

# WEL-COME



## CHAPTER 1 – SKY VISION

CLASS – 8<sup>TH</sup>

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# CONTENT'S

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1. **STAR**
2. **CONSTELLATION**
3. **PLANETS**
4. **SATELLITE**
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## Stars, Distance

- The **Sun** is about **15 crore km** ( $1.5 \times 10^8$  km) away from Earth (**8.3 light-minutes** away).
- The nearest star after the Sun is **Alpha Centauri (~4.3 light-years)** away.
- The **brightest star** is **Sirius (~8.7 light-years)** away.

## Milky Way & Galaxies

- A dense band of stars seen across the sky is the **Milky Way**.
- Our **solar system** lies within the Milky Way galaxy, one of the lakhs of galaxies in the universe.

## Pole Star (Dhruvtara)

- Stars seem to move east to west due to Earth's rotation (west to east).
- The **Pole Star** is almost stationary in the north; useful for directions.

## Constellations

- A **constellation** is a fixed pattern of stars that forms a recognizable shape.
- **Examples:**
  - **Big Saptarishi (Ursa Major):** Looks like a saucepan or Big Dipper.
  - **Small Saptarishi (Ursa Minor):** Contains the Pole Star at the top of its handle.
  - **Orion (Kalpurush):** Hunter-shaped constellation with bright stars.

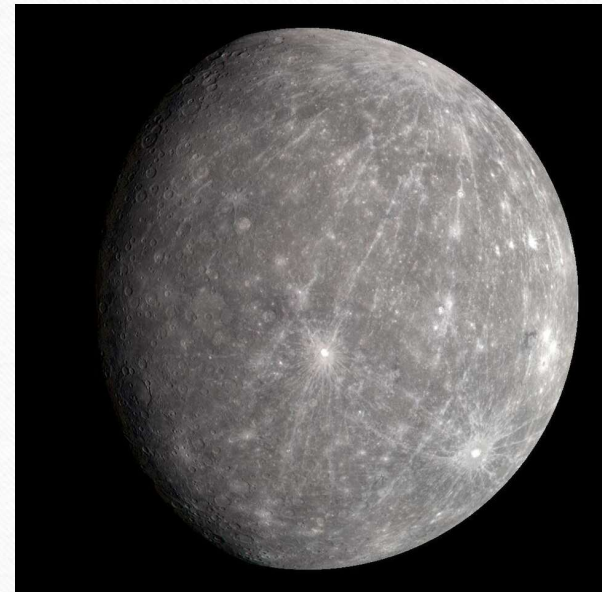


## PLANETS

- **Planets** are heavenly bodies that revolve around the Sun.
- Unlike stars, planets do **not emit light**, but **reflect the sunlight** that falls on them.
- Ancient astronomers could see **Mercury, Venus, Earth, Mars, Jupiter, and Saturn** with the naked eye.
- **Uranus, Neptune, and Pluto** were discovered after the invention of the telescope.
- Earlier it was believed that the Sun had **9 planets**.
- After some controversies, **Pluto is no longer considered a planet**, so we now have **8 planets**.
- **Satellites** are heavenly bodies that revolve around other bodies.
- The **Moon is Earth's natural satellite**.
- **Jupiter and Saturn** have **many satellites**.

## Mercury

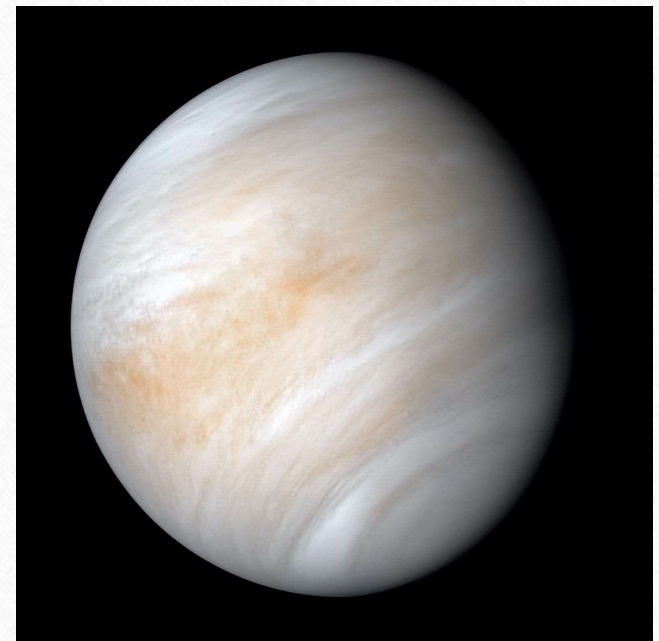
- **Nearest planet to the Sun.**
- Rarely visible due to bright sunlight.
- **Hottest planet** as it is closest to the Sun.
- Similar to the **Moon** in diameter and mass.
- Rocky and mountainous surface, with **no atmosphere**.
- Has **no natural satellites**.





