

GRADE 6 SCIENCE

CHAPTER 12 – BEYOND EARTH

1. The Universe and the Night Sky

The universe is a vast expanse containing everything that exists—stars, planets, galaxies, and even time. When we look up, we see **Celestial Bodies**, which include the Sun, Moon, and all those twinkling points of light.

- **Astronomy:** The branch of science that studies celestial objects and the universe as a whole.
- **Astronomers:** Scientists who study the universe (e.g., Aryabhata, Galileo).

2. Stars and Constellations

Stars are massive balls of hot gases that emit their own heat and light.

- **The Sun:** Our nearest star. It looks large because it is much closer to Earth than other stars.
 - **Constellations:** Groups of stars that form recognizable patterns in the sky.
 - **Ursa Major (Great Bear):** One of the most famous constellations.
 - **Saptarishi:** A group of seven stars that is part of Ursa Major.
 - **Pole Star (North Star):** A star that remains fixed in the north direction. People used it for navigation in ancient times.
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3. The Solar System

The Solar System consists of the Sun, eight planets, their moons, and other smaller bodies like asteroids and comets.

The Sun

- The center of the solar system.
- Provides the **gravitational pull** that keeps all planets in orbit.
- The ultimate source of heat and light for life on Earth.

The Eight Planets

Planets do not have their own light; they reflect the light of the Sun. They move around the Sun in fixed paths called **orbits**.

Category	Planets	Characteristics
Inner Planets	Mercury, Venus, Earth, Mars	Rocky, smaller, closer to the Sun.
Outer Planets	Jupiter, Saturn, Uranus, Neptune	Large, made of gases/liquids, have many moons and rings.

Note: **Venus** is known as "Earth's Twin" because of its similar size and shape. **Jupiter** is the largest planet.

4. Earth: The Unique Planet

Earth is the **third planet** from the Sun and the only one known to support life.

- **Conditions for Life:** Presence of water, a breathable atmosphere (Oxygen), and the right temperature.
 - **Blue Planet:** From space, Earth appears blue because two-thirds of its surface is covered by water.
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5. Natural and Artificial Satellites

A satellite is a celestial body that moves around a planet.

- **The Moon:** Earth's only natural satellite. It takes about **27 days** to orbit Earth and the same time to spin on its axis. This is why we always see the same side of the Moon.
 - **Artificial Satellites:** Man-made objects sent into space for communication, weather monitoring, and research.
 - *Examples:* INSAT, IRS, EDUSAT.
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6. Other Celestial Bodies

1. **Asteroids:** Tiny rocky bodies that orbit the Sun, mostly found between the orbits of **Mars and Jupiter** (the Asteroid Belt).

2. **Meteoroids:** Small pieces of rock or dust moving in space.
 - **Meteors:** Often called "shooting stars"; they burn up upon entering Earth's atmosphere.
3. **Galaxies:** A huge system of billions of stars, dust, and gases. Our galaxy is the **Milky Way (Akash Ganga)**.