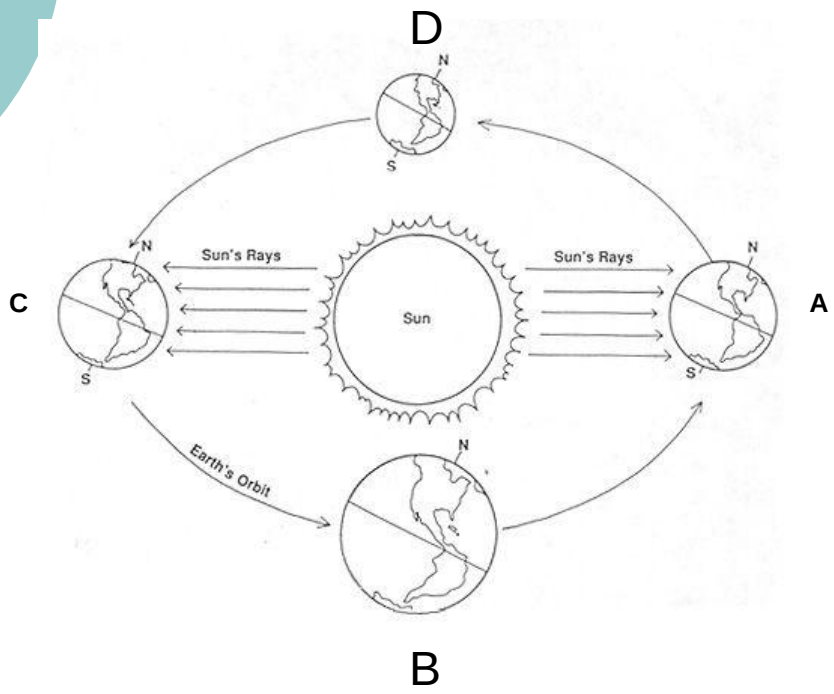
Reasons for Seasons

Earth, Sun, and Moon Relationships

Objective

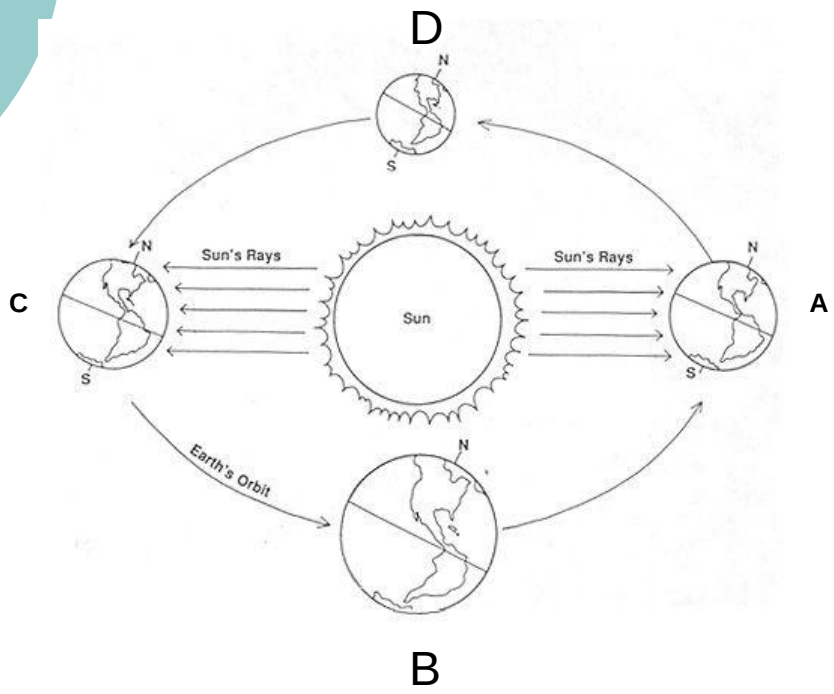
- Use a simulations to collect data from different locations to show how season work due to Earth’s tilt

Processing



- In position A, the Southern Hemisphere is receiving more direct sunlight as compared to the Northern Hemisphere. The Southern Hemisphere is in their _____ season, and the Northern Hemisphere is in their _____ season.

