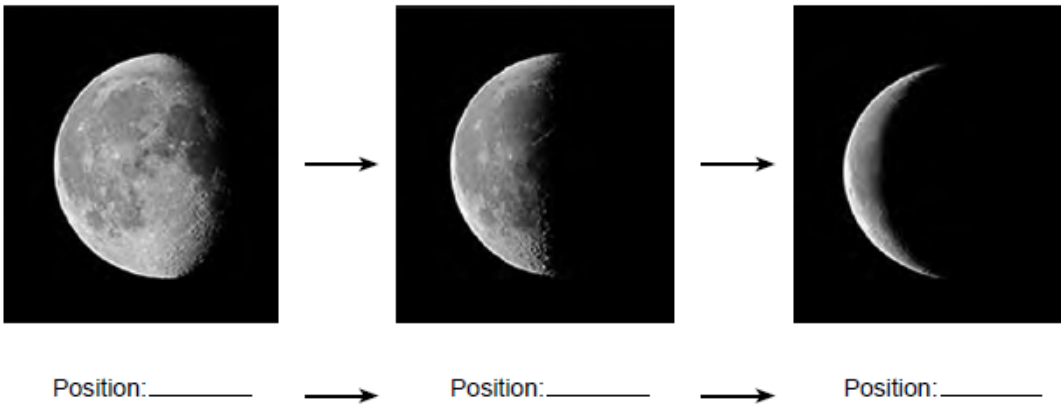


Base your answers to questions 1 through 3 on the diagram below and on your knowledge of Earth science. The diagram represents Earth as viewed from above the North Pole. The nighttime side of Earth and the Moon have been shaded. The Moon is represented in eight positions in its orbit around Earth.

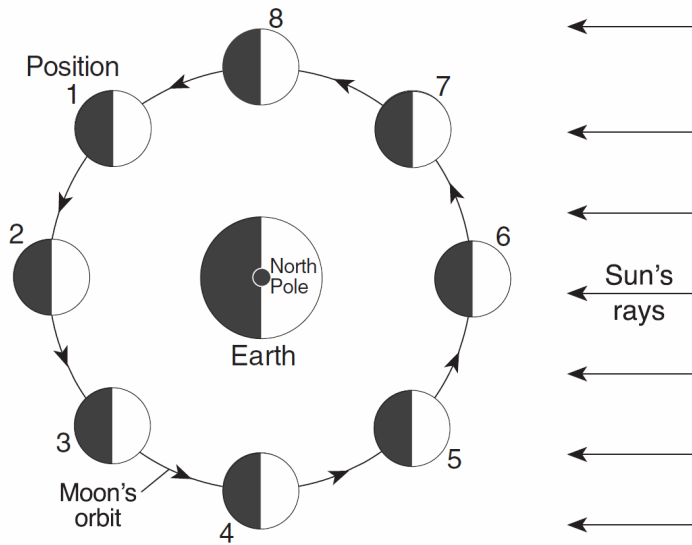


- 1) Identify by number the Moon's position where a solar eclipse might be observed from Earth.
- 2) The photographs below show the changing appearance of the Moon as viewed from New York State during three consecutive Moon phases. In the space below each photograph, identify the number of the Moon position that matches each of these phases.



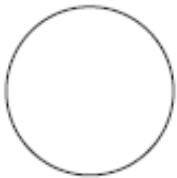
- 3) Explain how the Moon's rotation and revolution cause the same side of the Moon to always face Earth.

Base your answers to questions 4 through 7 on the diagram below, which represents eight positions of the Moon in its orbit around Earth.



(Not drawn to scale)

4) On the diagram, shade the portion of the Moon that is in darkness to show the phase of the Moon at position 3, as viewed from New York State.



5) Explain why the Moon's gravity has a greater effect on Earth's ocean tides than the Sun's gravity.

6) The table below shows times of ocean tides on March 4 for a city on the Atlantic coast of the United States.

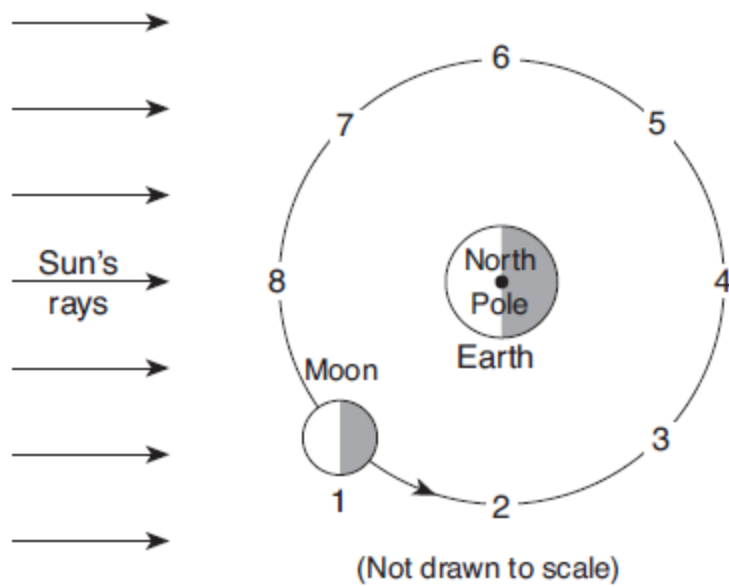
Ocean Tides on March 4

Tide	Time
high	12:00 a.m.
low	6:13 a.m.
high	12:26 p.m.

Determine the time when the next low tide occurred. Include a.m. or p.m. in your answer, if needed.

7) Identify the position of the Moon where a lunar eclipse is possible.

Base your answers to questions 8 through 10 on the diagram below, which shows the Moon at position 1 in its orbit around Earth. Numbers 2 through 8 represent other positions in the Moon's orbit.



8) How many days does it take the Moon to go from one full-Moon phase to the next full-Moon phase when viewed from Earth?

_____ days

9) Identify *one* numbered orbital position where the gravitational attraction of the Moon and the Sun cause Earth to experience the highest high tides.

10) Neap tides could occur when the Moon is located at which numbered positions?
