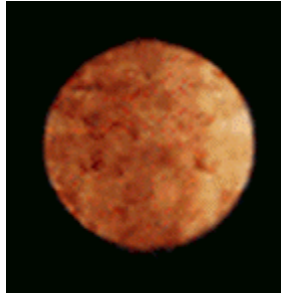


MERCURY

The Planet Mercury is the closest planet to our sun and is the smallest planet in the solar system. It is named after a roman god.



It has no natural satellites and no substantial atmosphere.

Facts about Planet Mercury

- * Diameter: 4,878km (3,032 miles) at its equator, which is about two-fifths of Earth's diameter.
- * Temperature: ?
- * Orbit: 57,910,000 km (0.38 AU) from Sun. Orbiting the Sun once every 88 days.
- * Average Distance: About 58 million km (36 million miles)
- * Time to Rotate: 58.6 days
- * Mass: 3.30×10^{23} kg (5.5% of Earth's)
- * Moons: 0
- * Period of Rotation: 58.6462 days.

Orbit

Mercury has a very elliptical (oval-shaped) orbit. At perihelion (at its closest point) it is about 46 million km (28.58 million miles) from the Sun, but at aphelion (at its farthest point) it is 70 million km. Mercury is about 77.3 million km (48 million miles) from Earth at its closest approach. Mercury is not easily seen from Earth due to its small angular separation from the Sun. Mercury moves around the sun faster than any other planet. Mercury travels about 48 km (30 miles) per second and it takes 88 Earth days to orbit the sun. The Earth goes around the sun once every 365 days (one year).

Rotation

The planet rotates once about every 59 Earth days, a rotation slower than that of any other planet except Venus. As a result of the planet's slow rotation on its axis and rapid movement around the sun, a day on Mercury lasts 176 Earth days (interval between one sunrise and the next).

Composition

Mercury is the second densest major body in the solar system after Planet Earth and its density is slightly less than the Earth's. Mercury's smaller mass makes its force of gravity only about a third as strong as that of the Earth. An object that weighs 100 pounds on the Earth would weigh only about 38 pounds on Mercury.

Mercury has a large iron core which is most likely at least partially molten and generates a magnetic field about 1% as strong as that of Earth's. Mercury's interior appears to resemble that of the Earth. Both planets have a rocky layer called a mantle beneath their crust and both planets have an iron core.

Surface

The surface of Mercury consists of cratered terrain and smooth plains and many deep craters similar to those on the moon. The craters formed when meteors or small comets crashed into the planet. The largest known crater is Caloris Basin, with a diameter of 1300 km (800 miles).

Like the other terrestrial planets (Venus, Earth and Mars) Mercury is made mostly of rock and metal. Mercury's surface appears to be much like that of the moon. It reflects approximately 6 percent of the sunlight it receives, about the same as the moon's surface reflects. Like the moon, Mercury is covered by a thin layer of minerals called silicates in the form of tiny particles.

Water

Scans of Mercury made by Earth-based radar indicate that craters at Mercury's poles contain water ice. The floors of the craters are permanently shielded from sunlight, so the temperature never gets high enough to melt the ice.

Temperature

Mercury is a planet of extreme temperature variations. It is hotter on Venus, but with less fluctuations. The temperature on the planet may reach 450 degrees C (840 degrees F) during the day. But at night, the temperature may drop as low as -170 degrees C (-275 degrees F). The sunlight on Mercury's surface is 6.5 times as intense as it is on Earth due to its closeness to the sun.

Atmosphere

Mercury is dry, extremely hot and almost airless. Planet Mercury is too small for its gravity to retain any significant atmosphere over long periods of time. The weak atmosphere contains hydrogen, helium, oxygen, sodium, calcium and potassium.

Due to the heat of the planet, the very thin atmosphere is blasted off its surface by the solar wind and quickly escapes into space. Mercury's atmosphere is constantly being replenished.

Mercury does not have enough atmosphere to slow down meteoroids and burn them up by friction. The sun's rays are approximately seven times as strong on Mercury as they are on the Earth. The sun also appears about 2 1/2 times as large in Mercury's sky as in the Earth's.

