# Earth and Moon

**Earth**

The third planet from the sun is, in scientific terms, quite similar to  the first two. In fact, the four planets of the inner solar system (Mercury ,  Venus , Earth and Mars ) all share rock and metal as their primary  ingredients. Each of these so-called terrestrial planets has a solid surface,  unlike the gaseous planets of the outer solar system.

Perhaps Earth's most distinguishing factor, at least from our point of  view, is the presence of water, which contributed to the formation of life  some 3,000 million years ago. Most of us ought also to be fond of Earth's  unique atmosphere, rich in life-sustaining nitrogen and oxygen.

**Final fact**

The Earth's surface is rotates about its axis at 1,532 feet per second --  slightly over 1,000 miles per hour -- at the equator, and the planet zips  around the sun at more than 18 miles per second.

**Moon**

Though a satellite of Earth, the Moon is bigger than Pluto. Some scientists think of it as a planet (four other moons in our solar system are even bigger). There are various theories about how the Moon was created, but recent evidence indicates it formed when a huge collision tore a chunk of the Earth away.

**How the Moon's phases change**

Because it takes 27.3 days both to rotate on its axis and to orbit Earth, the Moon always shows us the same face. We see the Moon because of reflected sunlight. How much of it we see depends on its position in relation to Earth and the Sun.

The 27.3-day number is what scientists call a sidereal month, and it is how long it takes the Moon to orbit the Earth in relation to a fixed star. Another measurement, called a synodic month, is measured between in relation to the Sun and equals 29.5 days. Full moons and new moon are measured by the synodic month.

Earth's gravity keeps the Moon in orbit, while the Moon's gravity creates tides on our oceans

**On the moon**

Like the four inner planets, the Moon is rocky. It's pockmarked with craters formed by asteroid impacts millions of years ago. Because there is no weather, the craters have not eroded.

The Moon has almost no atmosphere, so a layer of dust -- or a footprint -- can sit undisturbed for centuries. And without an atmosphere, heat is not held near the planet, so temperatures vary wildly. Daytime temperatures on the sunny side of the Moon reach 273 degrees F; on the dark side it gets as cold as -243.

In June of 1999, reserchers discovered by accident that a huge cloud of sodium gas trails behind the Moon.

The Lunar Prospector in 1998 provided evidence of ice near the Moon's poles, perhaps as much as 6 billion tons of it.

**Final fact**

The Moon travels around the Earth at a little more than half a mile per second; its speed is slowing and the satellite is gradually moving away from Earth.