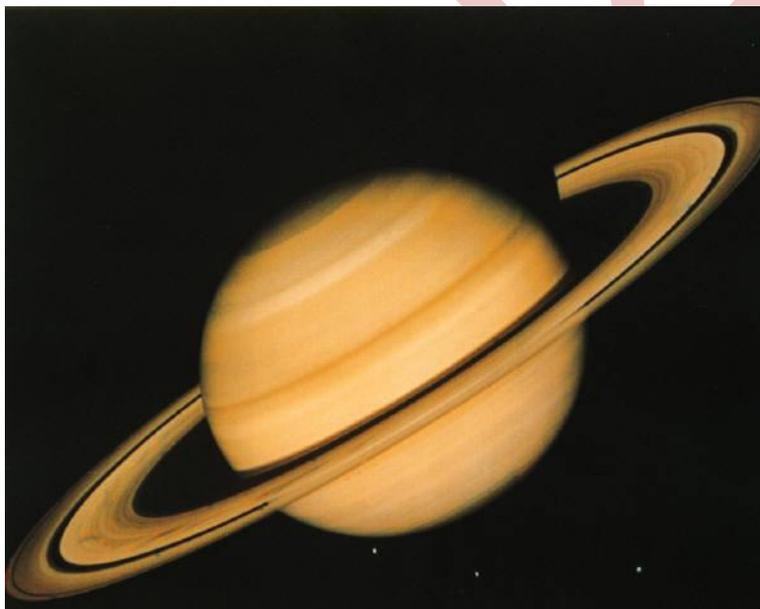


Saturn



Report by Name
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Sample

Introduction

Saturn is the sixth planet from the sun in our solar system. Saturn is the second largest planet, with a mass 95 times the mass of Earth. It takes over 29 Earth years for Saturn to revolve around the sun in its orbit, but only 11 hours for the planet to spin once around its axis. Saturn is over nine times farther from the sun than Earth, and it is never closer than 1.2 billion km from Earth.

Saturn is a gaseous planet with a liquid center. This composition causes it to be less dense than water, which means that Saturn would float if placed in water. Saturn was first observed by Galileo, using a telescope, in 1610. The rings of Saturn were not identified until 1659 by Huygens.

Around Saturn

Saturn is surrounded by moons and rings. There are at least 56 known moons and many rings. The rings are at least 250,000 kilometers wide, but only about one kilometer thick. More moons continue to be discovered with every new space mission to Saturn.

Rings

Moons

Each moon of Saturn is uniquely different from the others. The first four moons to be discovered were Titan, discovered by Huygens, followed by Iapetus, Rhea, and Dione discovered by Cassini.

Titan

The largest moon of Saturn, Titan is even larger than the planet Mercury. Titan is the only moon in the entire solar system that has clouds. The atmosphere on Titan is nitrogen-rich and has methane and ethane. The atmosphere is very thick and extends 600 km into space, compared to Earth's atmosphere which extends 60 km into space.

Rhea

Rhea is the second largest moon of Saturn and was the third moon to be discovered. The moon is composed of a small rocky core surrounded by water ice. Rhea is about 1500 km in diameter and the surface is covered in craters.

Iapetus

Iapetus has two very different sides. One side is quite bright, and the other side is extremely dark. The lighter side is roughly 10 times brighter than the darker side. The moon has a ridge around most of the equator on the darker side.

Dione

Dione is similar to Rhea in composition and just a little smaller in size. The diameter of Dione is about 1100 km. The surface on Dione is covered in craters, like that of Rhea.

There are many rings around Saturn. The rings are named with letters that indicate the order in which they were discovered. The rings are believed to be composed of pieces of water ice, with possibly some pieces of rock covered in ice. The ice varies in size from small particles to large pieces that measure many meters across.

Main Rings

There are three main rings, names C, B, and A. The C ring is the most inner main ring, and then the B ring and the A ring farthest from the planet. In between the B ring and A ring is a gap, which was discovered in 1675 by Cassini. The gap is named the Cassini Division.

Lesser Rings

There are quite a few fainter rings known as lesser rings. The D ring is very faint and is the closest ring to the planet, situated just inside the C ring. The F ring is narrow and is just outside the A ring. Even farther from the planet are the faint G and E rings.

Missions

Pioneer 11

Pioneer 11 was the first spacecraft that visited Saturn. A Saturn flyby was part of a larger mission for the spacecraft that included a visit to Jupiter. In 1979 the spacecraft came within 22,000 km of Saturn. The flyby yielded many pictures and the discovery of two small moons and an additional ring.

Voyagers 1 and 2

The prime mission of Voyager 1 was to observe Saturn and its rings and moons in 1980. The instruments gathered Titan data and sent back images the rings, including ring features called spokes. The Voyager 2 spacecraft had a larger-scope mission that included flybys of Jupiter, Saturn, Uranus, and Neptune. In 1981 Voyager 2 sent back many images of Saturn's atmosphere and rings.

Cassini-Huygens Mission

The Cassini-Huygens mission consisted of the Cassini spacecraft, first to orbit Saturn, and the Huygens probe. The Cassini orbiter is studying the features of Saturn's rings and moons in a 4 year mission. In January 2005, the Huygens probe dropped into the atmosphere of Saturn's moon Titan and collected atmosphere and surface data.

Summary

The second-largest planet in our solar system, Saturn is a giant gaseous planet. Many moons of varying compositions orbit the planet. The wide but thin ring system is composed of water ice. Several spacecraft have flown near Saturn and yielded many discoveries.