Tierra:

Aphelion 152,100,000 km (94,500,000 mi)

Perihelion 147,095,000 km (91,401,000 mi)

Semi-major axis ,598,023 km (92,955,902 mi)

Eccentricity 0.0167086

Orbital period 365.256363004 d

Average orbital speed 29.78 km/s (18.50 mi/s) (107,200 km/h

Mean anomaly 358.617°

Inclination 7.155° to the Sun's equator

1.57869°to invariable plane

0.00005° to J2000 ecliptic

Longitude of ascending node -11.26064° to J2000 ecliptic

Argument of perihelion 114.20783°

Satellites One natural satellite

Earth in Greek: Gaia, or in Latin: Terra is the third planet from the Sun,

the densest planet in the Solar System, the largest of the Solar System's

four terrestrial planets, and the only astronomical object known to harbour life.

According to evidence from radiometric dating and other sources,

Earth was formed about 4.54 billion years ago. Earth gravitationally

interacts with other objects in space, especially the Sun and the Moon.

During one orbit around the Sun, Earth rotates about its own axis 366.26 times,

creating 365.26 solar days or one sidereal year. Earth's axis of rotation

is tilted 23.4° away from the perpendicular of its orbital plane, producing seasonal

variations on the planet's surface with a period of one tropical year (365.24 solar days).

The Moon is Earth's only permanent natural satellite. Its gravitational interaction

with Earth causes ocean tides, s ilizes the orientation of Earth's rotational axis,

and gradually slows Earth's rotational rate.

Deimos:

Orbital characteristics

Periapsis 23455.5 km

Apoapsis 23470.9 km

Semi-major axis

23463.2 km (6.92 Mars radii)

Eccentricity 0.00033

Orbital period 1.263 d (30.312 h)

Average orbital speed 1.3513 km/s

Inclination 0.93° (to Mars's equator)

1.791° (to the local Laplace plane)

27.58° (to the ecliptic)

Satellite of Mars

Physical characteristics

Dimensions 15 × 12.2 × 11 km

Mean radius 6.2 ± 0.18 km (0.97316 mEarths)

Surface area 495.1548 km2 (97.0755 µEarths)

Volume 999.78 km3 (92.2979 nEarths)

Mass 1.4762×1015 kg (0.247179 nEarths)

Mean density 1.471±0.166 g/cm3

Surface gravity 0.003 m/s2 (306 µg)

Escape velocity 5.556 m/s (20 km/h)

Rotation period Synchronous

Albedo 0.068 ± 0.007

Temperature ≈ 233 K

Deimos (systematic designation: Mars II) is the smaller and outer of the two natural satellites of the planet Mars, the other being Phobos.

Deimos has a mean radius of 6.2 km (3.9 mi) and takes 30.3 hours to orbit Mars.

The name Deimos is pronounced /ˈdaɪmɒs/ dy-mos, or sometimes /ˈdiːməs/ dee-məs or like the Greek Δείμος.

In Greek mythology, Deimos was the twin brother of Phobos and personified terror.

Deimos is 23,460 km (14,580 mi) from Mars, much further than Mars's other moon, Phobos.

Deimos, like Mars's other moon, Phobos, has spectra, albedos and densities similar to those of a C- or D-type asteroid.

Like most bodies of its size, Deimos is highly non-spherical with triaxial dimensions of 15 × 12.2 × 11 km, making it 0.56 times the size of Phobos.

Deimos is composed of rock rich in carbonaceous material, much like C-type asteroids and carbonaceous chondrite meteorites.

It is cratered, but the surface is noticeably smoother than that of Phobos, caused by the partial filling of craters with regolith.

The regolith is highly porous and has a radar-estimated density of only 1.471 g/cm3. The two largest craters, Swift and Voltaire, each measure about 3 km (1.9 mi) across.

It has an escape velocity of 5.6 m/s and apparent magnitude of 12.45.

