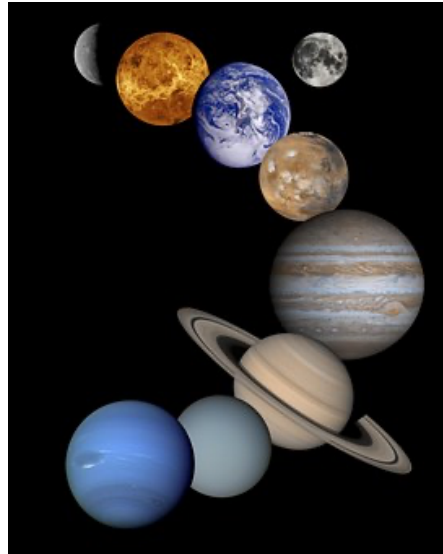


Planets



What is a planet?

Planets are bodies in space, named for their movement through the night sky. Ancient Greeks called them “planetes”, which means “wanderers”. They considered our moon and Sun to be planets as well as some of the objects we know as planets today.

Did You Know?

All of the planets, except for Uranus and Neptune, can be seen with the naked eye.

They could not see Uranus or Neptune and they did not think of Earth as a planet. In the intervening years, we have learned many things about these celestial wanderers. Today, planets are defined by four criteria: they must possess their own gravity that must be strong enough to make them spherical, they must orbit a star, they cannot be a moon of another celestial body, and they cannot share their orbit with any other objects. Beyond our solar system are many potential planets, called exoplanets for now. Some may even be able to support life.

What are the different types of planets?

Reading Sample



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The planets of our solar system

There are eight planets in our solar system: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune. Until 2006, we thought we had nine planets, but Pluto was classified as a dwarf planet because it shares its orbit with other objects. Mercury, Venus, Earth, and Mars are terrestrial planets, while Jupiter, Saturn, Uranus, and Neptune are gas giants.



Mercury is the nearest planet to the sun.

Mercury is the planet nearest to the sun and is the smallest planet in our solar system. Its temperature can fluctuate by over 1,000°F (530°C) between day and night. A day on Mercury is equivalent to 59 Earth days. A year on Mercury is only 88 days. Because of its odd orbit and rotation around its axis, Mercury experiences double sunrises and sunsets (the sun rises, then sets, then rises again and vice versa). Mercury has a very thin atmosphere and no water. Because of this thin atmosphere, meteors don't burn up on entry, so the surface of Mercury is covered in craters.

Reading Sample

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Earth, the third planet from the sun, is the largest terrestrial planet, and the only planet in the solar system known to be able to sustain life. It is also the only planet not named after a Greek or Roman deity. Most of Earth's surface (about two thirds) is covered in water. 97% of our water is

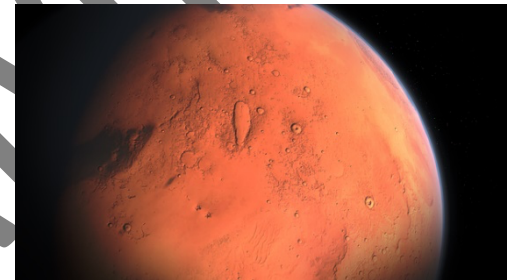


Earth is the only planet known to sustain life.

contained in the oceans. The atmosphere of Earth is a mixture of nitrogen (78%), oxygen (21%), and a little bit (1%) of other gases, including carbon dioxide. This atmosphere protects the planet from meteoroids as well as radiation from the sun. The planet has four major layers: an inner solid metallic core; outer fluid metallic core; thick, molten rock mantle; and thin, solid crust. One day on Earth is 23.9 hours. One year on Earth lasts 365.25 days, which is why every four years, a day is added to our calendar. Because of Earth's 23.4-

degree tilt, we experience four seasons. Which season we experience at any one time depends on whether our hemisphere is tilted toward or away from the sun. Earth is the only planet to have one moon. Earth is the fifth largest planet, and our moon is the fifth largest moon in the solar system.

Mars is the fourth planet from the sun, the second smallest planet, and home to the tallest mountain in the solar system, Olympus Mons. Despite its small size, Mars has almost the same amount of landmass as Earth. There is also evidence of liquid water on Mars, and it has visible polar ice caps, which grow and shrink over time. In 2008, a spacecraft, the



Mars is called "the Red Planet."

Phoenix Mars lander, observed snow falling on Mars. It is tilted on its axis like the Earth, and thus experiences seasons. Unlike Earth, Mars has no magnetic field, but there is evidence that it once did, around 4 billion years ago. Its gravity is only 37% that of Earth. Mars's atmosphere is thin and composed mainly of carbon dioxide. It has two moons and its dust storms are the largest in the solar system. One day on Mars lasts 24 hours and 37 minutes and a year is equivalent to 687 Earth days. Because of its characteristic color, Mars is known as the Red Planet.