Processing



- In position C, the Northern Hemisphere is receiving more direct sunlight as compared to the Southern Hemisphere. The Northern Hemisphere is in their

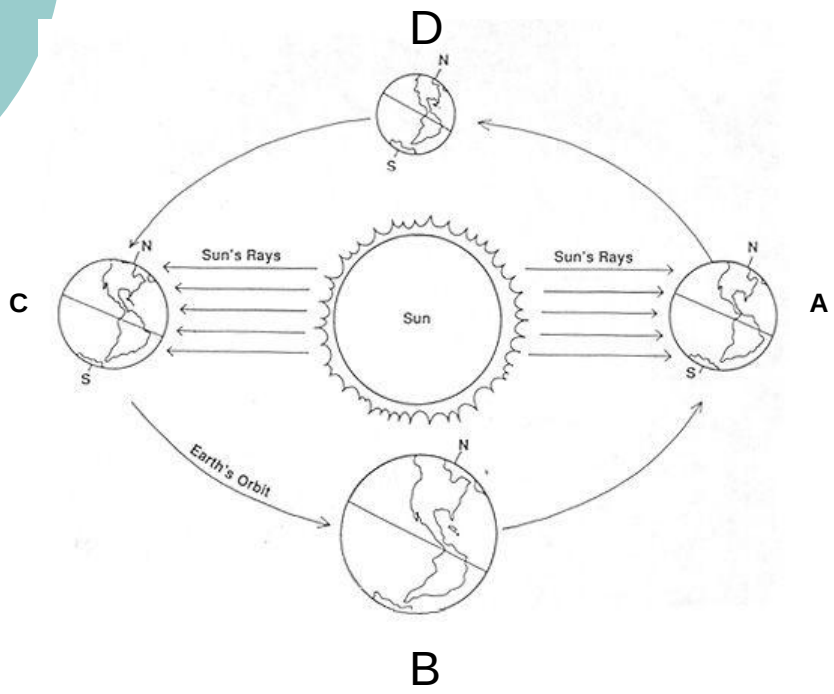
  _____

  season, and the Southern Hemisphere is in their

  _____

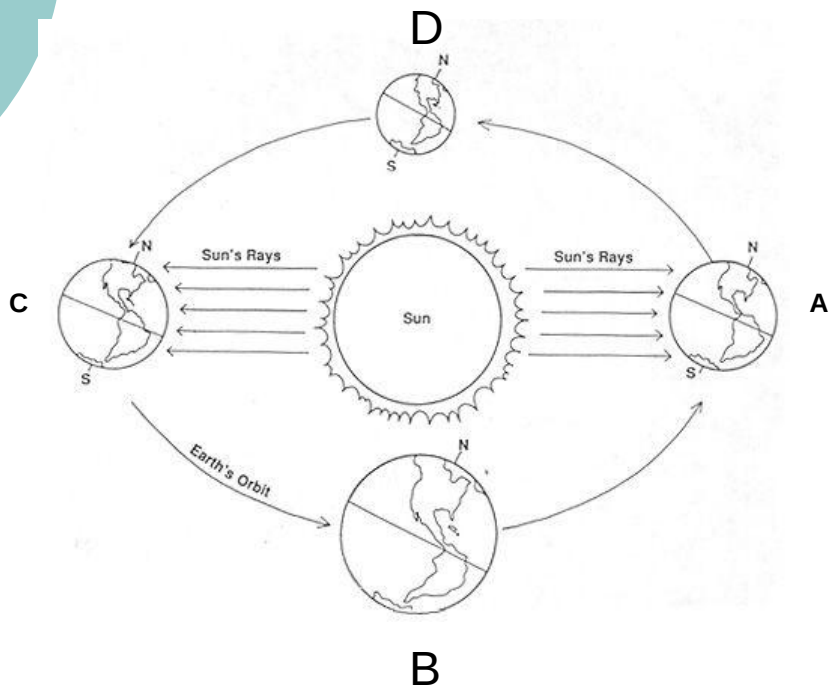
  season.