Europa:

Orbital characteristics

Periapsis 664862 km

Apoapsis 676938 km

Mean orbit radius 670900 km

Eccentricity 0.009

Orbital period 3.551181 d

Average orbital speed 13.740 km/s

Inclination 0.470° (to Jupiter's equator) 1.791° (to the ecliptic)

Satellite of Jupiter

Physical characteristics

Mean radius 1560.8±0.5 km (0.245 Earths)

Surface area 3.09×107 km2 (0.061 Earths)

Volume 1.593×1010 km3 (0.015 Earths)

Mass (4.799844±0.000013)×1022 kg (0.008 Earths)

Mean density 3.013±0.005 g/cm3

Europa Listeni/jʊˈroʊpə/ (Jupiter II), is the sixth-closest moon of Jupiter, and the smallest of its four Galilean satellites, but still the sixth-largest moon in the Solar System.

Europa was discovered in 1610 by Galileo Galilei and was named after Europa, mother of King Minos of Crete, who became one of Zeus' lovers.

Progressively better observations of Europa have occurred over the centuries by Earth-bound telescopes, and by space probe flybys starting in the 1970s.

Slightly smaller than the Moon, Europa is primarily made of silicate rock and has a water-ice crust and probably an iron–nickel core.

It has a tenuous atmosphere composed primarily of oxygen. Its surface is striated by cracks and streaks, whereas craters are relatively rare.

It has the smoothest surface of any known solid object in the Solar System.

The apparent youth and smoothness of the surface have led to the hypothesis that a water ocean exists beneath it, which could conceivably serve as an abode for extraterrestrial life.

This hypothesis proposes that heat from tidal flexing causes the ocean to remain liquid and drives geological activity similar to plate tectonics.

On 8 September 2014, NASA reported finding evidence supporting earlier suggestions of plate tectonics in Europa's thick ice shell—the first sign of such geological activity on a world other than Earth.

On 12 May 2015, scientists announced that sea salt from a subsurface ocean may be coating some geological features on Europa, suggesting that the ocean is interacting with the seafloor.

This may be important in determining if Europa could be habi le for life.

Jupiter:

Aphelion 5.45492 AU (816.04 Gm)

Perihelion 4.95029 AU (740.55 Gm)

Semi-major axis 5.20260 AU (778.299 Gm)

Eccentricity 0.048498

Orbital period 11.8618 yr 4,332.59 d

Synodic period 398.88 d

Average orbital speed 13.07 km/s

Mean anomaly 20.020°

Inclination 1.303° to ecliptic

6.09° to Sun's equator

0.32° to invariable plane

Longitude of ascending node 100.464°

Argument of perihelion 273.867°

Known satellites 67 (as of 2014)

Jupiter is the fifth planet from the Sun and the largest in the Solar System.

It is a giant planet with a mass one-thousandth that of the Sun, but two and

a half times that of all the other planets in the Solar System combined.

Jupiter is a gas giant, along with Saturn. (Uranus and Neptune are ice giants.)

Jupiter was known to astronomers of ancient times. The Romans named it after their god Jupiter.

When viewed from Earth, Jupiter can reach an apparent magnitude of −2.94, bright enough

for its reflected light to cast shadows, and making it on average the third-brightest object in the night sky after the Moon and Venus.

Jupiter is primarily composed of hydrogen with a quarter of its mass being helium, though helium

comprises only about a tenth of the number of molecules. It may also have a rocky core of heavier elements,

but like the other giant planets, Jupiter lacks a well-defined solid surface. Because of its rapid rotation,

the planet's shape is that of an oblate spheroid (it has a slight but noticeable bulge around the equator).

The outer atmosphere is visibly segregated into several bands at different latitudes, resulting in turbulence and storms along their interacting boundaries.

A prominent result is the Great Red Spot, a giant storm that is known to have existed since at least the 17th century when it was first seen by telescope.