Name

The Greeks gave it two names: Apollo for when it appeared as a morning star and Hermes when it came as an evening star.

In Roman mythology Mercury is the god of commerce, travel and thievery, the Roman counterpart of the Greek god Hermes, the messenger of the Gods. The planet probably received this name because it moves so quickly across the sky

VENUS

The Planet Venus is the second closest planet to the sun. It is located between our Earth and Mercury. It is named after the Roman goddess of love and beauty.



Venus is covered with thick clouds that create a greenhouse effect that makes it very hot.

Venus has no moons.

Facts about Planet Venus

- * Diameter: 12,100 km. It is about 1040km smaller in diameter than Earth
- * Temperature: Ranges from 900F+/- 50F (about 500°C +/- 32°C) at the surface
- * Distance from Earth: At its closest, Venus is 41,840,000 km away
- * Atmosphere: Carbon dioxide (95%), nitrogen, sulfuric acid, and traces of other elements
- * Surface: A rocky, dusty, waterless expanse of mountains, canyons, and plains, with a 200-mile river of hardened lava
- * Rotation of its axis: 243 Earth days (1 Venusian Day)
- * Rotation around the Sun: 225 Earth days
- * Magnetic Field: No

Venus is the brightest object in the sky besides our Sun and the Moon. It is also known as the *morning star* because at sunrise it appears in the east and *evening star* as it appears at sunset when it is in the west. It cannot be seen in the middle of the night.

A Venusian day is 243 Earth days and is longer than its year of 225 days. Oddly, Venus rotates from east to west (retrograde - opposite to that of earth). If you were on Venus, the Sun would rise in the west and set in the east.

Earth

Planet Earth is third planet from the Sun and the fifth largest planet in the solar system. This section covers topics related to our Planet Earth including links to Earth from space.



Facts about Planet Earth

- * Diameter: 12,800 km.
- * Atmosphere: Mainly nitrogen 78.084% Nitrogen, 20.946% Oxygen. The other small parts include Argon, Carbon Dioxide, Helium, Hydrogen, Methane.
- * Natural Satellites: 1 - the Moon
- * Earth Year: 365 days (rotation around the sun)
- * Earth Day: 24 hours
- * Surface: 71% of Earth's surface is covered in water.
- * Temperature Range: -69°C to 58°C.
- * Age: more than 4.5 billion years old.
- * Average Distance from Sun: 149,597,870 km (93 million miles)
- * Average distance from Earth to Moon: 384 000 km (238 607 miles). The Moon orbits Earth in 27.3217 days.
- * Tilt: 23.45°
- * Orbits the Sun: Speed of 107,870 km per hour (67,027 miles) per hour.
- * Name: Comes from old English and German.

The Earth consists of a gaseous atmosphere, the hydrosphere (all water on Earth), the lithosphere, mantle, and core. Water in the form of the oceans covers approximately 70% of the earth's surface. The remaining 30% is land. There are five continents: Eurasia (Europe and Asia), America (North and South America), Africa, Antarctica and Australia.

The following are some interesting facts:

1. Mount Everest is the highest point on the surface.
2. The largest volcano on earth is Mauna Loa volcano in Hawaii.
3. The longest river is the Nile River in Africa is 6,695 kilometers (4,160 miles) long.
4. The driest place on Earth is the Atacama Desert in Chile.
5. Grand Canyon is the world's largest canyon.
6. Caspian Sea is the largest lake in the world by size and volume. It is located between southeast Europe and west Asia.
7. The Sahara Desert in northern Africa is the world's largest desert.
8. The world's deepest lake is Lake Baikal in the south central part of Siberia is 5,712 feet (1.7 kilometers) deep.
9. Greenland is the world's largest island. Note: Australia is a continent.
10. Coldest temperature was minus 89.2 °C (-128.5°F) in Vostok, Antarctica, 1983. The highest temperature was 58°C (136.4°F) at Al'Aziziyah, Libya, on 13th September 1922.

