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Dwarf Planet



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Dwarf Planet

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Dwarf Planet

About space4alleducation

We are a small dedicated team who love space and wishes to share their love with anyone who wants to learn about space/astrometry and rockets and more.

I am Andy the owner and lead tutor for space4education.com a small company dedicated to improving the education for all learners who want to be involved in the developed of space.

Over the last 7 years we have been developing a program aimed helping and supporting leaners from 10 years and younger.

The Booklet that you are holding is the beginning of that journey, as it the beginning of your journey as you begin to explore the various regions of space.

This booklets is part of series booklets that will give you various information about space.

This booklet was created by

Andy (Content creator) and Steve (I.T Management).

Please check out our website

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Dwarf Planet

Dwarf planets are different from planets because they have not cleared their orbital paths. Planets have enough gravity to push other smaller objects, but dwarf planets do not. What other interesting quick fire dwarf planet facts are there?

There are currently only five official dwarf planets namely, Ceres, Pluto, Haumea, Makemake, and Eris. However, there are many other dwarf planet candidates like Gonggong, Orcus, Quaoar, Sedna, and Salacia.

The dwarf planets were named after mythological characters. From Roman mythology, Pluto is the god of the underworld and Ceres is the goddess of grains. Haumea is the Hawaiian goddess of childbirth and fertility and Eris is the Greek goddess of childbirth and fertility.

Makemake, from Rapa Nui mythology, is the god of fertility.

Haumea has the strangest shape among the five dwarf planets. Because of its fast rotation, it ended up having a unique egg-like shape.

Ceres is the nearest dwarf planet, the only one in the asteroid belt. It accounts for most of the mass in the asteroid belt. The other dwarf planets are in the Kuiper belt.

While Pluto is the largest dwarf planet, Eris is the most massive. It is also the farthest from [the Sun](#), it lies in the outer stretches of the Kuiper belt called the "scattered disk."

Just like planets, dwarf planets also have natural satellites. Pluto has five moons, Haumea has two, and Eris has one. Makemake has one provisional moon. Ceres is the only dwarf planet without a known moon.

Dwarf planets can also have ring systems. The oddball, Haumea, has a ring surrounding it. It is the first object beyond Neptune's orbit known to have a ring system.

Dwarf planets mostly have relatively short days but very long years. A day on Haumea is only 4 hours long while a year on Eris takes 557 Earth years!

Dwarf Planet

Hi I'm from Pluto, I am be small but I'm important to the solar system, I have 5 moons, and one even makes me wobble it's fun.



Pluto is named after the Greek god of the underworld. This is a later name for the more well-known Hades and was proposed by Venetia Burney an eleven year old schoolgirl from Oxford, England.

Pluto has five moons.

- The moons are Charon (discovered in 1978),
- Hydra and Nix (both discovered in 2005),
- Kerberos originally P4 (discovered 2011)
- Styx originally P5 (discovered 2012)
- Official designations S/2011 (134340)
- Official designations S/2012 (134340) 1.

Pluto is the largest Dwarf Planet.

At one point it was thought this could be Eris. Currently the most accurate measurements give Eris an average diameter of 2,326km with a margin of error of 12km, while Pluto's diameter is 2,372km with a 2km margin of error. Pluto has an eccentric and inclined orbit. This takes it between 4.4 and 7.3 billion km from the Sun meaning Pluto is periodically closer to the Sun than Neptune.

Dwarf Planet

Pluto was discovered in 1930, Pluto is the second closest dwarf planet to the Sun and was at one point classified as the ninth planet. Pluto is the largest dwarf planet but only the second most massive, with Eris being the most massive.

Pluto is one third water. This is in the form of water ice which is more than 3 times as much water as in all the Earth's oceans, the remaining two thirds are rock. Pluto's surface is covered with ices, and has several mountain ranges, light and dark regions, and a scattering of craters.

Moons:

5

Orbit Period:
(39.26 AU)

5,874,000,000 km

Surface Temperature: -229°C



Pluto's Distance from Sun

Dwarf Planet

Dwarf planets are different from planets. They are a different class of objects that orbit the Sun. They are much smaller and are mostly located in the outer regions of the Solar System. This class of celestial objects was established by the International Astronomical Union (IAU) in 2006.