Surrounding Jupiter is a faint planetary ring system and a powerful magnetosphere.

Jupiter has at least 67 moons, including the four large Galilean moons discovered by Galileo Galilei in 1610.

Ganymede, the largest of these, has a diameter greater than that of the planet Mercury.

Mars:

Aphelion 1.6660 AU 249.2 Gm

Perihelion 1.3814 AU 206.7 Gm

Semi-major axis 1.523679 AU 227.9392 Gm

Eccentricity 0.0934

Orbital period 1.8808 Julian years

Synodic period 779.96 days 2.135 Julian years

Average orbital speed 24.077 km/s

Mean anomaly 19.373°

Longitude of ascending node 49.558°

Argument of perihelion 286.502°

Satellites 2

Mars is the fourth planet from the

Sun and the second smallest planet

in the Solar System, after Mercury.

Named after the Roman god of war,

it is often referred to as the "Red Planet"

because the iron oxide prevalent on

its surface gives it a reddish appearance

Mars is a terrestrial planet with a thin

atmosphere, having surface features reminiscent

both of the impact craters of the Moon and the valleys,

deserts, and polar ice caps of Earth.

The rotational period and seasonal cycles of Mars are likewise similar

to those of Earth, as is the tilt that produces the seasons.

Mars is the site of Olympus Mons, the largest volcano and second-highest

known mountain in the Solar System, and of Valles Marineris, one of the

largest canyons in the Solar System. The smooth Borealis basin in the northern

hemisphere covers 40% of the planet and may be a giant impact feature.

Mars has two moons, Phobos and Deimos, which are small and irregularly shaped.

These may be captured asteroids, similar to 5261 Eureka, a Mars trojan.

Mercury:

Aphelion 0.466 697 AU 69,816,900 km

Perihelion 0.307 499 AU 46,001,200 km

Semi-major axis 0.387 098 AU 57,909,050 km

Eccentricity 0.205 630

Orbital period 87.969 1 d 0.240 846 yr

Synodic period 115.88 d

Average orbital speed 47.362 km/s

Mean anomaly 174.796°

Inclination 7.005° to ecliptic 3.38° to Sun's equator

6.34°to invariable plane

Longitude of ascending node 48.331°

Argument of perihelion 29.124°

Satellites None

Mercury is one of four terrestrial planets in the Solar System,

and is a rocky body like Earth. It is the smallest planet in the

Solar System, with an equatorial radius of 2,439.7 kilometres (1,516.0 mi).

Mercury is also smaller-albeit more massive-than the largest natural

satellites in the Solar System, Ganymede and Titan. Mercury consists of

approximately 70% metallic and 30% silicate material. Mercury's density is the

second highest in the Solar System at 5.427 g/cm3, only slightly less than Earth's

density of 5.515 g/cm3. If the effect of gravitational compression were to be

factored out, the materials of which Mercury is made would be denser,

with an uncompressed density of 5.3 g/cm3 versus Earth's 4.4 g/cm3.

Mercury's density can be used to infer details of its inner structure.

Although Earth's high density results appreciably from gravitational compression,

particularly at the core, Mercury is much smaller and its inner regions are not as compressed.

Therefore, for it to have such a high density, its core must be large and rich in iron.

Moon:

Perigee 362600 km (356400–370400 km)

Apogee 405400 km (404000–406700 km)

Semi-major axis 384399 km (0.00257 AU)

Eccentricity 0.0549

Orbital period 27.321661 d

(27 d 7 h 43.19 min 11.5 s)

Synodic period 29.530589 d

(29 d 12 h 44 min 2.9 s)

Average orbital speed 1.022 km/s

Inclination 5.145° to the ecliptic

Longitude of ascending node

regressing by one revolution in 18.6 years

Argument of perigee

progressing by one revolution in 8.85 years

Satellite of Earth

The Moon (Greek: σελήνη, Selene; Latin: Luna) is Earth's only natural satellite.