## Venus

- **Second planet** from the Sun.
- **Brightest** heavenly body seen in the sky.
- Thick clouds in its atmosphere reflect most sunlight ( $\sim 3/4$  of it).
- Known as the “**Morning Star**” or “**Evening Star**” because it is seen just before sunrise or after sunset.
- Diameter is almost the same as Earth, but its **volume is about 4/5** of Earth’s volume.
- Venus has **no satellites**.



## Earth

- **Third planet** from the Sun.
- The **only planet** known to support life.
- Revolves around the Sun in **365.26 days**.
- Rotates on its axis in **24 hours**, causing **day and night**.
- The axis is **tilted**, which causes **seasonal changes**.
- Earth has **one natural satellite** – the **Moon**.
- The Moon also orbits the Sun along with Earth and reflects **sunlight**, so we see only the part facing us.





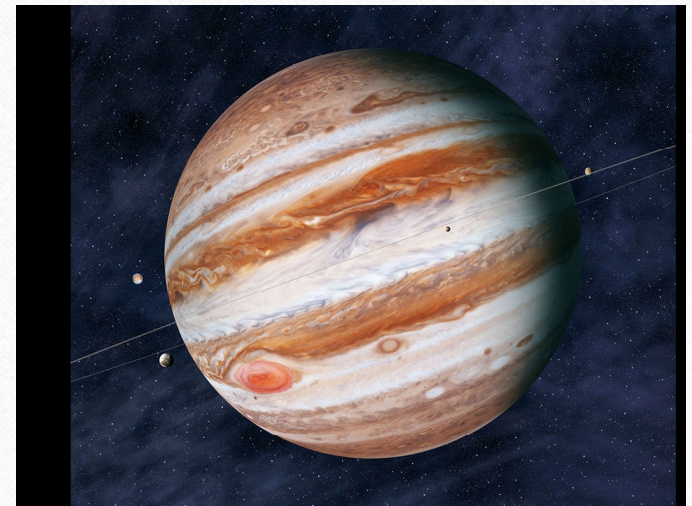
## Mars

- **Fourth planet** from the Sun.
- Appears **red in color**, so it's called the "**Red Planet.**"
- Visible from Earth almost **every day of the year**.
- Radius is **a bit more than half of Earth's**; volume is **1/9 of Earth's volume**.
- No strong evidence of **water or life** yet, but research is ongoing.
- Mars has **2 natural satellites**.



## Jupiter

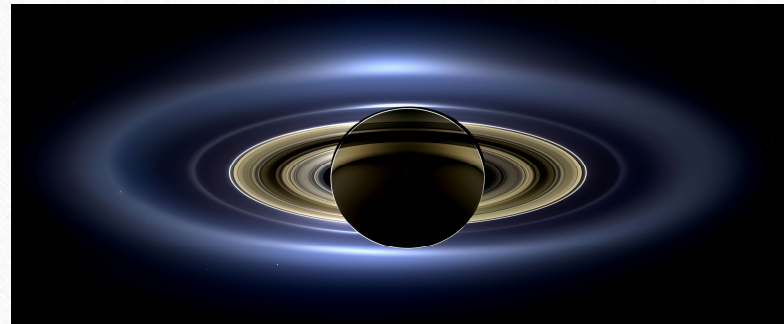
- **Biggest planet** in the solar system.
- Its volume is greater than the **combined volume of all other planets**.
- Distance from the Sun is more than the sum of the first four planets' distances.
- Receives **less light and energy** than Earth and Mars.
- Still appears very bright due to its **dense, reflective atmosphere**.
- Has **28 known natural satellites**.