Processing



- In position B, the Northern Hemisphere and Southern Hemisphere receive equals amount of sunlight. At this position, the Sun's rays are starting to move more to the Northern Hemisphere. The Northern Hemisphere is in their _____ season, and the Southern

Processing



- In position D, the Northern Hemisphere and Southern Hemisphere receive equals amount of sunlight. At this position, the Sun's rays are starting to move more to the Southern Hemisphere.The Northern Hemisphere is in their

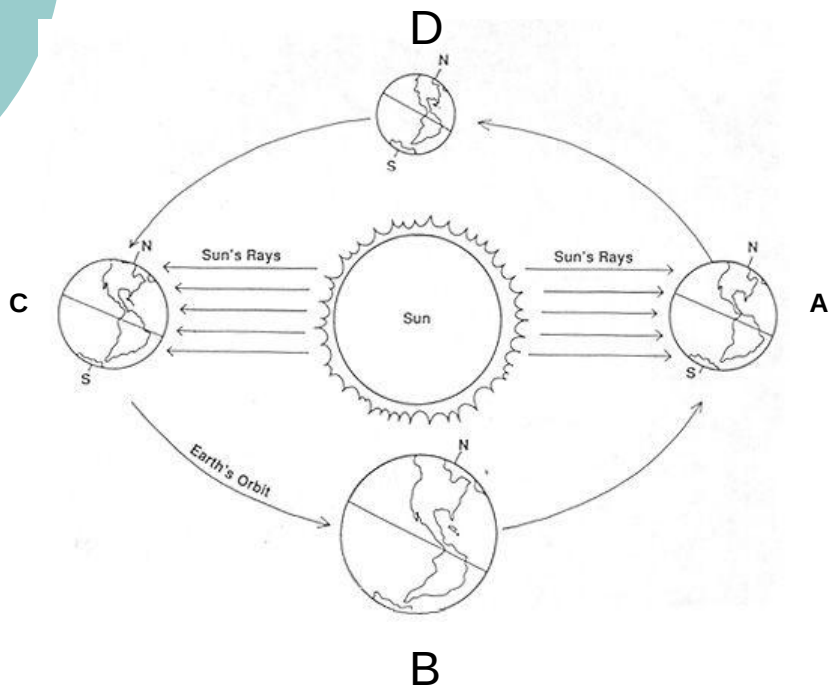
  _____

  season, and the Southern Hemisphere is in their

  _____

  season.

Processing



- What line of latitude is the Sun's rays directly pointing at the following positions in Earth's orbit around the Sun?
- Position A: _____
- Position B: _____
- Position C: _____
- Position D: _____

Key Concepts

- Earth's **axis tilt** causes the seasons on Earth.
- Earth's axis **tilts** away from perpendicular to the ecliptic plane, which is Earth's orbit around the Sun, by **23.5⁰**.
- Currently, Earth's axis **tilts** to the North Star also known as **Polaris**.

Key Concepts

- Earth's **axis tilt** affects **day length**, **Temperature**, and **Light intensity**, which causes differences in seasons.
- During the **summer**, the portion of the Earth leans **towards** the Sun in its **revolution**.
- There are more **daylight hours**, and the Sun's angle is more **perpendicular** than at other times of year.
- **Longer days** and more **concentrated** sunlight result in more heating.

Key Concepts

- During **winter**, the other portion of Earth leans **away** from the Sun.
- There are **fewer** daylight hours, and the Sun hits us at an **angle**; this makes it appear **lower** in the sky.
- There is **less** heating because the angled Sun's rays are "**spread out**" rather than direct.

Key Concepts

- During the **spring** and **fall**, the Earth **leans** neither **toward** nor **away** from the Sun.
- **Daylight** and **nighttime** hours are **equal** and temperatures are **moderate**.
- Around the **equator**, the **length** of days and the **directness** of sunlight don't change as much.
- The **further** you get from the **equator**, the more **dramatic** the seasonal changes.

Key Concepts

- Because of Earth's **axis tilt**, the Northern Hemisphere and southern hemispheres always experience the **opposite** season.
- For example, when the Northern Hemisphere experiences **summer**, the Southern Hemisphere experiences **winter**.