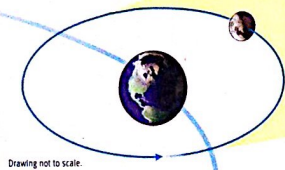


# 'Round and 'Round They Go!

## How are Earth, the moon, and the sun related in space?

Earth not only spins on its axis, but like the seven other planets in our solar system, Earth also orbits the sun. A body that orbits a larger body is called a **satellite** (SAT-layt). Six of the planets in our solar system have smaller bodies that orbit around each of them. These natural satellites are also called moons. Our moon is Earth's natural satellite.



Drawing not to scale.

Earth revolves around the sun as the moon revolves around Earth.

### Active Reading

**5 Identify** As you read, underline the reason that the moon stays in orbit around Earth.

### Earth and the Moon Orbit the Sun

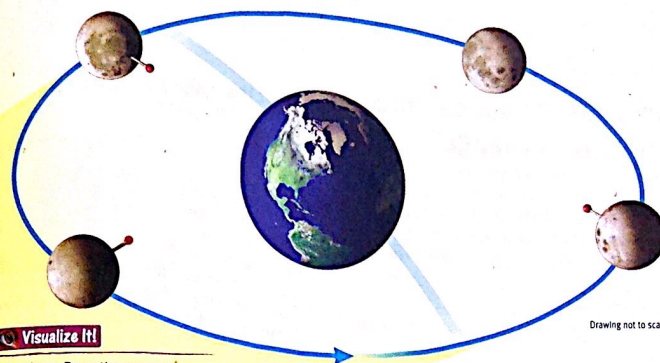
All bodies that have mass exert a force that pulls other objects with mass toward themselves. This force is called **gravity**. The mass of Earth is much larger than the mass of the moon, and therefore Earth's gravity exerts a stronger pull on the moon than the moon does on Earth. It is Earth's gravitational pull that keeps the moon in orbit around Earth, forming the Earth-moon system.

The Earth-moon system is itself in orbit around the sun. Even though the sun is relatively far away, the mass of the sun exerts a large gravitational pull on the Earth-moon system. This gravitational pull keeps the Earth-moon system in orbit around the sun.

### The Moon Orbits Earth

The pull of Earth's gravity keeps the moon, Earth's natural satellite, in orbit around Earth. Even though the moon is Earth's closest neighbor in space, it is far away compared to the sizes of Earth and the moon themselves.

The distance between Earth and the moon is roughly 383,000 km (238,000 mi)—about a hundred times the distance between New York and Los Angeles. If a jet airliner could travel in space, it would take about 20 days to cover a distance that huge. Astronauts, whose spaceships travel much faster than jets, need about 3 days to reach the moon.



Drawing not to scale.

### Visualize It!

**6 Analyze** Draw the correct position of the pin when the moon is in the position shown in the top right corner of this figure.

The moon completes one rotation for every revolution it makes around Earth.

## What does the moon look like from Earth?

The moon is only visible from Earth when it reflects the sunlight that reaches the moon. Although the moon is most easily seen at night, you have probably also seen it during daytime on some days. In the daytime, the moon may only be as bright as a thin cloud and can be easily missed. On some days you can see the moon during both the daytime and at night, whereas on other days, you may not see the moon at all.

When you can look at the moon, you may notice darker and lighter areas. Perhaps you have imagined them as features of a face or some other pattern. People around the world have told stories about the animals, people, and objects they have imagined while looking at the light and dark areas of the moon. The dark and light spots do not change over the course of a month because only one side of the moon faces Earth, often called the near side of the moon. This is because the moon rotates once on its own axis each time it orbits Earth. The moon takes 28.5 days or about a month to orbit Earth once.

### Inquiry

**7 Analyze** How would the moon appear to an observer on Earth if the moon did not rotate?

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