SS1 Geography

Week 3: Earth's Revolution (Detailed)

Lesson Objectives

By the end of this lesson, students should be able to:

- Define what Earth's revolution means.
- Describe the path and duration of Earth's revolution around the Sun.
- Explain the effects of Earth's revolution on seasons, the length of the year, day/night variations, equinoxes, and solstices.

---

1. What is Earth's Revolution?

- Earth's revolution is the movement of the Earth as it travels around the Sun.
- This movement follows an **elliptical (oval-shaped) orbit**, not a perfect circle.
- The Earth completes one full revolution in approximately **365 days and 6 hours** (365¼ days). This period is called a **solar year**.
- Because of the extra 6 hours each year, every **four years**, an additional day is added to the calendar — called a **leap year** (February 29).

---

2. Effects of Earth's Revolution

a) Seasons of the Year

- The Earth's axis is tilted at about **23.5 degrees** relative to its orbit. This tilt, combined with revolution, causes different parts of Earth to receive varying amounts of sunlight throughout the year, leading to seasons.
- When the Northern Hemisphere tilts towards the Sun, it experiences **summer**, while the Southern Hemisphere experiences **winter**, and vice versa.
- There are **four seasons** in most regions:
    - **Spring**
    - **Summer**

- **Autumn (Fall)**
- **Winter**

Example:
In Nigeria (near the equator), seasons are less marked compared to places like Europe or North America. They mainly experience wet and dry seasons due to their location.

---

b) Year Length and Leap Year

- One revolution defines a year. Since it takes 365¼ days, the extra quarter day accumulates to an extra day every four years.
- This is why the calendar adds February 29 in a leap year to keep time accurate.

---

c) Variation in Day and Night Length

- During revolution, the tilt causes days to be longer in one hemisphere and shorter in the other, depending on the time of the year.
- Near the equator, day and night lengths stay almost equal all year round.
- At the poles, the Sun can stay above or below the horizon for months, causing phenomena such as the **Midnight Sun** (continuous daylight) or **Polar Night** (continuous darkness).

---

d) Equinoxes

- Occur twice a year when the Sun is directly over the equator.
- During equinoxes, day and night are approximately equal in length everywhere on Earth.
- Dates: **March 21 (vernal equinox)** and **September 23 (autumnal equinox)**.

---

e) Solstices

- Occur twice a year when the Sun reaches its highest or lowest point relative to the equator.
- They mark the longest and shortest days of the year.

- Dates:
    - **June 21** – Summer solstice (longest day in the Northern Hemisphere)
    - **December 22** – Winter solstice (shortest day in the Northern Hemisphere)

---

3. Illustrations and Examples

- **Diagram of Earth's orbit** showing positions during equinoxes and solstices.
- **Chart showing seasonal changes** in day length at various latitudes.
- **Examples of how seasons affect farming**: planting and harvesting depend on season length and weather conditions.

---

4. Summary Table

Effect	**Explanation**	**Example**
Seasons	Caused by tilt and revolution; sunlight varies	Summer in June in Nigeria
Leap Year	Extra ¼ day accumulates every 4 years	Feb 29 added every 4 years
Day/Night Variation	Days longer in summer, shorter in winter	16-hour days in Norway summer
Equinox	Day = Night; Sun over equator	March 21 and Sept 23
Solstice	Longest/shortest days; Sun over Tropics of Cancer/Capricorn	June 21 and Dec 22