

Name: _____

The Outer Solar System

By Leslie Cargile

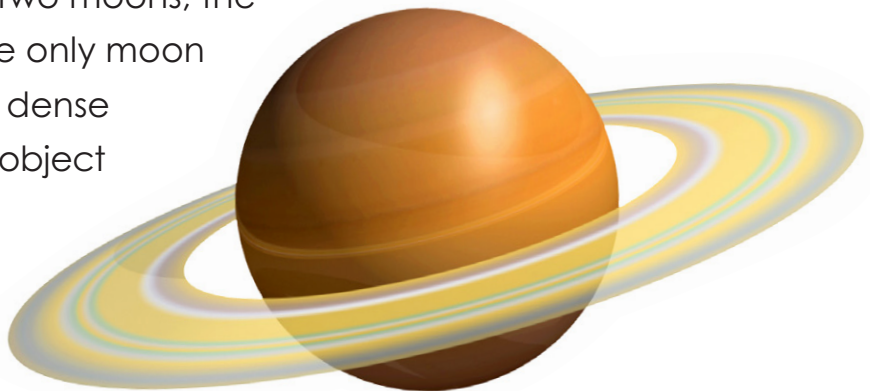
The outer solar system is the name of the planets beyond the asteroid belt. The planets in the outer solar system are called gas giants because they are made up of gas and ice. Other than the Sun, the gas giants contain ninety-nine percent of the mass in our whole solar system!



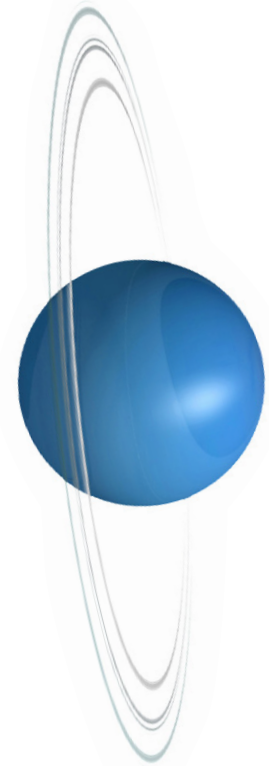
The first stop on our tour of the outer solar system is the fifth planet, Jupiter. Next to the Sun, Jupiter is the second most massive object in our solar system. It's bigger than three hundred Earths! Made up of hydrogen and helium and a few other gasses, there are violent wind storms that circle around Jupiter. The most famous storm is called the Great Red Spot. It has been churning for more than four hundred years and scientists don't think it will be slowing down any time soon.

Jupiter has its own system of moons. At last count Jupiter has sixty-three known moons and a faint ring around it too.

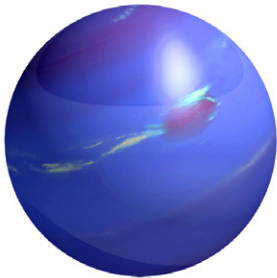
Next in our space neighborhood comes Saturn. It is the sixth planet from the Sun. Saturn is most well-known for the series of beautiful rings that circle it. They are made up of tiny bits of frozen dirt and ice. Like Jupiter, Saturn is made of mostly hydrogen and helium. It is smaller though, at only ninety-five times the size of Earth. Saturn has sixty two moons, the largest being Titan. Titan is the only moon in our solar system that has a dense atmosphere. It's also the only object in our solar system besides Earth known to have large amounts of liquid found on the surface.



Uranus is the seventh planet. The planet and its twenty seven moons orbit very far from the Sun. In addition to helium and hydrogen, Uranus' atmosphere also contains ammonia ice, and methane ice. It is a very cold planet, with no internal heat source. One of the strangest things about Uranus is that it is tipped over and orbits the Sun on its side at a ninety-degree angle. It also has faint rings around it, and the twenty seven moons it has orbit from top to bottom instead of left to right like our Moon.



The eighth planet is Neptune. Like its neighbor Uranus; Neptune is made up of hydrogen, helium, ammonia ice, and methane ice. Unlike Uranus, Neptune does have an inner heat source. It radiates twice as much heat as it receives from the Sun. The most distinctive quality Neptune has is its color. If you look through a powerful enough telescope you can see the beautiful blue. Thirteen moons and very faint rings circle around Neptune. Because it is so far away, scientists haven't studied Neptune very much. Most of the information we know about it came from the *Voyager 2* spacecraft passing close by in 1989.