How many Man-Made Satellites are Orbiting the Earth?

The Goddard Space Flight Center's lists 2,271 satellites currently in orbit. Russia has the most satellites currently in orbit, with 1,324 satellites, followed by the U.S. with 658. through this web site you will find info on earth related satellites and space-ships (spacecraft).

Man-made Structure Visible from Space

The Only Man-made Structure Visible from Space is the Great Wall of China It stretches over 6,000 kilometers (nearly 4,000 miles). It is truly awesome.

MARS

Planet Mars is also called the **Red Planet** or **Red World**.

Mars is reddish in colour and was named after the god of war of the ancient Romans. Mars is the only planet whose surface can be seen in detail from the Earth. Mars is the fourth closest planet to the Sun and the next planet beyond the Earth.



Planet Mars Facts:

Number of Moons: 2 (Phobos and Deimos)

Rotation Period: 24 hours and 37 minutes

Temperature: -140 to 20 degrees celsius (-220 to 60 fahrenheit)

Length of Year: About 1 Earth-year and ten and a half months

Diameter: 6796 Kms (4223 Miles)

Atmosphere: Mainly Carbon Dioxide

Distance from Sun: 249 million km (155 million miles)

Planet Make-up:

The outer surface of Mars is mostly basalt, brought to the surface by volcanoes in the planet's early history. This volcanic activity ceased many years ago, and now much of the surface is covered by fine iron oxide dust with the consistency of talcum powder. Huge dust storms on Mars can blow this Martian dust around, slowly wearing down features on the surface.

Nasa's Mars Robotic Exploration:

Mars was explored in flybys by Mariner 4, 6 and 7 in the 1960s and by the orbiting Mariner 9 in 1971 before NASA mounted the ambitious Viking mission, which launched two orbiters and two landers to the planet in 1975. The landers found no chemical evidence of life. Mars Pathfinder landed on the planet on July 4, 1997, delivering a mobile robot rover that explored the immediate vicinity. Mars Global Surveyor is creating the highest-resolution map of the planets surface.

Unlike the Earth, Mars has no magnetic field. It's possible that the Red Planet had an internally rotating core billions of years ago. Because of its small size and lack of water, these seized up billions of years ago. NASA's Mars Global Surveyor discovered magnetic bands on the planet, similar to deep ocean bands on Earth, which indicate that it might have had plate tectonics billions of years ago. But without water to lubricate, they would have seized up long ago.

JUPITER



Planet Jupiter Facts:

Number of Moons: 63 known satellites (as of Feb 2004): the four large Galilean moons plus many more small ones some of which have not yet been named:

Jupiter

Jupiter is the largest planet in the solar system. Its diameter is 88,846 miles (142,984 kilometers), more than 11 times that of Earth, and about one-tenth that of the sun. It would take more than 1,000 Earths to fill up the volume of the giant planet. When viewed from Earth, Jupiter appears brighter than most stars. It is usually the second brightest planet -- after Venus.

Jupiter is the fifth planet from the sun. Its mean (average) distance from the sun is about 483,780,000 miles (778,570,000 kilometers), more than five times Earth's distance. Ancient astronomers named Jupiter after the king of the Roman gods.

Astronomers have studied Jupiter with telescopes based on Earth and aboard artificial satellites in orbit around Earth. In addition, the United States has sent six space probes (crewless exploratory craft) to Jupiter.

Astronomers witnessed a spectacular event in July 1994, when 21 fragments of a comet named Shoemaker-Levy 9 crashed into Jupiter's atmosphere. The impacts caused tremendous explosions, some scattering debris over areas larger than the diameter of Earth.

Physical features of Jupiter

Jupiter is a giant ball of gas and liquid with little, if any, solid surface. Instead, the planet's surface is composed of dense red, brown, yellow, and white clouds. The clouds are arranged in light-colored areas called zones and darker regions called belts that circle the planet parallel to the equator.

