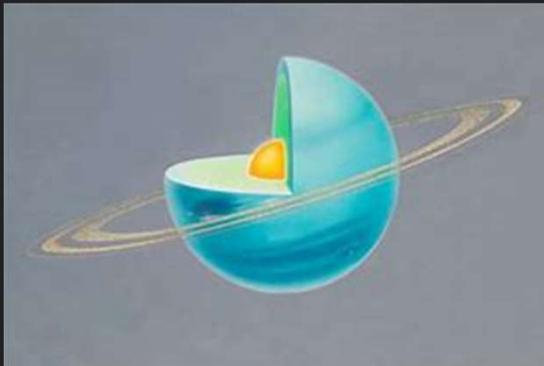


# Composition of Jupiter and Neptune

## Science Fair

2021

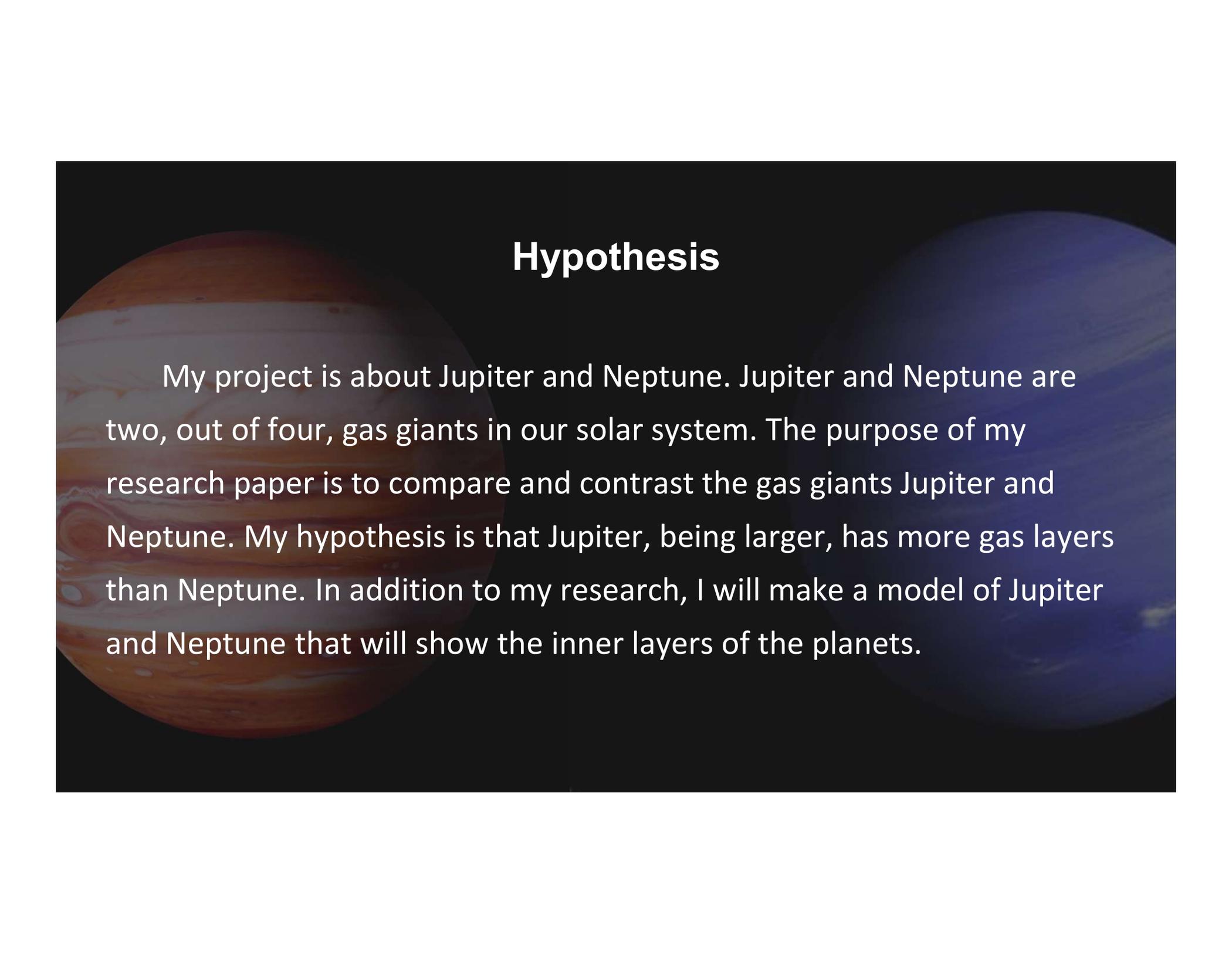
Montessori Academy at Spring Valley



By: Gavin

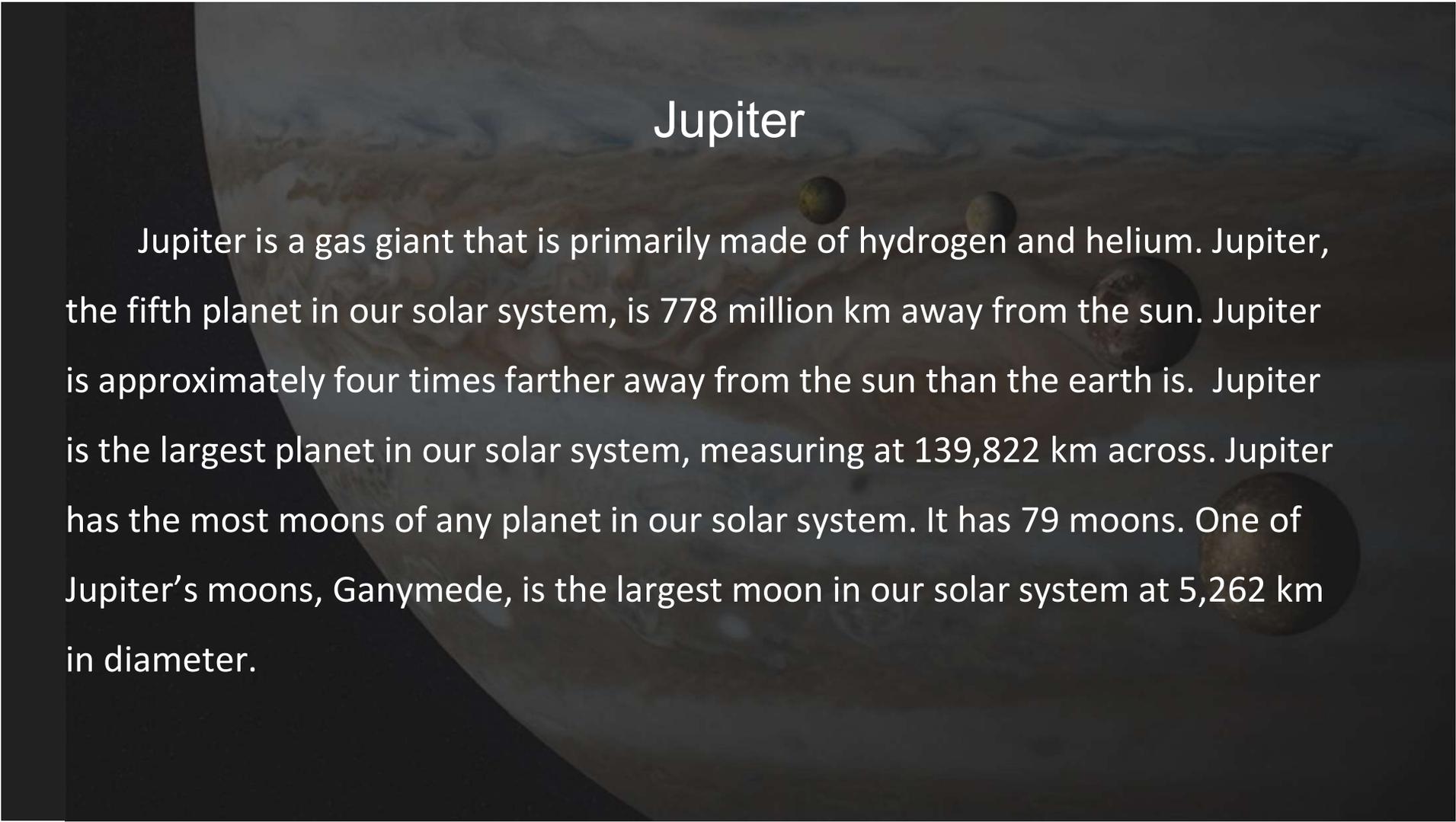
Grade: 5





## Hypothesis

My project is about Jupiter and Neptune. Jupiter and Neptune are two, out of four, gas giants in our solar system. The purpose of my research paper is to compare and contrast the gas giants Jupiter and Neptune. My hypothesis is that Jupiter, being larger, has more gas layers than Neptune. In addition to my research, I will make a model of Jupiter and Neptune that will show the inner layers of the planets.