It is one of the largest natural satellites in the Solar System, and, among planetary satellites, the largest relative to the size of the planet it orbits (its primary).

It is the second-densest satellite among those whose densities are known (after Jupiter's satellite Io).

The Moon is thought to have formed approximately 4.5 billion years ago, not long after Earth.

There are several hypotheses for its origin; the most widely accepted explanation is that the Moon formed from the debris left over after a giant impact between Earth and a Mars-sized body called Theia.

The Moon is in synchronous rotation with Earth, always showing the same face with its near side marked by dark volcanic maria that fill between the bright ancient crustal highlands and the prominent impact craters.

It is the second-brightest regularly visible celestial object in Earth's sky after the Sun, as measured by illuminance on Earth's surface.

Although it can appear a very bright white, its surface is actually dark, with a reflectance just slightly higher than that of worn asphalt.

Its prominence in the sky and its regular cycle of phases have, since ancient times, made the Moon an important cultural influence on language, calendars, art, and mythology.

Neptune:

Aphelion 30.33 AU (4,540 Gm)

Perihelion 29.81 AU (4,460 Gm)

Semi-major axis 30.110387 AU (4,504.45 Gm)

Eccentricity 0.009456

Orbital period 164.8 yr 60,182 d 89,666 Neptunian solar days

Synodic period 367.49 days

Average orbital speed 5.43 km/s

Mean anomaly 256.228°

Inclination 1.767975° to ecliptic

6.43° to Sun's equator

0.72° to invariable plane

Longitude of ascending node 131.784°

Argument of perihelion 276.336°

Known satellites 14

Neptune is the eighth and farthest known planet from the Sun.

It is the fourth-largest planet by diameter and the third-largest by mass.

Among the giant planets in the Solar System, Neptune is the most dense.

Neptune is 17 times the mass of Earth and is slightly more massive than its near-twin Uranus,

which is 15 times the mass of Earth and slightly larger than Neptune.

Neptune orbits the Sun at an average distance of 30.1 astronomical units (4.50×109 km).

Named after the Roman god of the sea, its astronomical symbol is ♆, a stylised version of the god Neptune's trident.

Neptune is not visible to the unaided eye and is the only planet in the Solar System found

thus far by mathematical prediction rather than by empirical observation. Unexpected changes

in the orbit of Uranus led Alexis Bouvard to deduce that its orbit was subject to gravitational

perturbation by an unknown planet. Neptune was subsequently observed with a telescope on 23 September 1846

by Johann Galle within a degree of the position predicted by Urbain Le Verrier. Its largest moon, Triton,

was discovered shortly thereafter, though none of the planet's remaining known 14 moons were located telescopically

until the 20th century. The planet's distance from Earth gives it a very small apparent size, making it challenging

to study with Earth-based telescopes. Neptune was visited by Voyager 2, when it flew by the planet on 25 August 1989.

Phobos:

Orbital characteristics

Periapsis 9234.42 km

Apoapsis 9517.58 km

Semi-major axis 9376 km (2.76 Mars radii)

Eccentricity 0.0151

Orbital period 0.318 d (7 h 39.2 min)

Average orbital speed 2.138 km/s

Inclination 1.093° (to Mars's equator)

Satellite of Mars

Dimensions 27 × 22 × 18 km

Mean radius 11.2667 km (1.76941 mEarths)

Surface area 1548.3 km2 (3.03545 µEarths)

Volume 5783.61 km3 (5.33933 nEarths)

Mass 1.0659×1016 kg (1.78477 nEarths)

Mean density 1.876 g/cm3

Surface gravity 0.0057 m/s2 (581.4 µ g)

Escape velocity 11.39 m/s (41 km/h)

Rotation period Synchronous

Equatorial rotation velocity 11.0 km/h (6.8 mph) (at longest axis)

Axial tilt 0°

Albedo 0.071

Temperature ≈ 233 K

Phobos (systematic designation: Mars I) is the larger and innermost of the two natural satellites of Mars, the other being Deimos.

