

THIS IS A CLASS SET - PLEASE TAKE NOTES ON THE HANDOUT AND IN YOUR NOTEBOOK

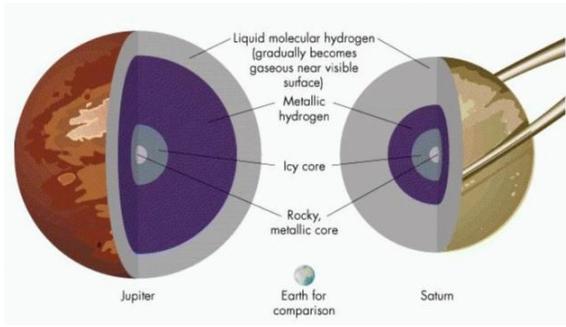
Saturn

If the sun were as tall as a typical front door, the Earth would be the size of a nickel and Saturn would be about as big as a basketball.

Saturn is the sixth planet from the sun at a distance of about 1.4 billion km (886 million miles) or **9.5 AU**.

Rotation / Revolution

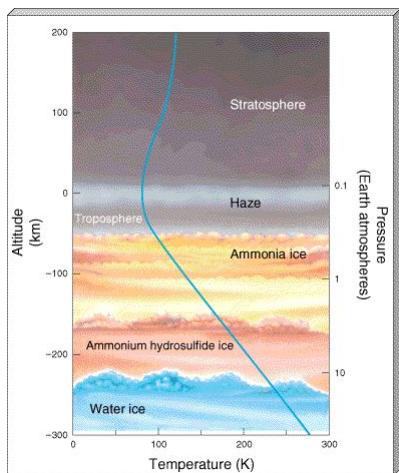
One day on Saturn takes 10.7 hours (spin / rotation). Saturn makes a complete orbit around the sun (revolution) in 29 Earth years (10,756 Earth days).



Structure

Saturn is a gas-giant planet and therefore does not have a solid surface. The planet is mostly swirling gases and liquids. Like Jupiter, Saturn is made mostly of hydrogen and helium. At Saturn's center is a dense core of rock, ice, water, and other compounds made solid by the intense pressure and heat. It is enveloped by liquid metallic hydrogen, inside a layer of liquid hydrogen.

It's hard to imagine, but Saturn is the only planet in our solar system that is less dense than water. The giant gas planet could float in a bathtub -- if such a colossal thing existed.



Atmosphere

Saturn's atmosphere is made up mostly of hydrogen (H_2) and helium (He). It is blanketed with clouds, stripes and storms. Overall the planet is tan and light brown in color, due to a mixture of yellow ammonia crystals in the upper atmosphere.

Moons

Saturn has 53 known moons with an additional nine moons awaiting confirmation of their discovery -- that is a total of 62 moons.

Rings

Saturn has the most spectacular ring system, which is made up of seven rings with several gaps and divisions between them. They are made mostly of water ice with some rocky material. They are about 282,000 kilometers wide. While there are some areas where they can reach 1 kilometer thick, for the most part, they are only 10 meters wide.

Exploring

Only a few missions have visited Saturn: Pioneer 11, Voyager 1 and 2 and Cassini-Huygens. Since 2004, Cassini has been exploring Saturn, its moons and rings. It was recently crashed into the planet by NASA.

Life on Saturn?

Saturn cannot support life as we know it. However, some of Saturn's moons have conditions that might support life.

Formation

When the solar system settled into its current layout about 4.5 billion years ago, Saturn formed when gravity pulled swirling gas and dust in to become a planet 886 million miles (1.4 billion km) from the sun. Like Jupiter, Saturn is mostly made of hydrogen and helium, the same two main components that make up the sun.

More Atmosphere

Winds in the upper atmosphere reach 1,600 feet (500 meters) per second in the equatorial region. In contrast, the strongest hurricane-force winds on Earth top out at about 360 feet (110 meters) per second. And the pressure -- the same kind you feel when you dive deep underwater -- is so powerful it squeezes gas into liquid. Even a metal spacecraft would be smashed in Saturn's intense atmosphere.

Saturn's north pole has an interesting atmospheric feature -- a six-sided jet stream. This hexagon-shaped pattern was first noticed in images from the Voyager I spacecraft and has been more closely observed by the Cassini spacecraft since. Spanning about 20,000 miles (30,000 km) across, the hexagon is a wavy jet stream of 200-mile-per-hour winds (about 322 kilometers per hour) with a massive, rotating storm at the center. There is no weather feature like it anywhere else in the solar system.