Orbit and rotation

Jupiter travels around the sun in a slightly elliptical (oval-shaped) orbit. The planet completes one orbit in 4,333 Earth days, or almost 12 Earth years.

As Jupiter orbits the sun, the planet rotates on its axis, an imaginary line through its center. The axis is tilted about 3°. Scientists measure tilt relative to a line at a right angle to the orbital plane, an imaginary surface touching all points of the orbit.

Jupiter rotates faster than any other planet. It takes 9 hours 56 minutes to spin around once on its axis, compared with 24 hours for Earth. Scientists cannot measure the rotation of the interior of the giant planet directly, so they have calculated the speed from indirect measurements. They first calculated the

speed using an average of the speeds of the visible clouds that move with interior currents, except for a more rapid zone near the equator.

Jupiter sends out radio waves strong enough to be picked up by radio telescopes on Earth. Scientists now measure these waves to calculate Jupiter's rotational speed. The strength of the waves varies under the influence of Jupiter's magnetic field in a pattern that repeats every 9 hours 56 minutes. Because the magnetic field originates in Jupiter's core, this variation shows how fast the planet's interior spins.

Jupiter's rapid rotation makes it bulge at the equator and flatten at the poles. The planet's diameter is about 7 percent larger at the equator than at the poles.

Mass and density

Jupiter is heavier than any other planet. Its mass (quantity of matter) is 318 times larger than that of Earth. Although Jupiter has a large mass, it has a relatively low density. Its density averages 1.33 grams per cubic centimeter, slightly more than the density of water. The density of Jupiter is about 1/4 that of Earth. Because of Jupiter's low density, astronomers believe that the planet consists primarily of hydrogen and helium, the lightest elements. Earth, on the other hand, is made up chiefly of metals and rock. Jupiter's mix of chemical elements resembles that of the sun, rather than that of Earth.

Jupiter may have a core made up of heavy elements. The core may be of about the same chemical composition as Earth, but 20 or 30 times more massive.

The force of gravity at the surface of Jupiter is up to 2.4 times stronger than on Earth. Thus, an object that weighs 100 pounds on Earth would weigh as much as 240 pounds on Jupiter.

The atmosphere of Jupiter is composed of about 86 percent hydrogen, 14 percent helium, and tiny amounts of methane, ammonia, phosphine, water, acetylene, ethane, germanium, and carbon monoxide. The percentage of hydrogen is based on the number of hydrogen molecules in the atmosphere, rather than on their total mass. Scientists have calculated these amounts from measurements taken with telescopes and other instruments on Earth and aboard spacecraft.

These chemicals have formed colorful layers of clouds at different heights. The highest white clouds in the zones are made of crystals of frozen ammonia. Darker, lower clouds of other chemicals occur in the belts. At the lowest levels that can be seen, there are blue clouds. Astronomers had expected to detect water clouds about 44 miles (70 kilometers) below the ammonia clouds. However, none have been discovered at any level.

Jupiter's most outstanding surface feature is the Great Red Spot, a swirling mass of gas resembling a hurricane. The widest diameter of the spot is about three times that of Earth. The color of the spot usually varies from brick-red to slightly brown. Rarely, the spot fades entirely. Its color may be due to small amounts of sulfur and phosphorus in the ammonia crystals.

The edge of the Great Red Spot circulates at a speed of about 225 miles (360 kilometers) per hour. The spot remains at the same distance from the equator but drifts slowly east and west.

The zones, belts, and the Great Red Spot are much more stable than similar circulation systems on Earth. Since astronomers began to use telescopes to observe these features in the late 1600's, the features have changed size and brightness but have kept the same patterns.

Temperature

The temperature at the top of Jupiter's clouds is about -230 degrees F (-145 degrees C). Measurements made by ground instruments and spacecraft show that Jupiter's temperature increases with depth below the clouds. The temperature reaches 70 degrees F (21 degrees C) -- "room temperature" -- at a level where the atmospheric pressure is about 10 times as great as it is on Earth. Scientists speculate that if Jupiter has any form of life, the life form would reside at this level. Such life would need to be airborne,

because there is no solid surface at this location on Jupiter. Scientists have discovered no evidence for life on Jupiter.

