

# Our Solar System

**A** solar system is a star that has planets, asteroids and comets revolving about it. In 1987, astronomers discovered the first planets orbiting other stars, and many more since. One estimate is that half of the stars have solar systems. At this time, astronomers do not have the instrumentation to detect planets as small as Earth.

## What type of star is our Sun?

Our Sun is a very average star, in size and color.

## How old is our solar system?

The Sun, Earth and all the other planets formed about 4.5 billion years ago.

## How did our solar system form?

Inside a huge gas cloud called a nebula, like the one pictured below. The Sun and planets condensed out of a dense disk of hydrogen gas and other elements inside a nebula.

## How big is our solar system?

Its diameter to Pluto is over 7 billion miles or 11 light hours. The outer reaches of our solar system, where the most distant comets reside, stretches half-way to our nearest solar neighbor, the star Proxima Centauri, which is 4.2 light years away.

## How long will our Sun last?

A star like our Sun will shine for 10 to 12 billion years. Near the end of its life, it will shed its outer atmosphere in one final heave. Outwardly, this will produce a planetary nebula as pictured on the previous page. The remaining core will shrink to become a white dwarf, a star about the size of Earth.

## What are the major differences between the planets?

Mercury, Venus, Earth and Mars are known as the Terrestrial planets because they are Earth-like and have surfaces that you can stand on. Jupiter, Saturn, Uranus and Neptune are known as the Gas giants, because they are much larger and are composed mostly of hydrogen gas. They do not have surfaces that you can stand on. Pluto is believed to be composed of ices and rocks.

## Where and what is the asteroid belt?

It lies between Mars and Jupiter and consists of about a billion giant rocks rich in metal ores.

## Where are all the comets?

There are three belts of comets. The innermost has orbits inside Jupiter's. The next group has orbits that extend past Pluto while the majority reside in a giant cloud surrounding the solar system.

Prominences, like this, are huge eruptions from the surface of the Sun.

## A size comparison of the Sun and planets

Mercury



Venus



Earth



Mars



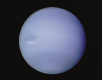
Jupiter



Saturn



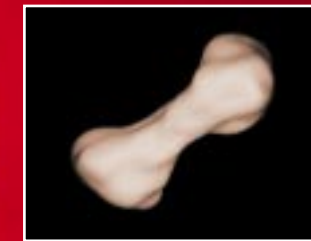
Uranus



Neptune

Pluto

## Asteroid Belt



The Asteroid Belt lies between Mars and Jupiter. Ceres, the largest asteroid is 568 miles in diameter. Asteroids are leftover material from the formation of the solar system. They are irregular in shape. Kleopatra above looks like a dog bone.

## Comets



Comet Hale-Bopp was one of the largest comets of the twentieth century. Comets are composed of ices and sand particles. Their long orbits occasionally bring them close to the Sun.



Solar systems form within giant hydrogen clouds called nebulae, like the Eagle nebula pictured here. This nebula is so large that many solar systems are forming inside.

## Solar System Comparison

	Diameter in Miles	Rotation	# Moons	Distance from Sun		Revolution
				Miles	Light Time	
SUN	865,000	30 days	-	-	-	-
MERCURY	3,032	59 days	0	36 million	3.2 minutes	88 days
VENUS	7,521	243 days	0	67 million	6 minutes	225 days
EARTH	7,926	24 hours	1	93 million	8.3 minutes	365 days
MARS	4,222	24.6 hours	2	142 million	13 minutes	687 days
JUPITER	88,844	9.8 hours	17	484 million	43 minutes	11.8 years
SATURN	74,900	10.2 hours	18	887 million	80 minutes	29 years
URANUS	31,764	17.9 hours	21	1.8 billion	2.7 hours	84 years
NEPTUNE	30,777	19.2 hours	8	2.8 billion	4.2 hours	164 years
PLUTO	1,429	6.4 days	1	3.7 billion	5.5 hours	248 years