Both moons were discovered in 1877 by American astronomer Asaph Hall.

Phobos is a small, irregularly shaped object with a mean radius of 11 km (7 mi), and is seven times more massive than Deimos, Mars's outer moon.

Phobos is named after the Greek god Phobos, a son of Ares (Mars) and Aphrodite (Venus) which was the personification of Horror.

The name "Phobos" is pronounced /ˈfoʊbəs/ foh-bəs or /ˈfoʊbɒs/ foh-bos,[3] or like the Greek Φόβος.

Phobos orbits 6,000 km (3,700 mi) from the Martian surface, closer to its primary than any other known planetary moon.

It is so close that it orbits Mars faster than Mars rotates, and completes an orbit in just 7 hours and 39 minutes.

As a result, from the surface of Mars it appears to rise in the west, move across the sky in 4 hours 15 min or less, and set in the east, twice each Martian day.

Phobos is one of the least reflective bodies in the Solar System, and features a large impact crater, Stickney.

The temperatures range from about −4 °C (25 °F) on the sunlit side to −112 °C (−170 °F) on the shadowed side.

Saturn.

Aphelion 10.086 AU (1,509 Gm)

Perihelion 9.024 AU (1,350 Gm)

Semi-major axis 9.554909 AU 1,429.39 Gm

Eccentricity 0.05555

Orbital period 29.4571 yr 24,491.07 Saturnian solar days

Synodic period 378.09 days

Average orbital speed 9.69 km/s

Mean anomaly 317.020°

Inclination 2.485240° to ecliptic 5.51° to Sun's equator

Longitude of ascending node 113.665°

Argument of perihelion 339.392°

Known satellites 62 with formal designations; innumerable additional moonlets.

Saturn is the sixth planet from the Sun and the second-largest in the Solar System, after Jupiter.

It is a gas giant with an average radius about nine times that of Earth.

Although only one-eighth the average density of Earth, with its larger volume Saturn is just over 95 times more massive.

Saturn is named after the Roman god of agriculture; its astronomical symbol (♄) represents the god's sickle.

Saturn's interior is probably composed of a core of iron–nickel and rock (silicon and oxygen compounds).

This core is surrounded by a deep layer of metallic hydrogen, an intermediate layer of liquid hydrogen and liquid helium,

and finally outside the Frenkel line a gaseous outer layer. Saturn has a pale yellow hue due to ammonia crystals

in its upper atmosphere. Electrical current within the metallic hydrogen layer is thought to give rise to Saturn's planetary

magnetic field, which is weaker than Earth's, but has a magnetic moment 580 times that of Earth due to Saturn's larger size.

Saturn's magnetic field strength is around one-twentieth of Jupiter's. The outer atmosphere is generally bland and lacking in contrast,

although long-lived features can appear. Wind speeds on Saturn can reach 1,800 km/h (500 m/s), higher than on Jupiter,

but not as high as those on Neptune.

Sun.

Equatorial radius 696,342±65 km

109 x Earth

Equatorial circumference 4.379x106 km

Surface area 6.09x1012 km2

12,000 x Earth

Volume 1.41x1018 km3

1,300,000 x Earth

Mass (1.98855±0.00025)x1030 kg

333,000 x Earth

Average density 1.408 g/cm3

0.255 x Earth

Center density (modeled) 162.2 g/cm3

12.4 x Earth

Equatorial surface gravity 274.0 m/s2

28 x Earth

Escape velocity (from the surface) 617.7 km/s

55 x Earth

Temperature Center 1.57x107 K

Photosphere (effective): 5,778 K

Corona: 5x106 K

Luminosity (Lsol) 3.846x1026 W

Age 4.6 billion years

The Sun (in Greek: Helios, in Latin: Sol[a])

is the star at the center of the Solar System

and is by far the most important source of energy for

life on Earth. It is a nearly perfect spherical ball of hot plasma,

with internal convective motion that generates a magnetic field

via a dynamo process. Its diameter is about 109 times that of Earth,

and it has a mass about 330,000 times that of Earth, accounting for

about 99.86% of the total mass of the Solar System. About three quarters

of the Sun's mass consists of hydrogen; the rest is mostly helium, with much

smaller quantities of heavier elements, including oxygen, carbon, neon and iron.

