

**Objectives**

*After reading this lesson, you should be able to*

- ▶ describe asteroids and comets.
- ▶ identify the position of the asteroid belt.
- ▶ explain the difference between meteors and meteorites.

**Asteroid**

*A rocky object smaller than a planet that orbits a star.*

**Asteroid belt**

*The region between Mars and Jupiter where most asteroids orbit the sun.*

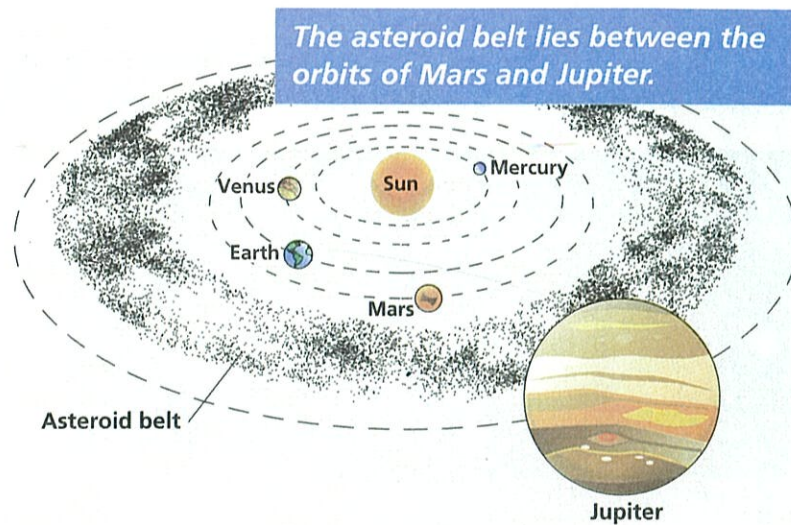
**Meteor**

*An asteroid that enters Earth's atmosphere.*

**Asteroids**

Our solar system has other objects besides the sun and the planets. Some of these objects are **asteroids**. An asteroid is a rocky object smaller than a planet that has its own orbit around the sun. Most asteroids are smaller than one kilometer in diameter, but a few are 1,000 kilometers across.

As the diagram shows, a large number of asteroids lie between the orbits of Mars and Jupiter. This area is known as the **asteroid belt**. As many as a million asteroids make up this belt, orbiting the sun. The belt may have formed as Jupiter's gravity pulled matter toward this region of space.



Not all of these asteroids stay in their orbits. Sometimes they are pulled out of orbit by the gravity of other planets. Asteroids may also be pulled in toward the sun.

A few asteroids come close to Earth and, at times, are captured by Earth's gravity. If an asteroid enters Earth's atmosphere, it heats up and becomes a ball of glowing gases. It is then called a **meteor**. You probably know meteors as "shooting stars" or "falling stars."





*A meteor crater in Arizona is more than a kilometer across.*

If a meteor is big enough and does not completely burn up, it may hit Earth. A meteor that strikes Earth is called a meteorite. Large meteorites can leave craters. About 50,000 years ago, a meteorite created Meteor Crater in Arizona, shown in the photograph.

### **Comet**

*A ball of ice, rock, frozen gases, and dust that orbits the sun.*

## **Comets**

Other objects of the solar system include **comets**. Most of these objects follow large

orbits. Most comets are not on the same orbital plane as the planets. A comet's orbit may take it far beyond the orbit of Pluto.

Scientists have found that comets are made of ice, rock, frozen gases, and dust. When a comet approaches the sun, it begins to warm up. Some of the ice turns to gases, and dust is also released. The gases and the dust reflect

sunlight, making the comet visible. A stream of particles from the sun, called the solar wind, pushes the gas and dust away from the head of the comet. This gas and dust form a tail that points away from the sun.

*Comet Hyakutake made headlines when it appeared in 1996.*



## **Self-Check**

1. What is an asteroid?
2. Where is the asteroid belt located?
3. What is a meteor?
4. When does a meteor become a meteorite?
5. What are comets made of?