

# Minor members of the solar system

[Science](#), [Astrology](#)



Asteroids are small rocky bodies that have been likened to "flying mountains." The largest, Ceres, is about 1000 kilometers in diameter, but most are only about 1 kilometer across. The smallest asteroids are assumed to be no larger than grains of sand. Most asteroids lie between the orbits of Mars and Jupiter. They have orbital periods of three to six years. Some asteroids have very eccentric orbits and travel very close to the sun, and a few larger ones regularly pass close to Earth and the moon.

Many of the most recent impact craters on the moon and Earth were probably caused by collisions with asteroids. Many asteroids have irregular shapes. Because of this, planetary geologists first speculated that they might be fragments of a broken planet that once orbited between Mars and Jupiter. Others have hypothesized that several larger bodies once coexisted in close proximity, and their collisions produced numerous smaller ones. The existence of several families of asteroids has been used to support this explanation. COMETS Comets are the shining wanderers of the solar system.

With their glowing tails that may stretch 100 million kilometers through space. Most comets reside in the outer fringes of the solar system, far beyond Pluto. For all their apparent size in the sky, comets are actually fairly small objects. When a comet begins its trip down past the Sun, it is probably a chunk of "dirty ice," a mixture of rock dust and ice a few kilometers across, much smaller than the typical observed asteroid. As it speeds towards the Sun, the heat from the Sun evaporates the ice, and the gases thus released blow dust particles outward from the solid body or nucleus.

Radiation from the Sun ionizes the released atoms, producing a tail that glows in the sky like a neon sign; the dust particles reflect sunlight and form another, smoother tail. But not all develop a tail that extends for millions of kilometers. The fact that the tail of a comet points away from the sun in a slightly curved manner led early astronomers to propose that the sun has a repulsive force that pushes the particles of the coma away, thus forming the tail. The tails seem white to the eye, but color photography reveals that the ionized gas tail is blue and the dust tail yellow.

The small nucleus, the only even near-permanent part of a comet, is surrounded by the coma or head of the comet, a large, hazy structure formed by the liberated gas and dust. Of the 100 billion comets that may exist, less than 1000 have been observed thus far as they make the long Journey down to the heat of the Sun. Halley's is one of the best-known and brightest comets others are the Oort cloud which are comets that appear to be distributed in all directions from the sun, forming a spherical shell around the solar system. METEOROIDS Often referred to as a " shooting star.

This streak of light occurs when a meteoroid enters the Earth's atmosphere. A meteoroid is a small solid particle that travels through space. Most meteoroids originate from any one of the following three sources: (1) Interplanetary debris that was not gravitationally swept up by the planets during the formation of the solar system (2) Material from the asteroid belt, (3) The solid remains of comets that once traveled near Earth's orbit. A few meteoroids are believed to be fragments of the moon, or possibly Mars, that were ejected when an asteroid impacted these bodies.

Some meteoroids are as large as asteroids. Most, however, are the size of sand grains. Consequently, they vaporize before reaching Earth's surface. Those that do enter Earth's atmosphere and burn up are called meteors. The light that we see is caused by friction between the particle and the air, which produces heat. Occasionally, meteor sightings can reach 60 or more per hour. These displays, called meteor showers, result when earth encounters a swarm of meteoroids traveling in the same direction and at nearly the same speed as Earth. A meteoroid that actually reaches Earth's surface is called a meteorite.