Near the planet's center, the temperature is much higher. The core temperature may be about 43,000 degrees F (24,000 degrees C) -- hotter than the surface of the sun.

Jupiter is still losing the heat produced when it became a planet. Most astronomers believe that the sun, the planets, and all the other bodies in the solar system formed from a spinning cloud of gas and dust. The gravitation of the gas and dust particles packed them together into dense clouds and solid chunks of material. By about 4.6 billion years ago, the material had squeezed together to form the various bodies in the solar system. The compression of material produced heat. So much heat was produced when Jupiter formed that the planet still radiates about twice as much heat into space as it receives from sunlight.

Rings

Jupiter has three thin rings around its equator. They are much fainter than the rings of Saturn. Jupiter's rings appear to consist mostly of fine dust particles. The main ring is about 20 miles (30 kilometers) thick and more than 4,000 miles (6,400 kilometers) wide. It circles the planet inside the orbit of Amalthea.

SATURN

Facts about Planet Saturn

- * Diameter: 120,660 km
- * Temperature: -178°C
- * Distance from Earth: 1190.4 million km
- * Atmosphere: Hydrogen and helium
- * Surface: consists of liquid and gas.
- * Rotation of its axis: 10 hours, 40 min, 24 sec
- * Rotation around the Sun: 29.5 Earth years



In Roman mythology, Saturn is the god of agriculture. The associated Greek god, Cronus, was the son of Uranus and Gaia and the father of Zeus (Jupiter). Saturn is the root of the English word "Saturday" (see Appendix 5).

Saturn has been known since prehistoric times. Galileo was the first to observe it with a telescope in 1610; he noted its odd appearance but was confused by it. Early observations of Saturn were complicated by the fact that the Earth passes through the plane of Saturn's rings every few years as Saturn moves in its orbit. A low resolution image of Saturn therefore changes drastically. It was not until 1659 that Christiaan Huygens correctly inferred the geometry of the rings. Saturn's rings remained unique in the known solar system until 1977 when very faint rings were discovered around Uranus (and shortly thereafter around Jupiter and Neptune).

Saturn was first visited by NASA's Pioneer 11 in 1979 and later by Voyager 1 and Voyager 2. Cassini (a joint NASA / ESA project) arrived on July 1, 2004 and will orbit Saturn for at least four years.

Saturn is visibly flattened (oblate) when viewed through a small telescope; its equatorial and polar diameters vary by almost 10% (120,536 km vs. 108,728 km). This is the result of its rapid rotation and fluid state. The other gas planets are also oblate, but not so much so.

Saturn is the least dense of the planets; its specific gravity (0.7) is less than that of water.

Like Jupiter, Saturn is about 75% hydrogen and 25% helium with traces of water, methane, ammonia and "rock", similar to the composition of the primordial Solar Nebula from which the solar system was formed.

Saturn's interior is similar to Jupiter's consisting of a rocky core, a liquid metallic hydrogen layer and a molecular hydrogen layer. Traces of various ices are also present.

Saturn's interior is hot (12000 K at the core) and Saturn radiates more energy into space than it receives from the Sun. Most of the extra energy is generated by the Kelvin-Helmholtz mechanism as in Jupiter. But this may not be sufficient to explain Saturn's luminosity; some additional mechanism may be at work, perhaps the "raining out" of helium deep in Saturn's interior.

The bands so prominent on Jupiter are much fainter on Saturn. They are also much wider near the equator. Details in the cloud tops are invisible from Earth so it was not until the Voyager encounters that any detail of

Saturn's atmospheric circulation could be studied. Saturn also exhibits long-lived ovals (red spot at center of image at right) and other features common on Jupiter. In 1990, HST observed an enormous white cloud near Saturn's equator which was not present during the Voyager encounters; in 1994 another, smaller storm was observed (left).

