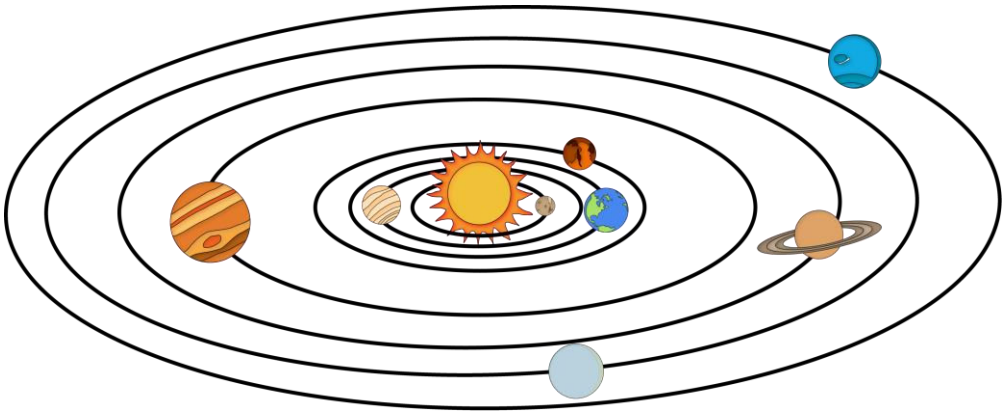
Astronomy & Space Science Textbook

Section 3: Solar System



Early Greeks thought planets, the sun, moon, and stars all rotated around the Earth. This is called the **geocentric or earth centered model**. However, Nicholas Copernicus and Galileo Galilei observed that the moon revolved around the Earth and that Earth and the other planets revolved around the sun. This is called the **heliocentric or sun-centered model**.

Astronomers believe the solar system began 4.6 billion years ago in a cloud of gas and dust. Shockwaves from a possible supernova, or exploding star, caused clouds to compress, which resulted in a flat, spinning disc of heated material. Heated material from the cloud triggered nuclear fusion, which formed the sun. Material that was not used to create the sun began to cluster together to form asteroids, comets, planets, and more. Eventually only rocky materials could survive close to the sun, so objects that were gaseous and icy successfully clustered further away, forming the solar system we live in today.

Planets, dwarf planets, asteroids, comets, and meteoroids are all objects that orbit the sun. A **planet** orbits the sun, has a nearly spherical shape, and has a much larger mass than the total mass of all other objects in nearby orbits. A **dwarf planet** is a spherical shaped object that orbits the sun but does not have more mass than the objects in nearby orbits. An **asteroid** is composed of millions of small and rocky objects that orbit the sun in an asteroid belt. They range in size from less than a meter to several hundred km. A **comet** is made of gas, dust, and ice, and it moves around the sun in an oval-shaped orbit. A **meteoroid** is made up of debris left by colliding asteroids or dispersing comets.

Review:

1. Compare the geocentric model to the heliocentric model.
2. What is the difference between an asteroid and a meteoroid?
3. What is a comet made up of?