

Chapter Twenty-One: The Solar System

Lesson 4: Dwarf Planets and Other Objects

Ceres was discovered in 1801 and was called a planet until similar objects were discovered near it. Then it became an asteroid.

International Astronomical Union (IAU):

- Adopted the “dwarf planet” status to Pluto in 2006
 - Object that orbits the Sun, has enough mass and gravity to form a sphere, and has objects similar in mass orbiting near it or crossing its orbital path.
- Ceres:
 - Orbits the Sun in the asteroid belt
 - Might have a rocky core surrounded by a layer of water ice and a thin, dusty crust.
- Pluto:
 - 2/3 the size of the Moon.
 - Period of revolution is 248 years.
 - Has a rocky core surrounded by ice.
 - So cold that it is covered with frozen nitrogen (-230°C)
- Eris:
 - Largest of the dwarf planets and was discovered in 2003
 - Orbit lasts about 557 years



Asteroids:

- Pieces of rock and ice...orbit the Sun in the asteroid belt.
 - Between the orbits of Mars and Jupiter

- Largest asteroid is Pallas which is over 500 km in diameter (310.7 miles)
- Chunks of rock and ice that never clumped together like the rocks and ice that formed the inner planets.
 - Asteroids are left over material from the formation of the solar system.

Comets:

- Mixtures of rock, ice, and dust
- Orbit the Sun in long elliptical orbits
- The solid, inner part of a comet is the nucleus
 - As a comet gets closer to the Sun, it absorbs thermal energy and changes the ice in the comet to a gas.
 - This is the glow you see on the comet.
 - Coma: the comet's bright tail and glowing nucleus.
- Short period comets:
 - Take less than 200 Earth years to orbit
 - Come from the Kuiper belt
- Long period comets:
 - More than 200 Earth years to orbit
 - Come from the Oort cloud (10,000 AU from the Sun)
 - Take up to millions of years to orbit the Sun



Meteoroids:

- **Meteoroid:** a small, rocky particle that moves through space
- **Meteor:** a streak of light in Earth's atmosphere made by a glowing meteoroid
 - Most meteoroids burn up in the atmosphere
- **Meteorite:** a meteoroid that strikes a planet or a moon
- **Impact crater:** a round depression formed on the surface of a planet, moon, or other space object by the impact of a meteorite