## Jupiter

Jupiter is a gas giant that is primarily made of hydrogen and helium. Jupiter, the fifth planet in our solar system, is 778 million km away from the sun. Jupiter is approximately four times farther away from the sun than the earth is. Jupiter is the largest planet in our solar system, measuring at 139,822 km across. Jupiter has the most moons of any planet in our solar system. It has 79 moons. One of Jupiter's moons, Ganymede, is the largest moon in our solar system at 5,262 km in diameter.

## Jupiter Continued...

Jupiter has the strongest gravitational pull in our solar system for a planet because it has a mass of 1,898,000,000,000,000,000,000,000 kg. Jupiter has very thin and translucent rings that can only be seen with a powerful telescope. The core of Jupiter is thought to be made of liquid metallic hydrogen and helium. The length of a day in Jupiter is 9.93 hours and the length of a year is 11.86 earth years. From the strong storms in Jupiter winds can reach up to 571 km per hour.

# Neptune

Neptune is a gas giant primarily made of hydrogen, helium, and methane. Neptune is the eighth planet from the sun. Neptune is 4.48 billion km away from the sun which is 30 times farther than then the Earth is from the sun. Neptune is the fourth largest planet in our solar system, measuring at 49,500 km across. Neptune has 14 moons and has the seventh biggest moon in our solar system. The moon is named Triton with a diameter of 2,707 km. Neptune's largest moon was discovered 17 days after Neptune was discovered.



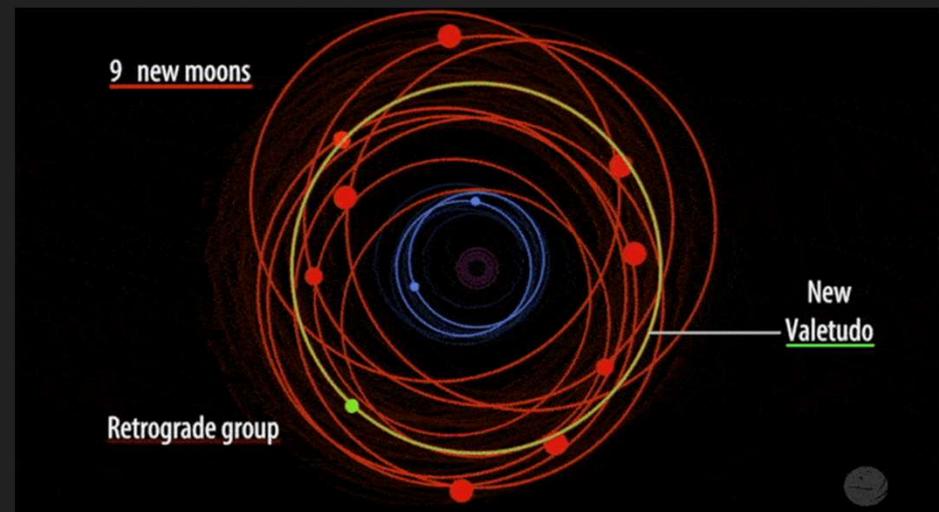
## Neptune Continued...

Neptune is the smallest gas giant but has the second strongest gravitational pull for a planet because its core is heavier than the other gas giants in our solar system.

Neptune's core is thought to be made of iron, nickel, and silicates. It has a mass of 102,700,000,000,000,000,000,000 kg. Neptune has 6 rings but only two of them are visible from an earth-based telescope. An average day on Neptune is about 16 hours. A year on Neptune is about 165 earth years. Neptune has the strongest winds out of all the planets in our solar system. It has supersonic winds that reach up to 1,900 km per hour.

# The Similarities of Jupiter and Neptune

I discovered from my research Jupiter and Neptune have many similarities. Both planets have multiple moons, have a big storm inside of them, and are thought to have a solid core. Through my research, I discovered that both planets have a similar atmosphere but different cores. Jupiter's core is thought to be made of liquid metallic hydrogen and helium (liquid metallic hydrogen is a stage where hydrogen acts like an electric conductor when its highly compressed and under high temperatures). Neptune's core is thought to be made of iron, nickel, and silicates which makes Neptune's core much denser than Jupiter.



