

### Did You Know?

Rats traveling aboard ships have spread plague to all areas of the world.

Plague is caused by tiny living things called bacteria. It is mostly a disease of rats. Fleas that bite infected rats pick up the plague bacteria. They then spread it to other rats or to people through bites. Infected people sometimes spread the disease to others when they cough.

Once inside a person's body, the plague bacteria enter the bloodstream. They travel to the liver, spleen, kidneys, lungs, and brain. Fever, weakness, headache, and shaking chills quickly develop. The most common form of plague, called bubonic plague, also causes swelling in a person's lymph nodes. (The lymph nodes help to protect the body from disease.) Swollen nodes are called buboes, which is why this form is called bubonic plague. Pneumonic plague mostly infects the lungs. Septicemic plague mainly infects the bloodstream.

Outbreaks of the plague are now rare. Because cities are cleaner than they used to be, there are fewer infected rats and fleas to spread the disease.

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Bacteria • Disease, Human • Epidemic • Flea • Rat

## Planets

Planets are large natural objects that orbit, or travel around, stars. Eight planets orbit the star called the sun. In order from the closest to the sun, these planets are Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune. The solar system is the collection of the sun

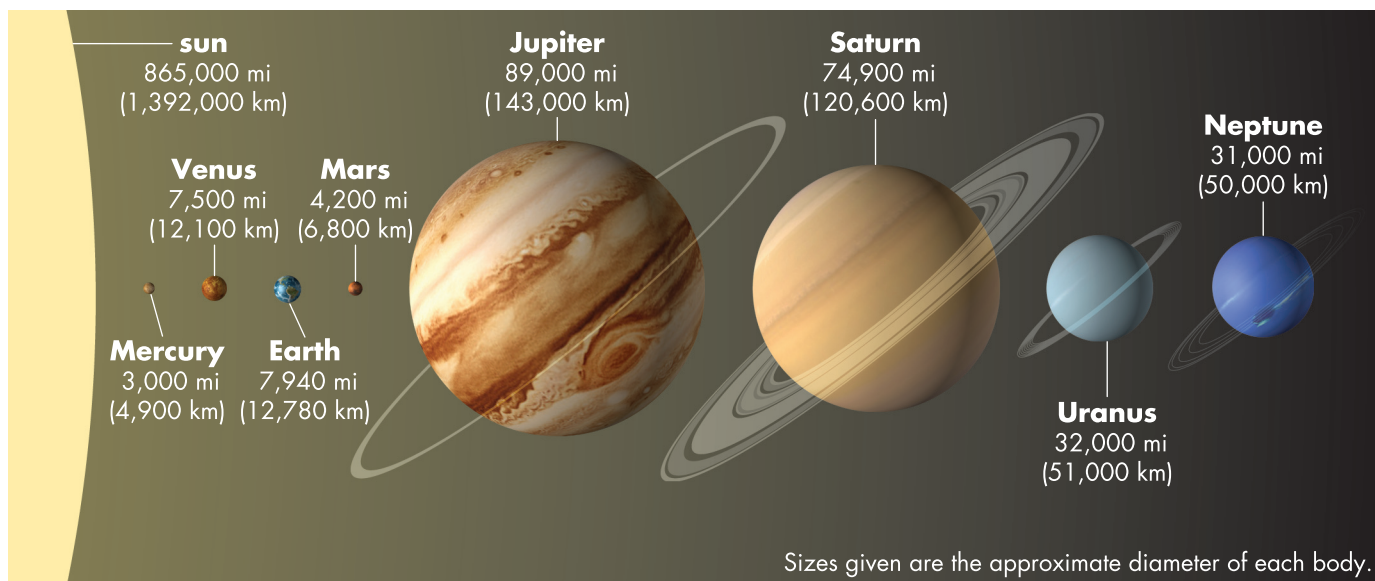
and the objects that orbit around it, including the eight planets.

Planets differ from other objects such as comets, asteroids, and meteors. In general, planets are the largest objects in the solar system after the sun. Most of them orbit the sun in a path shaped like a circle. They also have an atmosphere, or a layer of gases surrounding them. Most of the planets have at least one moon.

However, scientists have long debated what makes a planet a planet. For many years most people believed that there were nine planets in the solar system. This number included Pluto, which was discovered in 1930. Pluto is a planetlike object that is usually beyond Neptune. But Pluto orbits the sun in a different way than the eight planets do. Pluto's orbit overlaps the orbit of Neptune. Also, Pluto is much smaller than the eight planets. In 2006 a large group of scientists decided to make a new category for Pluto and similar objects in the solar system. They called the objects dwarf planets.

### Types of Planets

There are two main types of planets in the solar system. The four planets nearest the sun—Mercury, Venus, Earth, and Mars—are called inner planets. They are rocky planets about the size of Earth or somewhat smaller. Jupiter, Saturn, Uranus, and Neptune are called gas giants. They are made up mostly of gases and have no solid surfaces. They are all much larger than Earth. Also, the gas giants each have many moons and a system of



Mercury, Venus, Earth, and Mars are rocky planets. They are closer to the sun than Jupiter, Saturn, Uranus, and Neptune, which are gas giant planets.

rings. Saturn's rings are the largest and best known.

## Motion

Planets move in two ways. Each planet travels around the sun in a path called an orbit. The time it takes a planet to complete one orbit is equal to a year on that planet. For example, Earth completes one orbit every 365 days, so a year on Earth is that long.

Each planet also rotates, or spins about its center. As the planet spins, it turns different sides toward and then away from the sun. In one day, a person on the planet would see the sun appear overhead, then set, then rise overhead again.

On most planets, a day is roughly equal to the time it takes the planet to complete one rotation. For example, Earth completes one rotation in about 24 hours, and a day on Earth lasts 24

hours. Mercury and Venus are different because they spin slowly. By the time they complete one rotation, they have traveled very far in their orbit. A different part of the planet is then facing the sun. Therefore their day is not yet complete. It takes much longer for the same part of the planet to face the sun again.

## Other Planets

In the 1900s scientists began to discover planets outside the solar system. These planets orbit around stars other than the sun. It is difficult to tell much about such planets because they are so far away. Scientists can find them by looking for certain tiny changes in the position and light of stars. These changes occur when a planet travels around a star.

### ► More to explore

Earth • Jupiter • Mars • Mercury  
• Neptune • Saturn • Solar System • Sun  
• Uranus • Venus