Pluto is beyond Neptune and was considered a planet from its discovery in 1930. In 2006, Pluto was demoted and reclassified as a dwarf planet. Pluto exists in the Kuiper belt. That's just a fancy name for the band of rocks, dust, and ice that lay beyond the gas giants. Scientists have found objects bigger than Pluto in the Kuiper Belt.

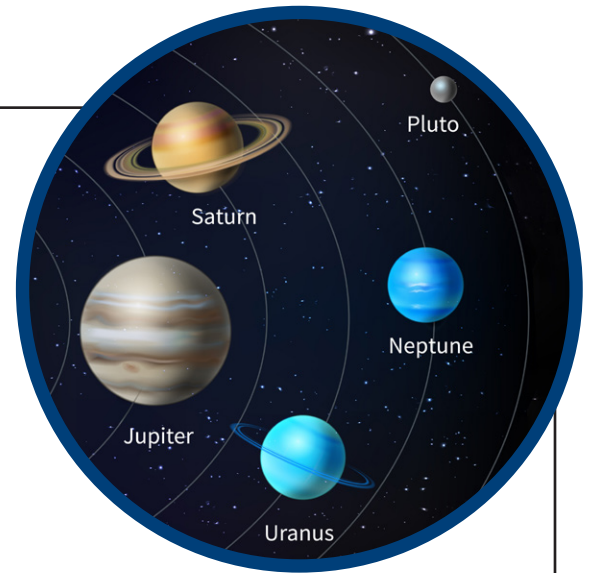


The outer solar system has many secrets to explore. What mysteries remain to be discovered in the gas giants and their many moons? Scientists think there may be liquid water on Jupiter's Europa. Perhaps life is growing underneath its icy layers. No one knows for sure, will you be the one to find out?

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1. What substances make up Saturn's rings?

_____ and _____

2. Which two gases make up most of Jupiter and Saturn?

_____ and _____

3. What is the most massive object in our solar system? _____

4. How are Titan and Earth alike?

- a. They both have life on them.
- b. They both have lots of oxygen.
- c. They both have large amounts of liquid on their surfaces.
- d. They are both planets.

5. Neptune is further away from the Sun than Uranus, yet Uranus is colder than Neptune. Explain how this can be possible.

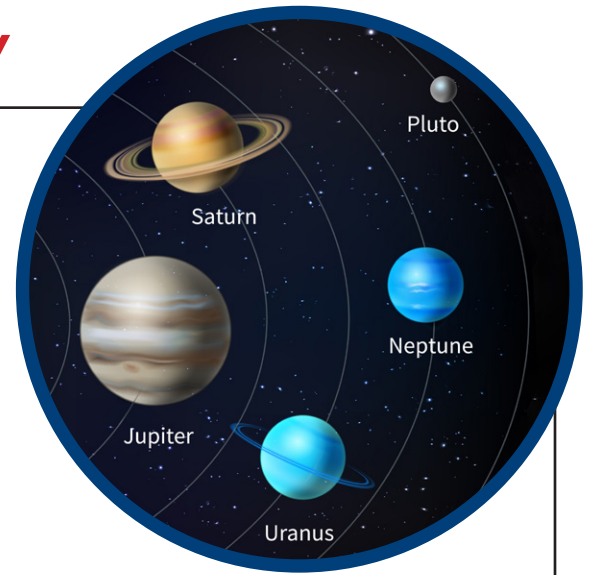
6. What is the Kuiper Belt?

- a. an area of rocks, dust, and ice that is between Jupiter and Saturn
- b. an area of rocks, dust, and ice that is beyond Pluto
- c. an area of rocks, dust, and ice that includes Pluto
- d. an area of rocks, dust, and ice that surrounds Saturn's rings

ANSWER KEY

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1. What substances make up Saturn's rings?

frozen dirt and **ice**

2. Which two gases make up most of Jupiter and Saturn?

hydrogen and **helium**

3. What is the most massive object in our solar system? **the Sun**

4. How are Titan and Earth alike?

a. They both have life on them.

b. They both have lots of oxygen.

c. They both have large amounts of liquid on their surfaces.

d. They are both planets.

5. Neptune is further away from the Sun than Uranus, yet Uranus is colder than Neptune. Explain how this can be possible.

Neptune has an internal heat source, or a heated core inside the planet. Uranus does not.

6. What is the Kuiper Belt?

a. an area of rocks, dust, and ice that is between Jupiter and Saturn

b. an area of rocks, dust, and ice that is beyond Pluto

c. an area of rocks, dust, and ice that includes Pluto

d. an area of rocks, dust, and ice that surrounds Saturn's rings