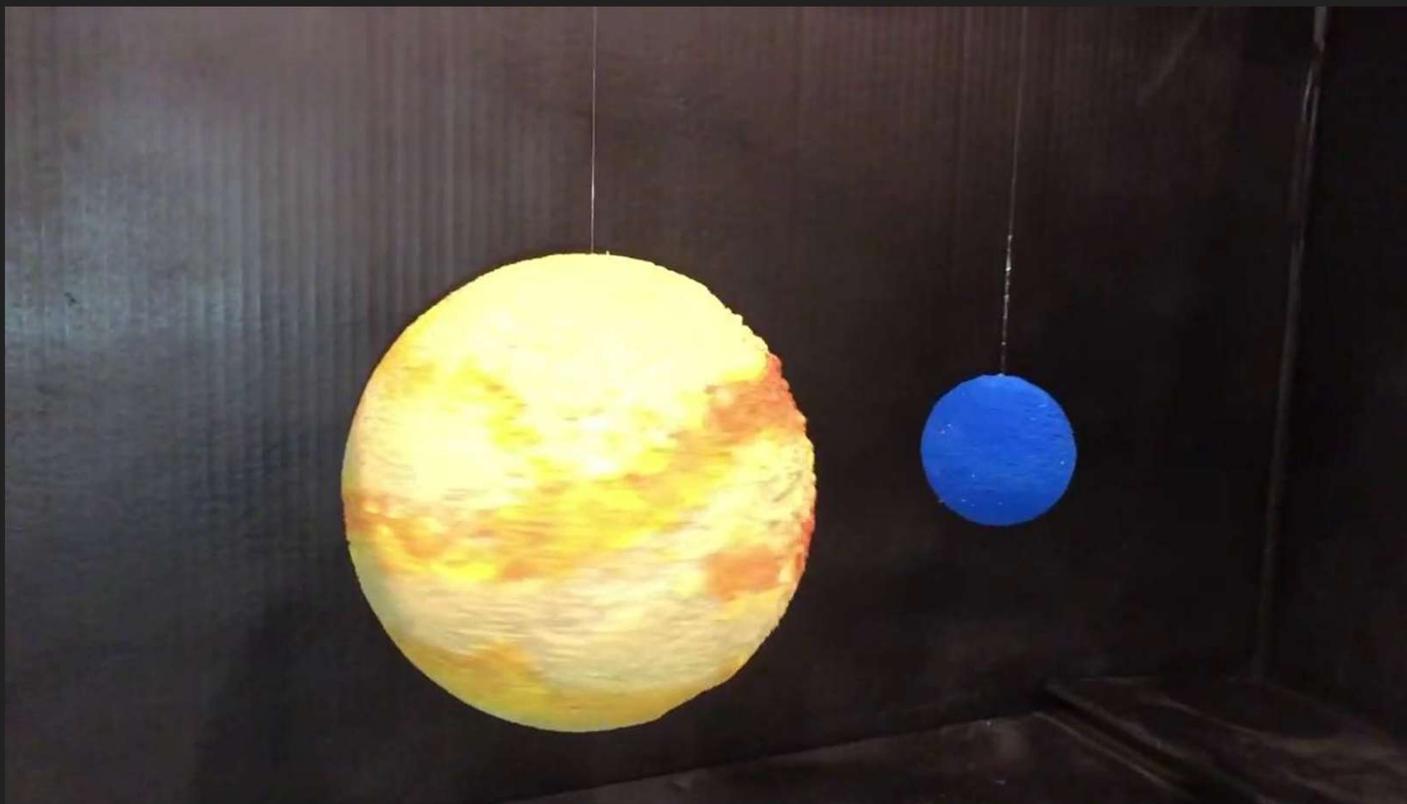
# Planet Assembly

- 1.) For Jupiter take the 7 inch foam ball and coat the whole thing with the brownish yellow paint.  
-After it dries out, paint orange, red, and yellow streaks across it.
- 2.) For Neptune, take the 2 1/2 foam ball and paint it blue. When it dries, Neptune is done.
- 3.) For the cross sections, take one 6 inch foam ball and cut it in half.
- 4.) Paint the half spheres like you did with Jupiter and Neptune.  
  
-Do not use hot glue since it will melt the foam.
- 5.) Next, cut the 2 1/2 foam ball in half to create the cores. Paint one for Jupiter and one for Neptune.
- 6.) Glue both cores to their planet's half.
- 7.) Hang your planets and take a picture.

