

Revolution


Apart from rotating on its axis, the Earth also moves around the Sun along a fixed path called the **orbit**. So this movement of the Earth around the Sun, along its orbit from **west to east**, is called **revolution**. It takes **365 days and 6 hours** or **$365\frac{1}{4}$ days** to complete one revolution around the Sun.



Interesting:

The orbit of the Earth is not round but more or less oval or **elliptical** (egg shaped).

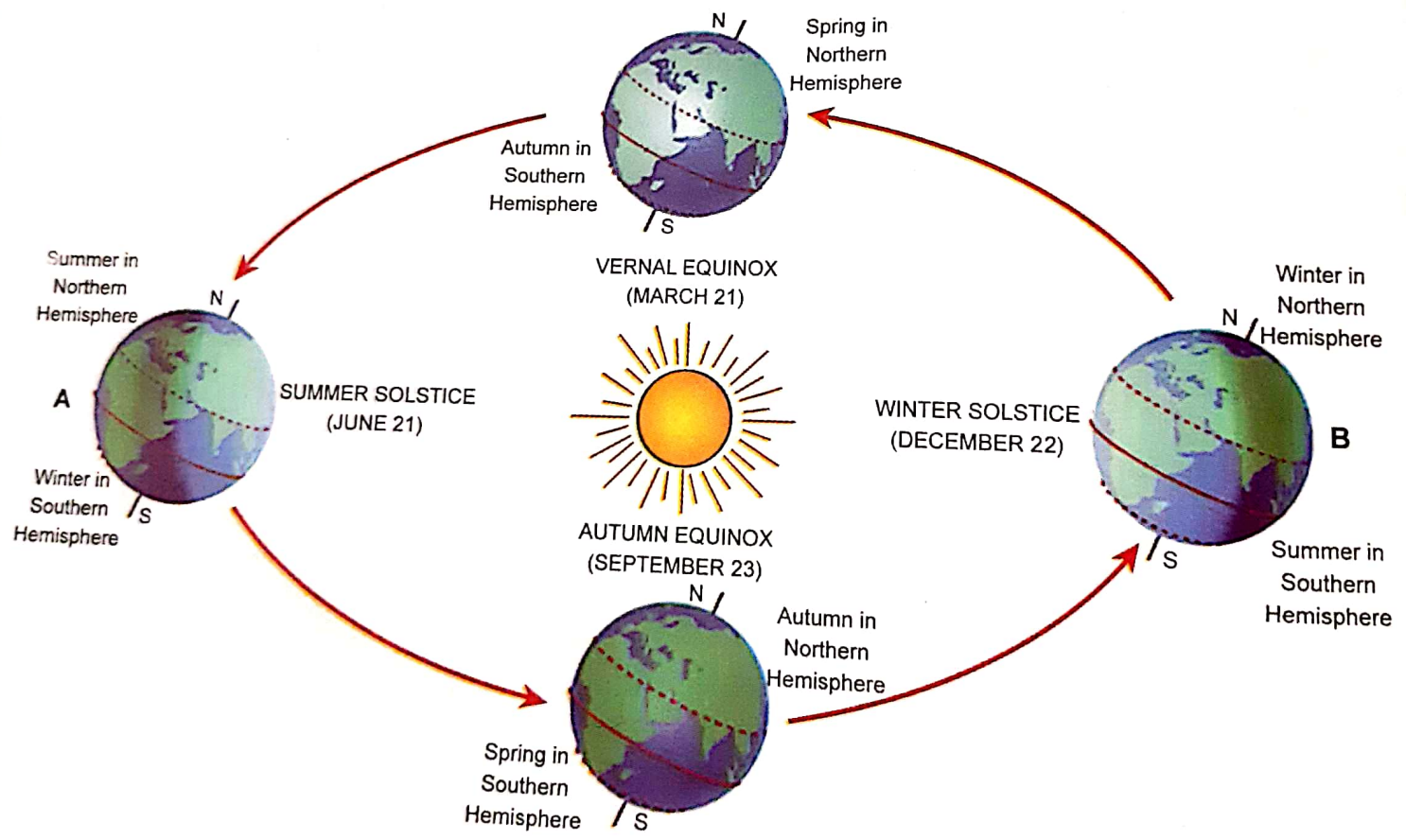
You know that we have 365 days in a calendar year. So what happens to the 6 hours every year? Well, it is added up and every fourth year, when it sums upto 24 hours, an extra day is added to the year. The year with an extra day, of 366 days, is called a **leap year**. *Find out to which month is this extra day added!*

Think Tank!
 Can you find out how much time do Mercury, Jupiter and Neptune take to revolve around the Sun?

