

Motions of the Earth

Class 6 Social Science

Complete Study Notes

Learning Objectives

Students will understand the two major motions of the Earth—rotation and revolution. They will learn how these movements cause day and night, seasons, leap years, solstices, and equinoxes. The chapter also explains the Earth's axis, orbit, and the importance of these motions in supporting life on Earth.

Introduction to the Motions of the Earth

The Earth is constantly moving in space. It performs two important motions known as rotation and revolution. These movements are responsible for many natural phenomena such as day and night, seasonal changes, and the calculation of years.

Understanding these motions helps explain how the Earth functions as part of the Solar System and why different regions experience different climatic conditions throughout the year.

Rotation of the Earth

Rotation is the movement of the Earth on its own axis from west to east. The Earth completes one rotation in about 24 hours, producing one complete day and night cycle.

Because the Earth is spherical, only one half receives sunlight at any given time. The side facing the Sun experiences daytime, while the opposite side experiences nighttime. Without rotation, one side of the Earth would remain extremely hot under continuous sunlight, while the other side would remain in permanent darkness and freezing temperatures, making life impossible.

Circle of Illumination: The imaginary line separating the illuminated half from the dark half is called the Circle of Illumination.

Revolution of the Earth

Revolution is the movement of the Earth around the Sun in an elliptical or elliptical orbit. The Earth takes approximately 365¼ days to complete one revolution, which is considered one year.

Since every year includes an extra quarter of a day, an additional day is added every four years to keep the calendar accurate. This creates a Leap Year, which has 366 days, with 29 days in February.

Seasons, Solstices, and Equinoxes

The Earth's axis is tilted, causing different parts of the Earth to receive varying amounts of sunlight throughout the year. This results in the changing of seasons.

- **Summer Solstice:** Occurs around 21 June, when the Northern Hemisphere receives the maximum sunlight and experiences the longest day.
- **Winter Solstice:** Occurs around 22 December, when the Southern Hemisphere receives more direct sunlight while the Northern Hemisphere experiences the shortest day.
- **Equinoxes:** Occur around 21 March and 23 September, when the Sun's rays fall directly on the Equator, resulting in nearly equal day and night across the Earth.

Importance of Earth's Motions

The Earth's movements regulate climate, weather patterns, agriculture, and the daily life of all living organisms. They help determine seasons, influence farming activities, and make life possible by distributing sunlight across different parts of the planet. Studying the Earth's motions helps students understand important geographical processes and their impact on our environment.

Practice Questions

1. What is rotation?
2. What is revolution?
3. Why does a leap year have 366 days?
4. What is the Circle of Illumination?
5. What causes the change of seasons?

Answer Key

- **ANSWER 1:** Rotation is the movement of the Earth on its own axis from west to east. It takes about 24 hours and causes day and night.
- **ANSWER 2:** Revolution is the movement of the Earth around the Sun in an elliptical orbit. It takes approximately $365\frac{1}{4}$ days to complete one revolution.
- **ANSWER 3:** A leap year has 366 days because the extra one-quarter day each year adds up to one full day every four years, which is added to February.
- **ANSWER 4:** The Circle of Illumination is the imaginary line that separates the illuminated half of the Earth from the dark half, dividing day and night.
- **ANSWER 5:** The change of seasons is caused by the Earth's revolution around the Sun and the tilt of its axis.