

# Categories of Solar System Objects

In the astronomical community, there are six currently accepted categories for the objects below: star, planet, dwarf planet, moon/satellite, comet, and asteroid.

1. **Ceres, dwarf planet** – The largest member of the Asteroid Belt, Ceres is now classified as a dwarf planet.
2. **Charon, satellite of Pluto** – Charon is not currently classified as a dwarf planet, like Pluto.
3. **Earth, planet** –
4. **Eris, dwarf planet** – Eris was formerly known as 2003 UB313, also sometimes called the “tenth planet” and is now considered a dwarf planet.
5. **Eros, asteroid** – Eros is a member of the asteroid belt.
6. **Europa, satellite of Jupiter** – Europa is Jupiter’s 4th largest moon.
7. **Halley, comet** – The nucleus of a comet is like a dirty snowball.
8. **Hyakutake, comet** –
9. **Ida, asteroid** – Ida is one of the over 100,000 asteroids in the asteroid belt.
10. **Jupiter, planet** – Jupiter is the largest planet in the Solar System.
11. **Luna, satellite of Earth** –
12. **Mars, planet** –
13. **Mathilde, asteroid** –
14. **Neptune, planet** –
15. **Phobos, satellite of Mars** – This is one of Mars’ two small moons (the other is Deimos), which were probably asteroids that were trapped by Mars’ gravity.
16. **Pluto, dwarf planet** – Pluto, smaller than the Earth’s Moon and with a highly eccentric and tilted orbit, is classified as a dwarf planet. It is also one of the largest Kuiper Belt Objects (KBOs). The first data card for #16 shows Clyde Tombaugh’s image of Pluto, and the data from Kuiper’s paper in 1950. The new #16 card shows current data and image for Pluto.
17. **Saturn, planet** –
18. **Sol, star** –
19. **Tempel 1, comet** –
20. **Titan, satellite of Saturn** – Titan is Saturn’s largest moon. Its diameter is 3,200 miles, the size of the United States.
21. **Triton, satellite of Neptune** – Triton is covered in ice and may have a weak atmosphere.
22. **Venus, planet** –
23. **Vesta, asteroid** – Vesta has an interesting surface with clear light and dark regions, unlike most other asteroids, meaning that it is made up of many different elements.
24. **Wild 2, comet** –

# Categories of Solar System Objects

**Star** – A star is a giant ball of gas that gives off energy (light) due to thermonuclear reactions. Our Sun is the only star in the Solar System, but is one of about 200 billion stars in the Milky Way Galaxy.

**Planet** – According to the resolution passed by the International Astronomical Union (IAU) in 2006, a planet is a celestial body that

- is in orbit around the Sun,
- has sufficient mass for its self-gravity to overcome rigid body forces so that it assumes a hydrostatic equilibrium (nearly round) shape, and
- has cleared the neighborhood around its orbit.

**Dwarf Planet** - According to the resolution passed by the IAU in 2006, a "dwarf planet" is a celestial body that

- is in orbit around the Sun,
- has sufficient mass for its self-gravity to overcome rigid body forces so that it assumes a hydrostatic equilibrium (nearly round) shape,
- has not cleared the neighborhood around its orbit, and
- is not a satellite

**Moon / Satellite** – A satellite (moon) is an object that orbits around a planet or dwarf planet.

**Comet** – A comet is a small body that orbits the Sun, usually with a highly elliptical orbit, and that exhibits a coma (atmosphere) and tail when it approaches the Sun. Comets belong to a bigger category known as “Small Solar System Bodies,” a term introduced by the IAU in 2006.

**Asteroid** – An asteroid is a small body that orbits the Sun, usually within the Asteroid Belt, a region of the Solar System between the orbits of Mars and Jupiter. Asteroids also belong to the category “Small Solar System Bodies” (see “Comet” above) and have also been referred to as minor planets. All the asteroids put together would only have a diameter about half that of the Earth’s Moon.

*Modified from Original Activity “Sorting the Solar System” Astronomical Society of the Pacific*

*Developed by the Science Education Institute at RVC College, NJ*  
GEN Professional Development Institute – Orlando, FL – September 28-29, 2013