According to the IAU, a celestial body is classified as a dwarf planet if it exhibits the following characteristics:

01 – It is in orbit around the Sun.

02 – It has sufficient mass for its self-gravity to overcome rigid body forces so that it assumes a hydrostatic equilibrium (nearly round) shape;

03 – That It has not cleared the neighbourhood around its orbit.

04 – That It is not a satellite (a moon).

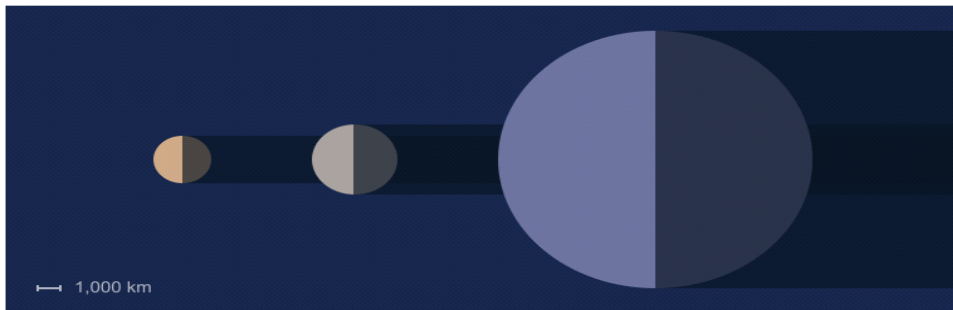
This definition of a dwarf planet differentiates it from a planet on two criteria: unlike the dwarf planet, a planet has cleared the neighbourhood around its orbit, and the definition of a planet does not include the satellite distinction.

Dwarf Planet

Pluto was reclassified from a planet to a dwarf planet in 2006. This is when the IAU formalised the definition of a planet as “A planet is a celestial body that (a) is in orbit around the Sun, (b) has sufficient mass for its self-gravity to overcome rigid body forces so that it assumes a hydrostatic equilibrium (nearly round) shape, and (c) has cleared the neighbourhood around its orbit.”



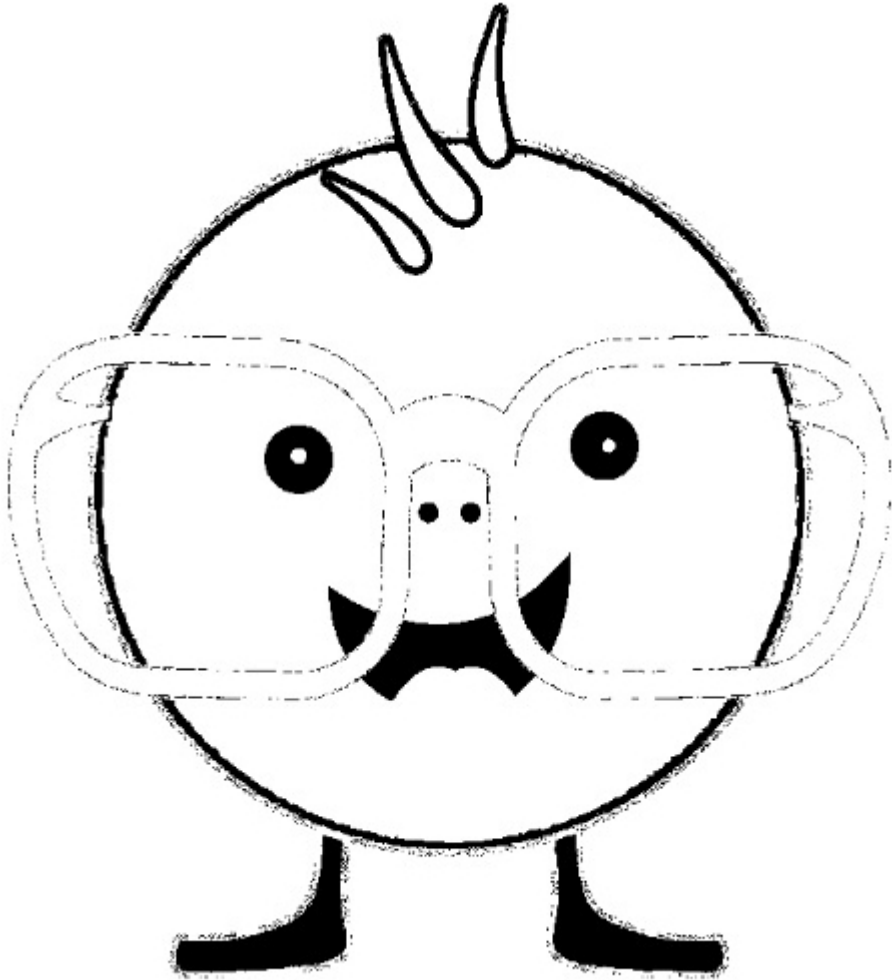
Pluto compared to the moon and the Earth