## Saturn

- **Sixth planet** from the Sun.
- Distance from the Sun is **about twice** that of Jupiter.
- Similar to Jupiter in **volume and nature**, but **colder**.
- Famous for its **three bright rings**, which make it the most beautiful planet.
- Rings are visible through a **telescope**.
- Saturn has **30 known satellites**.



## Uranus

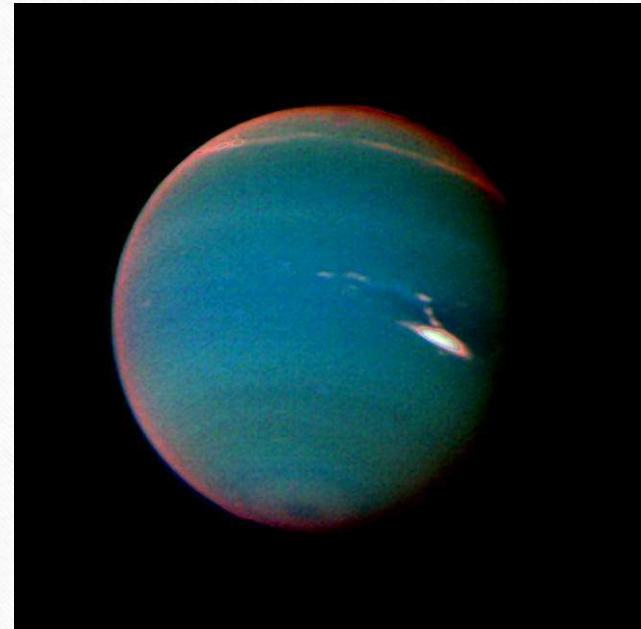
- **First planet discovered using a telescope.**
- Distance from the Sun is **about twice** that of Saturn's distance.
- It has **21 known satellites**.





## Neptune

- **Eighth planet** from the Sun.
- It has **8 satellites**.
- Being farthest from the Sun, it is the **coldest planet**.



## Pluto

- Farthest object in the solar system — about **39.5 times Earth's distance from the Sun**.
- **Smallest** of all traditional planets; sunlight reaches it in **32 hours**.
- Previously considered a planet, but **reclassified** on **24 August 2006** by the International Astronomical Union (IAU).

### Definition of a planet (IAU criteria):

- Revolves around the Sun.
- Massive enough to be nearly spherical.
- Has a clear orbit without other objects in its path.

### Why Pluto is not a planet?

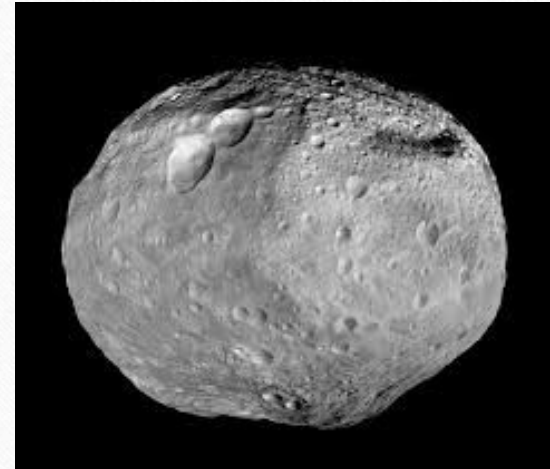
- Too **small** and not perfectly spherical.
- Moves in an **elliptical orbit** that crosses Neptune's orbit.
- Its orbit is tilted at **17°**, not aligned like other planets.
- Hence, it's called a **“pseudo-planet”** or **“dwarf planet.”**





## Asteroids

- **Small bodies** revolving around the Sun.
- Mostly found in the **belt between Mars and Jupiter**.
- Considered as **leftover matter** that could not form into a planet.
- Irregular in shape and size.



## Comets

- **Small heavenly bodies** that revolve around the Sun.
- Visible only when they come **close to the Sun**.
- Have a **bright head** and a **long tail** which always points **away from the Sun**.
- Appear after a **fixed interval of time**.
- Example: **Halley's Comet** appears every **76 years** (last seen in **1986**).





## Meteors and Meteorites

- **Meteors** are small heavenly bodies that revolve around the Sun.
- Known as “**shooting stars**” or “**falling stars.**”
- When meteors enter Earth’s atmosphere at high speed, they **burn up** due to friction and produce a **bright streak** in the sky.
- If part of a meteor **does not burn up** completely and reaches the Earth’s surface, it is called a **meteorite**.

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