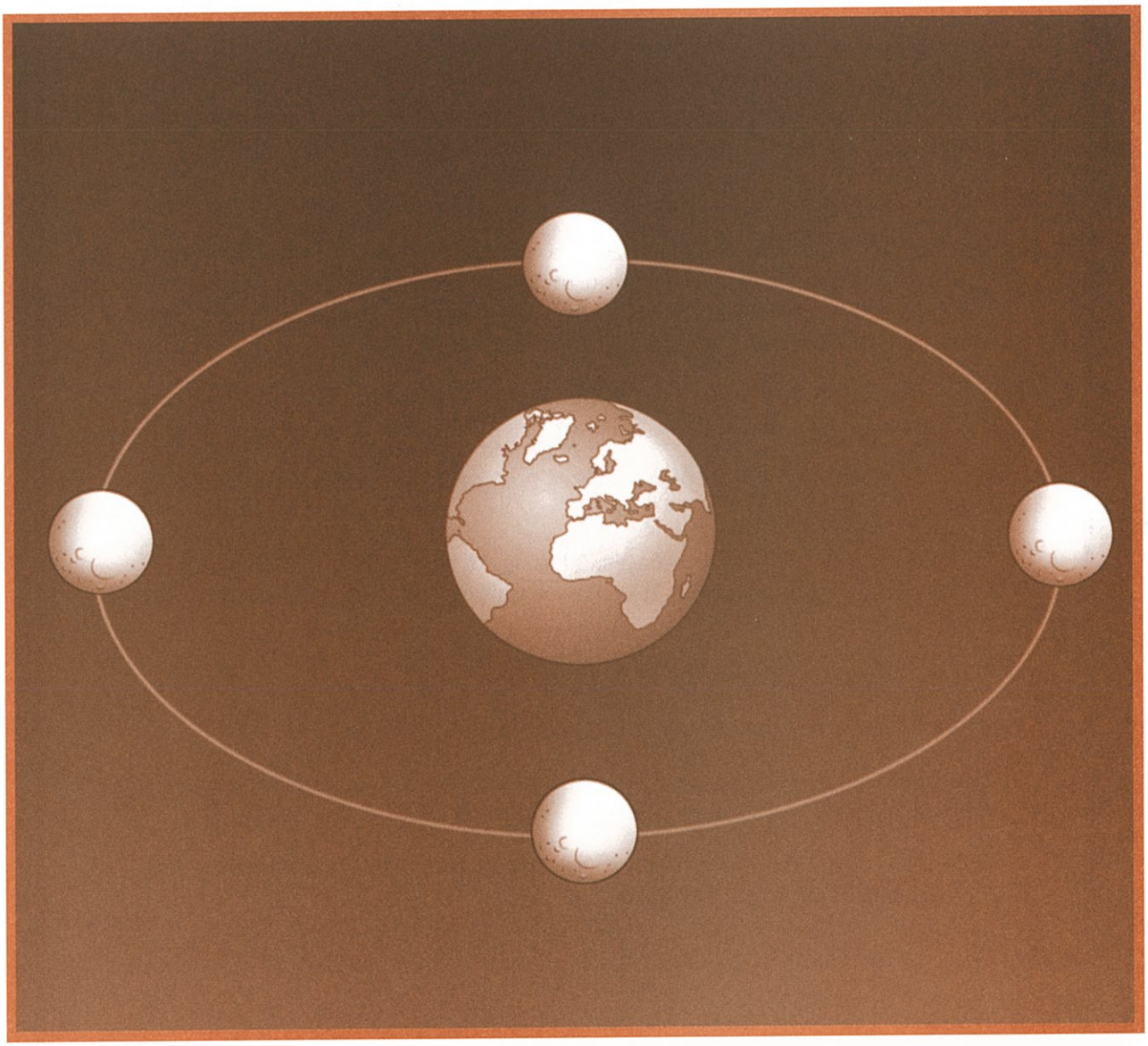
Lesson 16

Why can we see only one side of the moon?



KEY TERMS

apogee: point at which the moon is farthest from the Earth

perigee: point at which the moon is closest to the Earth

UNDERSTANDING ROTATION

Have you ever seen a top spinning? How about a gymnast doing a flip? Both of these motions involve rotation. Rotation is the spinning of an object around its axis. The moon also rotates around its axis.