Two prominent rings (A and B) and one faint ring (C) can be seen from the Earth. The gap between the A and B rings is known as the **Cassini division**. The much fainter gap in the outer part of the A ring is known as the **Encke Division** (but this is somewhat of a misnomer since it was very likely never seen by Encke). The Voyager pictures show four additional faint rings. Saturn's rings, unlike the rings of the other planets, are very bright (albedo 0.2 - 0.6).

Though they look continuous from the Earth, the rings are actually composed of innumerable small particles each in an independent orbit. They range in size from a centimeter or so to several meters. A few kilometer-sized objects are also likely.

Saturn's rings are extraordinarily thin: though they're 250,000 km or more in diameter they're less than one kilometer thick. Despite their impressive appearance, there's really very little material in the rings -- if the rings were compressed into a single body it would be no more than 100 km across.

The ring particles seem to be composed primarily of water ice, but they may also include rocky particles with icy coatings.

Voyager confirmed the existence of puzzling radial inhomogeneities in the rings called "spokes" which were first reported by amateur astronomers (left). Their nature remains a mystery, but may have something to do with Saturn's magnetic field.

Saturn's outermost ring, the F-ring, is a complex structure made up of several smaller rings along which "knots" are visible. Scientists speculate that the knots may be clumps of ring material, or mini moons. The strange braided appearance visible in the Voyager 1 images (right) is not seen in the Voyager 2 images perhaps because Voyager 2 imaged regions where the component rings are roughly parallel. They are prominent in the Cassini images which also show some as yet unexplained wispy spiral structures.

There are complex tidal resonances between some of Saturn's moons and the ring system: some of the moons, the so-called "shepherding satellites" (i.e. Atlas, Prometheus and Pandora) are clearly important in keeping the rings in place; Mimas seems to be responsible for the paucity of material in the Cassini division, which seems to be similar to the Kirkwood gaps in the asteroid belt; Pan is located inside the Encke Division and S/2005 S1 is in the center of the Keeler Gap. The whole system is very complex and as yet poorly understood.

The origin of the rings of Saturn (and the other jovian planets) is unknown. Though they may have had rings since their formation, the ring systems are not stable and must be regenerated by ongoing processes, perhaps the breakup of larger satellites. The current set of rings may be only a few hundred million years old.

When it is in the nighttime sky, Saturn is easily visible to the unaided eye. Though it is not nearly as bright as Jupiter, it is easy to identify as a planet because it doesn't "twinkle" like the stars do. The rings and the larger satellites are visible with a small astronomical telescope. There are several Web sites that show the current position of Saturn (and the other planets) in the sky. More detailed and customized charts can be created with a planetarium program.

URANUS

The Planet Uranus is the third largest planet in the solar system, is a Gas Giant and is the seventh planet from the sun. Planet Uranus has rings like Planet Jupiter, Saturn and Neptune.



It was discovered by William Herschel on March 13, 1781 and was the first planet discovered in modern times. It is also the first planet discovered with a telescope as opposed to the naked eye.

The Planet Uranus has been visited by the Voyager 2 spacecraft

Facts about Planet Uranus

- * Diameter: 51,500 km (32,000 miles)
- * Temperature: -197.15 C (-322.87° F)
- * Orbit: Takes 84 years to complete an orbit.
- * Average Distance: 2,870,972,200 km (1,783,939,400 miles - 19.2 AU) from Sun
- * Mass: 8.6849×10^{25} kg
- * Moons: 27
- * Period of Rotation: 17.24 hours (retrograde: spins backwards compared to most other planets)

Atmosphere

Uranus' atmosphere is about 83% hydrogen, 15% helium and 2% methane. There are also traces of water and ammonia. The planet's atmospheric details are very difficult to see in visible light. The methane gas above the cloud layers gives it a blue-green colour.

Name

Johann E. Bode, a German astronomer, named the planet after the Greek god of the sky.

Rotation

Uranus is the only planet in our Solar System to spin on its side. The axis of rotation tilt is 98 degrees. The severe tilt to its rotational axis may have resulted from a great collision long ago.