Effect of revolution

The most important outcome of the revolution of the Earth is the formation of **seasons**. The different seasons arise due to two main reasons:

1. The tilt of the Earth's axis.
2. The revolving of the Earth around the Sun.



The revolution of the Earth along its orbit

You are all aware of the two main seasons of **summer** and **winter**. Added to these are **spring** before summer and **autumn** before winter. *Do you know the duration of these seasons in the year?*



Spring



Summer



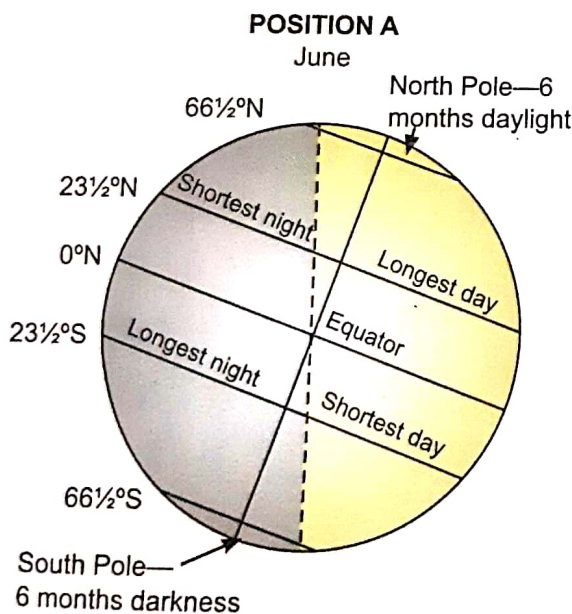
Autumn



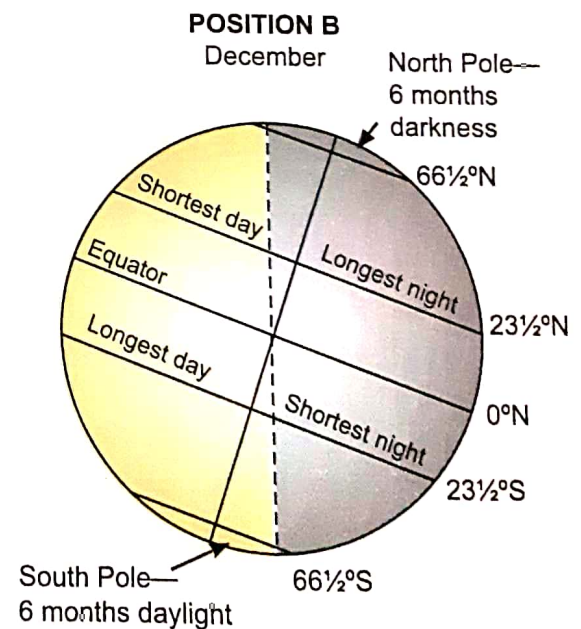
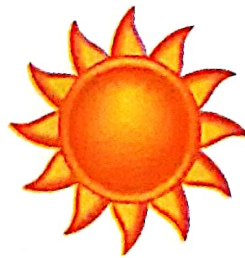
Winter

So, have you ever wondered why do these seasons occur at a specific period of the year? To understand this, observe the diagram of the revolution of the Earth on the previous page.

During the course of the Earth's revolution when it lies in Position A, the **North Pole** is **inclined** towards the Sun. So, the Northern Hemisphere gets not only more direct sunlight, but also for a longer period. Thus, **the days are longer and so it is hot and**, therefore it is **summer** here. The Southern Hemisphere, being inclined away from the Sun, receives slanting rays so the nights are longer and, therefore, it has **winter**. This is the position of the Earth in June.



Summer Solstice



Winter Solstice

Now, observe Position B, which lies opposite to Position A. You can guess that conditions here will be exactly opposite to that of Position A. The **South Pole** is now **tilted** towards

the Sun. So the Southern Hemisphere gets direct sunlight and for a longer period. Thus, **days are longer and hot and, therefore, it is summer here.**

The Northern Hemisphere, now being tilted away from the Sun, experiences **winter** with shorter days and longer nights. This is the position of the Earth in December.

In the other two positions, you can notice that both the North and South Poles are neither inclined nor away from the Sun. This is the period when **spring** and **autumn** occur. Spring follows winter and autumn follows summer in either of the hemisphere.



In India, which is a tropical country, two main seasons occur, summer and winter. Added to these is the rainy season. However, in England, which lies in the temperate zone, all the four seasons occur.

The duration of days and nights are more or less equal during these seasons.

One interesting fact is that when people in the Northern Hemisphere, like we Indians, Americans or Europeans experience summer, the people in southern South America or Africa and in Australia enjoy winter! So, *can you guess what will the season be in Australia be during Christmas!*



When the Northern Hemisphere is inclined towards the Sun, places on and beyond the Arctic Circle ($66\frac{1}{2}^{\circ}\text{N}$) experience 24 hours of daylight. During this period, conditions are just the opposite in the Southern Hemisphere. Places on and south of the Antarctic Circle ($66\frac{1}{2}^{\circ}\text{S}$) experience **24 hours of darkness**. Conditions are reversed when the Southern Hemisphere is tilted towards the Sun.

Movements of the Earth

Rotation	Revolution
Spinning of the Earth on its axis	Orbiting of the Earth around the Sun.
Daily motion	Annual motion
Takes 24 hours	Takes $365\frac{1}{4}$ days
Spins from west to east	Revolves from west to east
Causes day and night	Causes seasons

□ Answer the following questions.

1. What are the two factors that cause seasons?

2. With reference to the June position of the Earth, state:

i) the hemisphere ~~where~~ which receives direct rays of the sun and why?

ii) the length of days.

iii) Season experienced

3. Write three differences between Rotation and Revolution of the Earth.

□ Fill in the blanks -

1) In a leap year, there are _____ days.

2) The Sun's rays are _____ during summer and _____ during winter.

3) Earth moves around the Sun along a fixed path called _____.