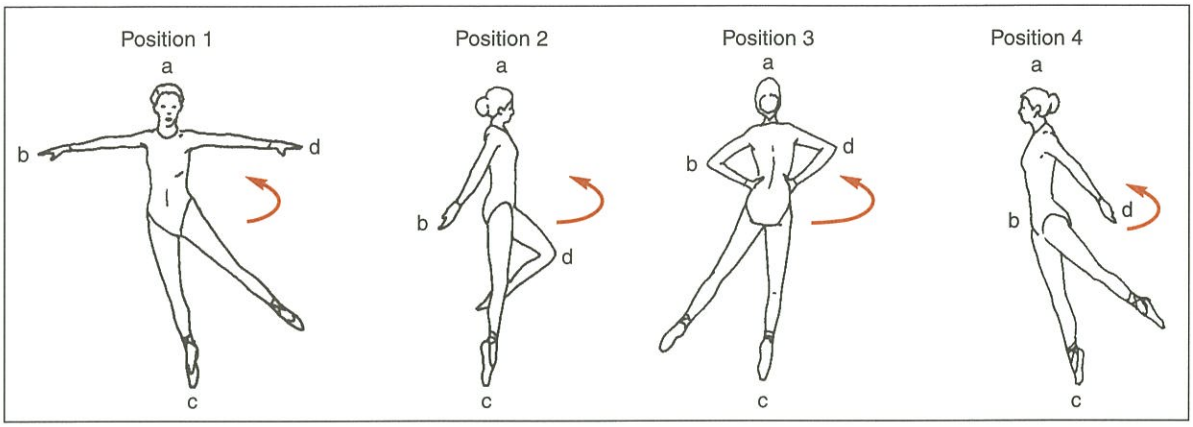


Figure A *Rotation*

Imagine you are the dancer in Figure A. During one rotation, you will face in every direction of the circle. At the end of one rotation, you will face the same direction as when you started.

1. List the points you expect to see as you turn. _____
2. Will you see the places between these points? _____
3. After one quarter turn, which point do you see? _____
4. After two one-quarter turns, which point do you see? _____
5. Two one-quarter turns equals which fraction of one turn? _____
   1/4, 1/2, 3/4
6. Look at your starting position. At one half turn, the direction you face is

   _____ .
   the same, just opposite
7. At three one-quarter turns, which point do you see? _____
8. Three one-quarter turns equals which fraction of one turn? _____
   1/4, 1/2, 3/4
9. When you make one more quarter turn, which point do you see again? _____
10. **a)** Did you rotate? _____

    b) Did you revolve? _____

    c) How do you know? _____

    _____

UNDERSTANDING REVOLUTION AND ROTATION TOGETHER

Imagine that you are walking (revolving) around a chair. The diagram below shows what you look like.

Study the diagram. Then answer the questions.