Surface

Uranus is a 'Gas Giant' with no solid surface. It may have a small, silicate-rich core, but most of its gas consists of water, ammonia and methane. Its surface area is about 8,115,600,000 km².

More than 80 percent of the mass of Uranus is contained in an extended liquid core consisting primarily of 'icy' materials (water, methane and ammonia) with higher-density material at depth.

Viewing

If you know where to look, it can occasionally be spotted with the naked eye, however, it can be hard to see due to the similarity of the background stars.

Spacecraft

The only spacecraft to visit Planet Uranus was the Voyager 2 spacecraft in a flyby in 1986. It discovered 10 moons and two rings in addition to studying moons and rings previously seen from Earth.

Moons

of

Uranus

The Planet Uranus has many moons. Five of largest are Miranda, Titania, Oberon, Umbriel, Ariel. The largest moon is Titania with a radius of only 788.9 km (less than half that of our Moon).

The Titania and Oberon were discovered by William Herschel in 1787. Ariel and Umbriel were discovered by William Lassell in 1851. John Herschel (William Herschel's son) gave the four then known moons their names in 1852. In 1948 Gerard Kuiper discovered the moon Miranda.

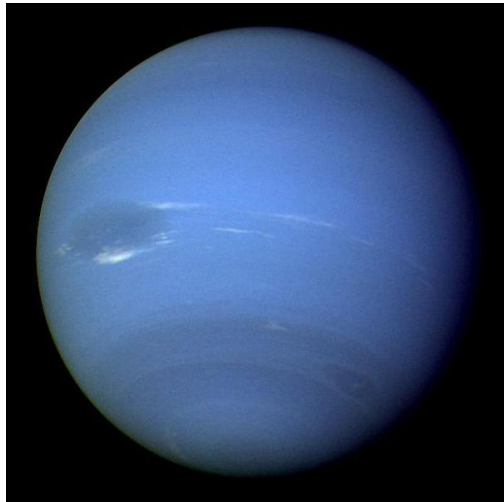
Many moons of Uranus have been named for characters in the works of William Shakespeare and Alexander Pope.

More Facts on Planet Uranus - Did you know?

Uranus is the farthest planet that can be seen without a telescope.

NEPTUNE

The Planet Neptune is the eighth planet from the sun. It is also known as the Blue Giant. Neptune is the fourth and outermost of the gas giant planets and also has rings. Its atmosphere is mostly hydrogen and helium. In Roman mythology Neptune was the god of the Sea.



Neptune has been visited by only one spacecraft, Voyager 2 on Aug 25 1989. It was the last stop in 1989 for the Voyager 2 spacecraft on its grand tour of the solar system.

Recent knowledge has been gained by ground-based telescopes and the Hubble Space Telescope.

Due to Pluto's eccentric orbit, Neptune at times becomes the most distant planet from the Sun for a few years.

Planet Neptune Facts:

Mass: 17.15 Earth-masses

Number of known satellites: 8

Length of Year: 164.8 Earth-years

Mean Distance from the Sun: 4,500 million kilometers

Mean Orbital Velocity: 5.4 kilometers per second

Length of Day: 16.11 hours, 0.67 Earth-day

Equatorial diameter: 49,500 kilometers

Atmospheric components: 74% hydrogen, 25% helium, 1% methane

Moons of Planet Neptune

Neptune has 8 known moons: Triton, Thalassa, Naiad, Despina, Galatea, Larissa, Proteus and Nereid

Triton has the coldest temperatures in the solar system. Voyager observed geysers.