Jupiter is the largest planet.

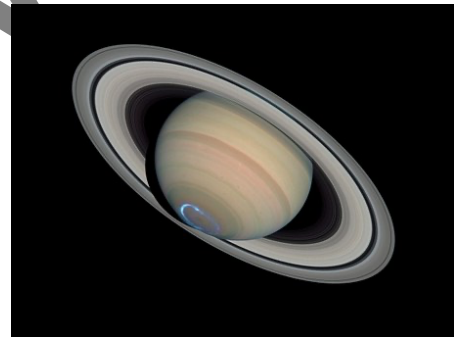
Jupiter is the fifth planet from the sun and the largest in our solar system. In fact, it would take a line of 11 Earths to span Jupiter and its mass is 317 times that of Earth. Jupiter's red spot alone, a giant storm that has lasted over 300 years, could hold three Earths. It was discovered in the 7th or 8th century BC. Jupiter is the next brightest object in the night sky after Venus. It has three faint rings and sixty-seven moons, one of which, Ganymede, is the

Reading Sample

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Saturn, the sixth planet from the sun is the least dense and second largest planet in the solar system. Its density is less than that of water. It has very large and visible rings made of ice and dust and one hundred and fifty frozen moons, one of which may have an ocean beneath its surface. Titan, one of Saturn's moons, is the second largest moon in the solar system. The winds on Saturn are faster than those on any other planet (1800 km/hr; 1100 miles/hr) and it has oval-shaped storms similar to those



Saturn is characterized by its highly visible rings.

seen on Jupiter. Its tilt is similar to that of Earth at 26.73 degrees, so it also experiences seasons. These are subtle, given its distance from the sun. The yellow hue of Saturn is due to ammonia in the atmosphere. This ammonia is present in trace amounts, given that the atmosphere is around



Uranus is the coldest planet.

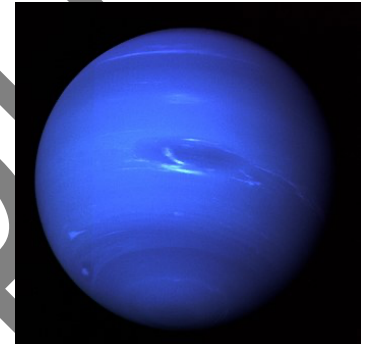
96% hydrogen and 4% helium. A Saturn day lasts 10 hours and 34 minutes. A year on Saturn is equal to 29.4 years on Earth.

Uranus is the seventh planet from the sun and the coldest in our solar system. It was discovered on March 13, 1781, by William Herschel. It has 13 rings and 27 moons. One day on Uranus lasts 17 hours and 14 minutes. One year on Uranus is equivalent to 84 Earth years. For a quarter of this time, half of the planet gets full

sun and the other half is completely dark. This is due its extreme tilt - 97.77 degrees – which may have been caused by a past collision with an Earth-sized planet. Like Venus, it also rotates clockwise. It is composed mainly of water, methane, and ammonia. Uranus's atmosphere is mainly hydrogen (~83%) and helium (~15%), but also contains methane and traces of ammonia and water. In fact, the outer atmosphere is a layer of methane gas, which gives Uranus its characteristic blue color.

Neptune, discovered in 1846, is the eighth planet from the sun. It was predicted by mathematical modeling of Uranus's motion irregularities and subsequently observed with a telescope. Neptune is the windiest planet in the solar system. Its winds can be up to nine times stronger than Earth's. It has 13 moons and 6 rings. Its largest moon has an opposite orbit to its other moons. One day on Neptune is 18 hours on Earth and one Neptune year is equivalent to 164.8 Earth years. Neptune is too far away from Earth to be seen without the aid of a telescope.

Like Uranus, Neptune is blue because of methane in its atmosphere, but scientists suspect an additional unknown element given that Neptune is more intensely blue than Uranus. Pluto's orbit actually brings it within Neptune's every 248 Earth years, where it remains for 20 years before moving back out.



Neptune was the last planet to be discovered.

Reading Comprehension Questions:

1. What is a planet?
2. What
3. How many planets are in our solar system?
4. Why
5. List
6. Which
7. Which
8. Which planet is almost a star?
9. Why are Uranus and Neptune blue?

Extension Questions:

10. Create a
11. What features of Earth make it suitable for life? Research the “Goldilocks Zone”. Are there any exoplanets currently known to exist in this zone? Do some research and list as many as you can find.

Reading Sample



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