Uranus.

Aphelion 20.11 AU (3,008 Gm)

Perihelion 18.33 AU (2,742 Gm)

Semi-major axis 19.2184 AU (2,875.04 Gm)

Eccentricity 0.046381

Orbital period 84.0205 yr 42,718 Uranian solar days

Synodic period 369.66 days

Average orbital speed 6.80 km/s

Mean anomaly 142.238600°

Inclination 0.773° to ecliptic

6.48° to Sun's equator

Longitude of ascending node 74.006°

Argument of perihelion 96.998857°

Known satellites 27

Uranus is the seventh planet from the Sun. It has the third-largest planetary radius and fourth-largest planetary mass in the Solar System.

Uranus is similar in composition to Neptune, and both have different bulk chemical composition from that of the larger gas giants Jupiter and Saturn.

For this reason, scientists often classify Uranus and Neptune as "ice giants" to distinguish them from the gas giants.

Uranus's atmosphere, although similar to Jupiter's and Saturn's in its primary composition of hydrogen and helium, contains more "ices", such as water, ammonia, and methane, along with traces of other hydrocarbons.

It is the coldest planetary atmosphere in the Solar System, with a minimum temperature of 49 K (−224.2 °C), and has a complex, layered cloud structure, with water thought to make up the lowest clouds, and methane the uppermost layer of clouds.

The interior of Uranus is mainly composed of ices and rock.

Venus:

Aphelion 0.728213 AU 108,939,000 km

Perihelion 0.718440 AU 107,477,000 km

Semi-major axis 0.723332 AU 108,208,000 km

Eccentricity 0.006772

Orbital period 224.701 0.615198 yr 1.92 Venus solar day

Synodic period 583.92 days

Average orbital speed 35.02 km/s

Mean anomaly 50.115°

Longitude of ascending node 76.680°

Argument of perihelion 54.884°

Satellites None

Venus is the second planet from the Sun, orbiting it every 224.7 Earth days.

It has the longest rotation period (245 days) of any planet in the Solar System,

and, unusually, rotates in the opposite direction to most other planets.

It has no natural satellite. It is named after the Roman goddess of love and beauty.

After the Moon, it is the brightest natural object in the night sky, reaching an

apparent magnitude of −4.6, bright enough to cast shadows.Because Venus

is an inferior planet from Earth, it never appears to venture far from the Sun:

its elongation reaches a maximum of 47.8°.

Venus is a terrestrial planet and is sometimes called Earth's "sister planet"

because of their similar size, mass, proximity to the Sun and bulk composition.

It is radically different from Earth in other respects. It has the densest atmosphere

of the four terrestrial planets, consisting of more than 96% carbon dioxide.

The atmospheric pressure at the planet's surface is 92 times that of Earth.

With a mean surface temperature of 735 K (462 °C; 863 °F), Venus is by far the

hottest planet in the Solar System, even though Mercury is closer to the Sun.

Venus is shrouded by an opaque layer of highly reflective clouds of sulphuric acid,

preventing its surface from being seen from space in visible light. It may have had

oceans in the past,but these would have vaporised as the temperature rose

due to a runaway greenhouse effect. The water has most probably photo dissociated,

and, because of the lack of a planetary magnetic field, the free hydrogen has been swept

into interplanetary space by the solar wind. Venuses surface is a dry desert scape

interspersed with slab-like rocks and periodically resurfaced by volcanism.