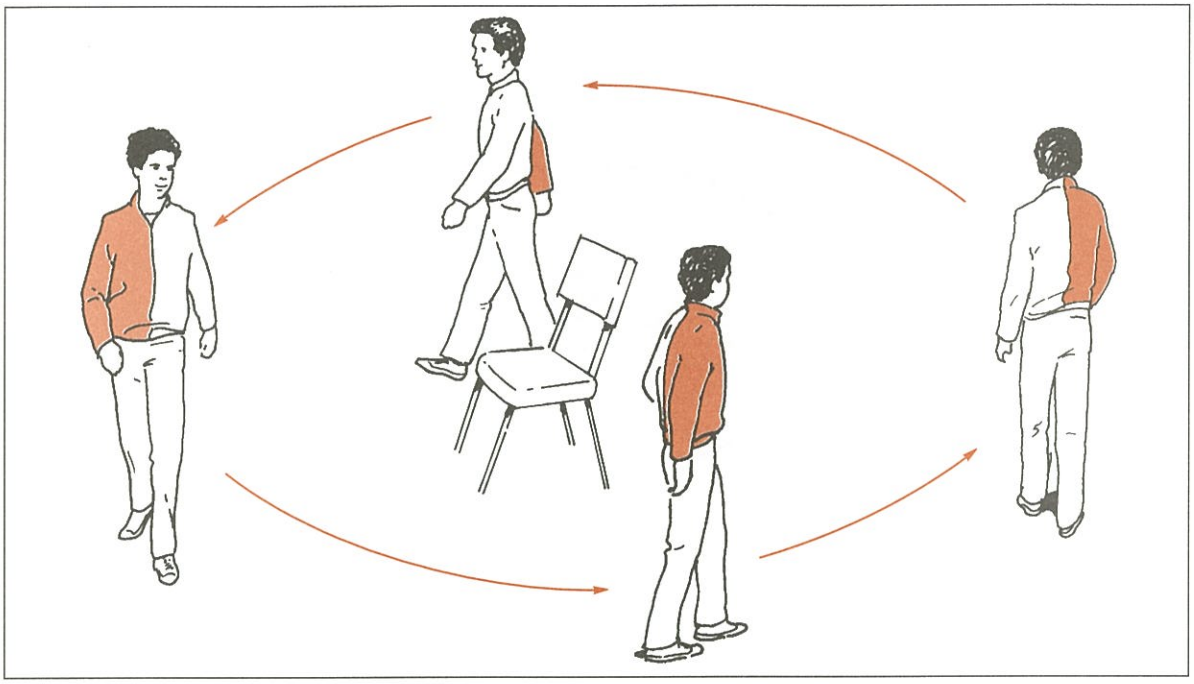


Figure C *Rotation and Revolution together*

1. How many revolutions have you made? _____

2. At halfway through the revolution, you were facing _____ (the opposite, the same) direction as when you started.

3. At one revolution, you were facing _____ (the opposite, the same) direction as when you started.

4. What were you doing while you were revolving? _____

5. How many times? _____

6. As you were revolving and rotating, how many sides of your body faced the chair?

   _____ (one, two, three, all)

7. When an object rotates once for each time it revolves around an object

   _____ . (only one side faces the object, all sides face the object)

NOW TRY THIS

Use the diagram to complete the following.

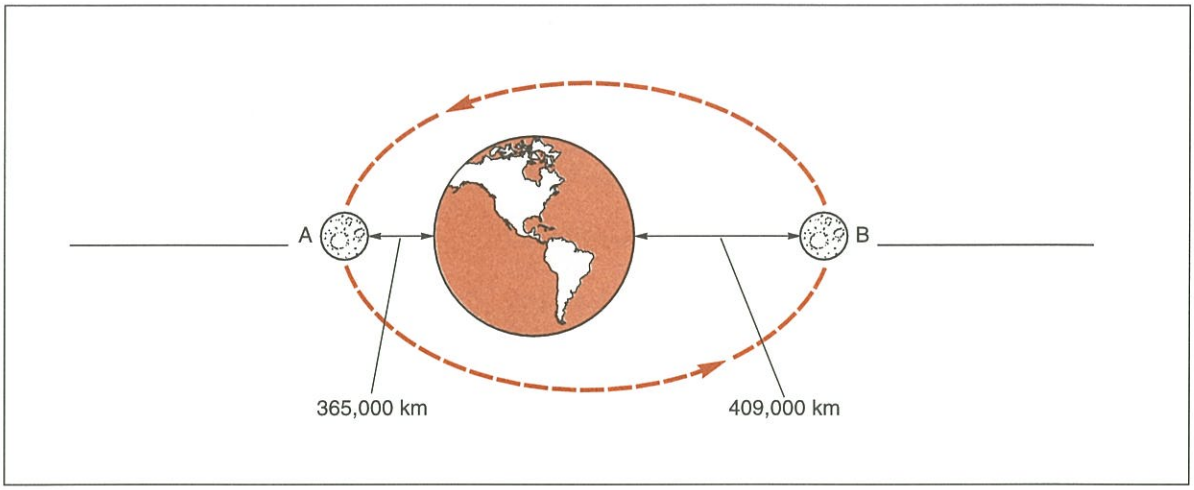


Figure E *The elliptical orbit of the moon.*

1. The diagram shows the distance of the moon from the Earth at apogee and at perigee. Label each of these positions on the diagram in the space provided.
2. What is the distance of the moon from the Earth at apogee? _____
3. What is the distance of the moon from the Earth at perigee? _____
4. How much closer to the Earth is the moon at perigee than at apogee?

   _____

MATCHING

Match each term in Column A with its description in Column B. Write the correct letter in the space provided.

	Column A	Column B
_____	**1.** apogee	**a)** where the Earth is closest to the moon
_____	**2.** perigee	**b)** spinning of an object around its axis
_____	**3.** revolution	**c)** moon related
_____	**4.** rotation	**d)** where the Earth is farthest from the moon
_____	**5.** lunar	**e)** movement of an object around another