PLUTO



Facts about Planet Pluto

- * Diameter: 2324 km (1444 miles).
- * Surface composition: Nitrogen, carbon monoxide, methane and water ices
- * Average surface temperature: -233°C (-382°F)
- * Mass: 0.002 (Earth = 1)
- * Gravity: 0.07 (Earth = 1)
- * Average distance from the Sun: 5.9 billion kilometres.
- * Rotation Period: 6.39 Earth days (length of day)
- * Orbital period around the sun: 248 Earth years (length of year)
- * Rings = 0
- * Moons = 1
- * Average distance between Pluto and Charon: 19,600 Kms

Pluto, formal designation **134340 Pluto**, is the second-largest known dwarf planet in the Solar System (after Eris) and the tenth-largest body observed directly orbiting the Sun. Classified as a planet from its 1930 discovery, in 2006 the International Astronomical Union (IAU) declared it a dwarf planet instead; Pluto is now considered the largest member of a distinct population called the Kuiper belt.^[note 9]

Like other members of the Kuiper belt, Pluto is composed primarily of rock and ice and is relatively small: approximately a fifth the mass of the Earth's Moon and a third its volume. It has an eccentric and highly inclined orbit that takes it from 30 to 49 AU (4.4–7.4 billion km) from the Sun. This causes Pluto to periodically come closer to the Sun than Neptune.

Pluto and its largest moon, Charon, are sometimes treated together as a binary system because the barycentre of their orbits does not lie within either body.^[6] The IAU has yet to formalise a definition for binary dwarf planets, and until it passes such a ruling, they classify Charon as a moon of Pluto.^[7] Pluto has two known smaller moons, Nix and Hydra, discovered in 2005.^[8]

From its discovery in 1930 until 2006, Pluto was considered the Solar System's ninth planet. In the late 1970s, following the discovery of minor planet 2060 Chiron in the outer Solar System and the recognition of Pluto's very low mass, its status as a major planet began to be questioned.^[9] Later, in the early 21st century, many objects similar to Pluto were discovered in the outer Solar System, notably the scattered disc object Eris, which is 27% more massive than Pluto.^[10] On August 24, 2006, the IAU defined the term "planet" for the first time. This definition excluded Pluto as a planet, and added it as a member of the new category "dwarf planet" along with Eris and Ceres.^[11] After the reclassification, Pluto was added to the list of minor planets and given the number 134340.^{[12][13]} A number of scientists continue to hold that Pluto should be classified as a planet.^[14]

Pluto was discovered in 1930 by Clyde W. Tombaugh. The planet is named Pluto after the God of the Underworld in Roman mythology. In Greek mythology the equivalent god is Hades.

The Orbit of Planet Pluto

Pluto's orbit from the Sun varies from 4.4 to 7.7 billion kms and for the most of its orbit it is the outer most planet. Between 1979 and 1999 Pluto was actually closer to the Sun than Neptune and the closest approach to the sun (perihelion) was in September 1989.

Due to the changes in orbit in time, Pluto has a unique atmosphere that transforms at various stages of its orbit. As its orbit approaches the Sun, its atmosphere begins to form. The frozen atmosphere melts as it comes closer. As Pluto moves further out its atmosphere will freeze.

Charon Moon

Charon was discovered in 1978. Its diameter is 1212 km (753 miles) which is more than half as wide in size as Pluto and the Pluto-Charon system is like a double planet. Charon orbits Pluto every 6.4 days and has a synchronous orbit (the pair show the same face to each other all the time). To an observer on the planet, Charon appears to be stationary in the sky like a geostationary satellite orbiting the Earth.

Spacecraft

NASA has for at least a decade been planning a fly-by of the solar systems most distant planet. The latest version, called New Horizons will be launched in 2006.

In the mid 1990's NASA began a development of the Pluto-Kuiper Express spacecraft. In mid-September, 2000, however, NASA issued a stop-work order on the project. NASA then began to talk of a plan which would have a probe arrive before 2020 and that would cost less than \$500 million (2002 dollars).

As a result Nasa started a competition and it chose a team called New Horizons to build a spacecraft that will study Pluto, Charon and several Kuiper Belt objects during a series of flybys. It will be launched in 2006 and will arrive in 2015.

What was Pluto-Kuiper Express?

NASA was developing a robotic reconnaissance mission to Pluto called Pluto-Kuiper Express. The Pluto mission would have used lightweight advanced-technology hardware components and advanced software technology. The Pluto mission plan called for launch when this technology was ready. It was scheduled for launch in 2004 and to arrive at Pluto in 2012.