6. Asteroid Belt
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Location: Between Mars and Jupiter

Contains:

Millions of asteroids

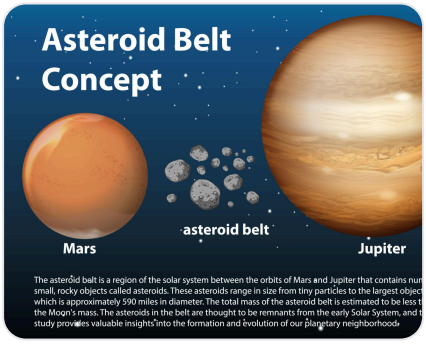
Dwarf planet Ceres

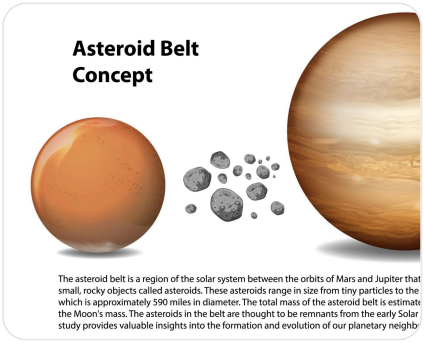
Composition:

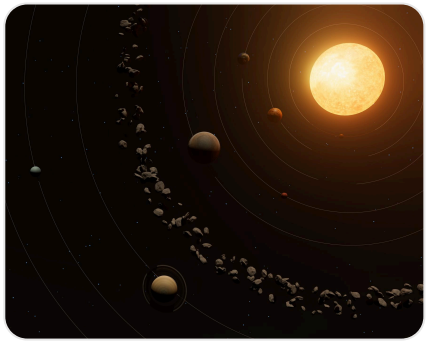
Rock

Metal full info on this

Asteroid Belt — Complete Information







1. Location

The **Asteroid Belt** is a region of space located between the orbits of **Mars** and **Jupiter**, about:

- **329 million km to 478 million km from the Sun**
- It separates the **inner rocky planets** (Mercury, Venus, Earth, Mars) from the **outer gas giants** (Jupiter, Saturn, Uranus, Neptune)

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2. What it contains

The Asteroid Belt contains:

A. Millions of Asteroids

- Over **1 million asteroids larger than 1 km**
- Billions of smaller rocks and dust particles
- Sizes range from tiny dust grains to objects hundreds of kilometers wide

Examples of major asteroids:

- Vesta
- Pallas
- Hygiea

B. Dwarf Planet Ceres

- **Ceres** is the largest object in the asteroid belt
- Diameter: about **940 km**
- Classified as a **dwarf planet**
- Contains **water ice**
- Discovered in **1801**

Ceres makes up about **one-third of the asteroid belt's total mass**

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3. Composition

Asteroids are made mainly of:

A. Rock (Silicate rock)

- Similar to Earth's crust rocks
- Contains silicon and oxygen

B. Metals

- Mainly **iron and nickel**
- Some asteroids are almost pure metal

C. Carbon compounds

- Some asteroids contain carbon and organic materials
- These are called **carbonaceous asteroids**

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4. Types of asteroids

Scientists classify asteroids into 3 main types:

1. **C-type (Carbonaceous)**
    - Most common (~75%)

- Dark in color
- Rich in carbon

2. **S-type (Silicaceous)**
   - Made of rock and metal
   - Brighter
3. **M-type (Metallic)**
   - Made mostly of iron and nickel
   - Very dense

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5. Formation of the Asteroid Belt

The asteroid belt formed about **4.6 billion years ago** when the Solar System formed.

Important reason:

- Jupiter's strong gravity prevented these rocks from joining to form a planet
- Instead, they stayed as separate objects

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6. Size and mass

- Total mass = about **4% of the Moon's mass**
- Even though it has millions of asteroids, the belt is mostly **empty space**
- Spacecraft can pass through safely

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7. Orbital motion

- Asteroids orbit the Sun just like planets
- Orbital period ranges from **3 to 6 Earth years**
- They move at speeds of about **17–25 km per second**

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8. Importance of the Asteroid Belt

The asteroid belt helps scientists:

- Understand Solar System formation

Asteroids may have helped bring **water to Earth**

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9. Fun facts

- The asteroid belt is not crowded like in movies
- The distance between asteroids is very large
- NASA spacecraft like **Dawn** visited Ceres and Vesta
- Some asteroids have moons

Short summary (exam-ready)

- Located between Mars and Jupiter
- Contains millions of asteroids and dwarf planet Ceres
- Made of rock, metal, and carbon materials
- Formed 4.6 billion years ago
- Jupiter's gravity prevented planet formation
- Helps scientists study Solar System history

If you want, I can also make **short notes, MCQs, or diagrams for exam revision**.