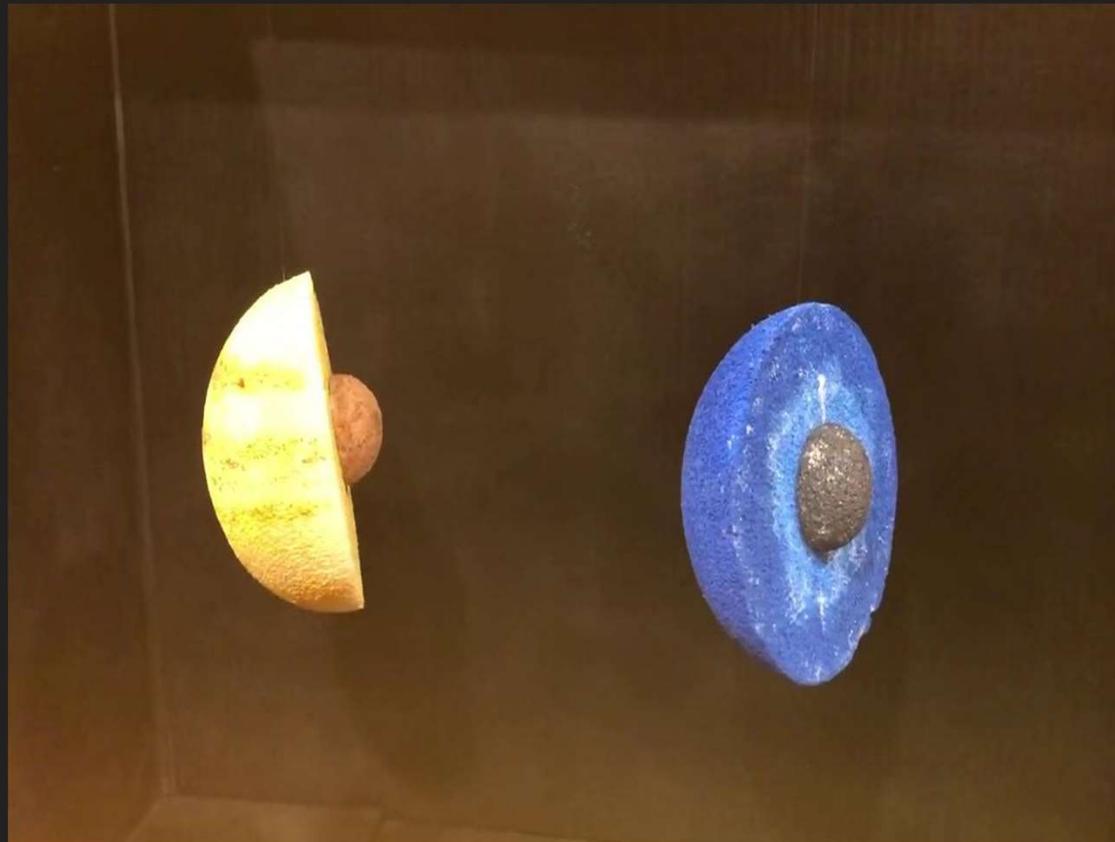
## Materials Needed to Construct Jupiter and Neptune Models:

1. 1.7 inch foam ball
2. One 6 inch foam ball cut in half
3. Two 2 1/2 inch foam balls
4. Paint colors for planets

Jupiter and Neptune to scale.

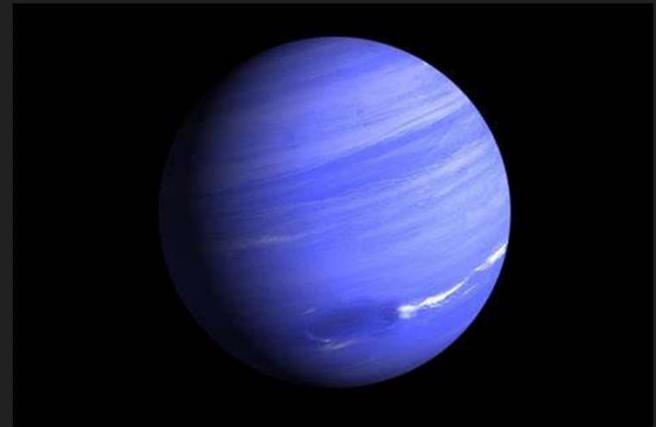


## Jupiter and Neptune Cores



## Conclusion

My hypothesis that Jupiter has more gas layers than Neptune because it has more mass was wrong. Neptune has four layers and Jupiter has three. Jupiter has very thick layers and Neptune has a lot thinner layers because of its dense core. I was incredibly surprised when I found out about Jupiter's and Neptune's layers and cores and I cannot wait for my next science fair.



## References

1. <https://www.nasa.gov>
2. <https://www.space.com>
3. <https://www.worldatlas.com>
4. <https://www.universetoday.com>
5. <https://www.bing.com/images/search?q=neptune+core&form=HDR>
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