Dwarf Planet

Makemake is another dwarf planet located in the Kuiper belt. It was discovered in 2005 by a team of astronomers led by Michael Brown. Its discovery is one of the reasons for redefining planets and creating the “dwarf planet” classification. The name Makemake was inspired by the god of fertility of the Rapa Nui people. After Pluto, Makemake is the second-brightest object in the Kuiper belt. It lies around 46 AU from the Sun. Roughly 1,430 km (889 mi) across, this dwarf planet is about 1/9 the radius of the Earth. Makemake is a very cold world and the probability of life there is very low. A day on this dwarf planet is 22.5 hours long, roughly the same as Mars and Earth. It completes a trip around the Sun in 305 years. In 2016, a small moon orbiting Makemake was detected by the Hubble Space Telescope. No spacecraft has visited the Makemake system yet. Eris is the farthest dwarf planet from the Sun but also the most massive. It was discovered in 2005 by the same team that also discovered Makemake. It lies 68 AU from the Sun in the outer regions of the Kuiper belt called the “scattered disk.” Eris follows an elliptical orbit that is very inclined at 44°. Its average radius is 1,163 km or 723 miles. It was once thought that it could be the 10th planet. However, it did not push through after the reclassification of Pluto. Because of its size, we can put all the objects in the asteroid belt inside this dwarf planet. A day on Eris takes about 26 hours, slightly longer than here on Earth. However, a year there is much longer. It takes Eris 557 years to complete an orbit around the Sun. Though no direct flyby has been done on Eris yet, scientists believe that it may have a rocky surface. Eris has no known ring system but it has one moon named Dysnomia. It is the second-largest moon to a dwarf planet, after Pluto’s Charon. With the discovery of methane on Eris, the surface of this dwarf planet is thought to be similar to that of Pluto.

Dwarf Planet



Dwarf Planet

The dwarf planet Ceres was discovered in January 1801 by the Italian astronomer Giuseppe Piazzi. It was named after the Roman goddess of agriculture. It lies 2.8 astronomical units (AU) from the Sun, in the asteroid belt. A day on Ceres is only 9 hours long, and a year there takes 4.61 Earth years. It follows a nearly circular orbit that is tilted about 11° . With a mean radius of 476.2 km, it is the smallest of the five dwarf planets. Ceres was thought to be a planet upon discovery. Since many objects similar to it were discovered, scientists made a different category and called it "asteroid." It was the first object in the solar system to be considered an asteroid. It was reclassified as a dwarf planet when Pluto was reclassified to this category in 2006.

In 2015, NASA's Dawn spacecraft arrived at Ceres. It made Ceres the first dwarf planet to be visited by a spacecraft. Haumea is an egg-shaped dwarf planet that lies past Neptune's orbit in the Kuiper belt. Its discovery was disputed by two groups of astronomers. Because of that, the IAU only recognizes its place of discovery, not the individuals. The name Haumea was inspired by Hawaiian mythology's goddess of fertility and childbirth. Namaka and Hi'iaka, its moons, were named after the goddess's daughters. Unlike Pluto and Ceres, no spacecraft has visited the Haumean system yet.

Haumea is 43 times as distant as the Earth is from the Sun. It is one of the fastest spinning large objects in the Solar System. This dwarf planet completes one rotation in only 4 hours. This fast rotation makes its shape elongated. A year in Haumea is equivalent to about 283 years on Earth. Aside from the two moons, a ring system was also discovered in the system of Haumea.