

GEOGRAPHY-STD:X

SEASONS AND TIME

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ROTATION and REVOLUTION

Rotation of the Earth is its turning on its axis.

Revolution is the movement of the Earth around the Sun.

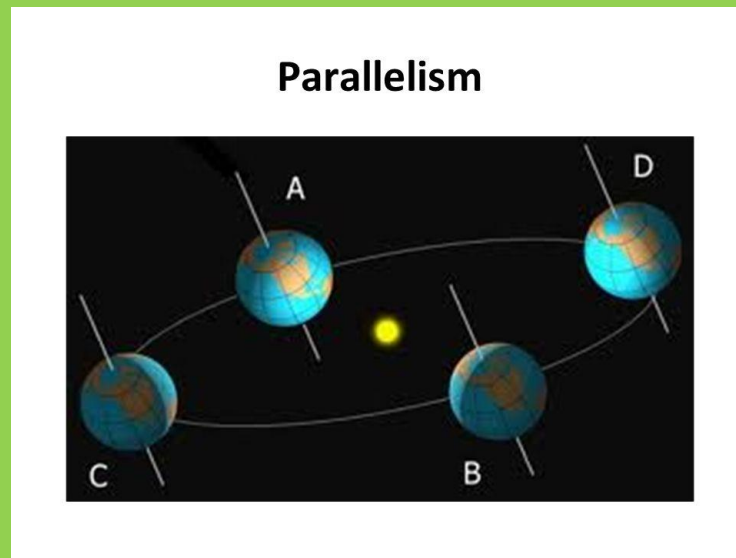


What are the effects of rotation and revolution?

The spinning of the Earth causes day to turn to night, while the the revolution of the Earth causes seasonal changes

Parallelism of the Earth's axis

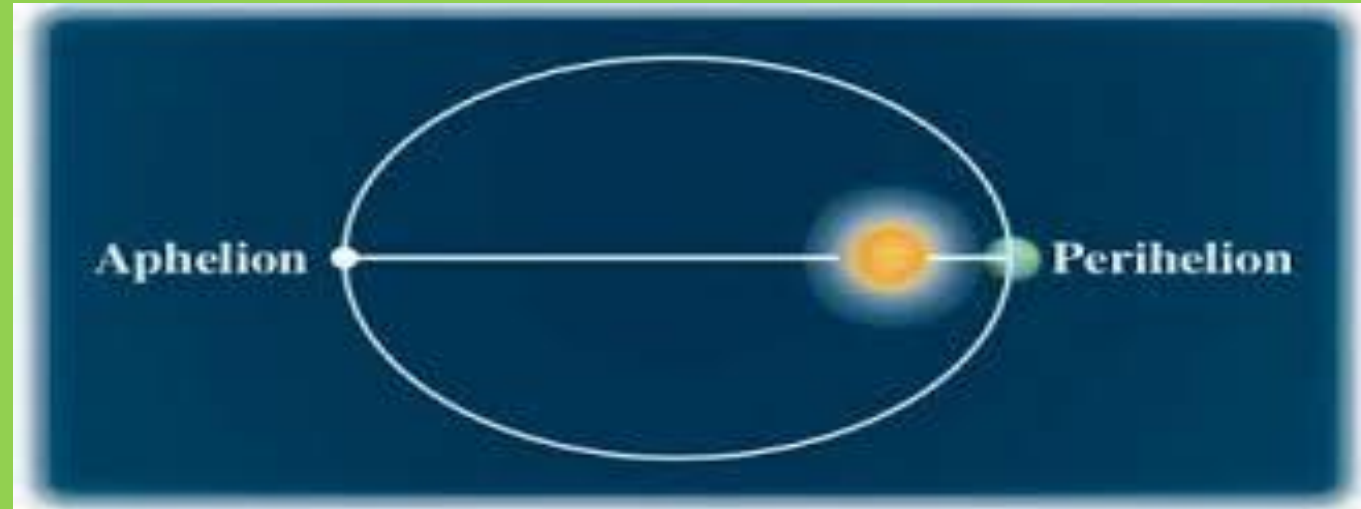
Axis of earth is titled at an angle of $66\frac{1}{2}^{\circ}$ from the orbital plane.
If measured from the vertical plane this would be $23\frac{1}{2}^{\circ}$
The earth maintains tilt throughout its revolution



How does the tilt of the earth contribute to the occurrence of the seasons ?
The earth tilts at an angle of 23.5° . This causes the amount of sunlight an area receives to vary

Perihelion and Aphelion

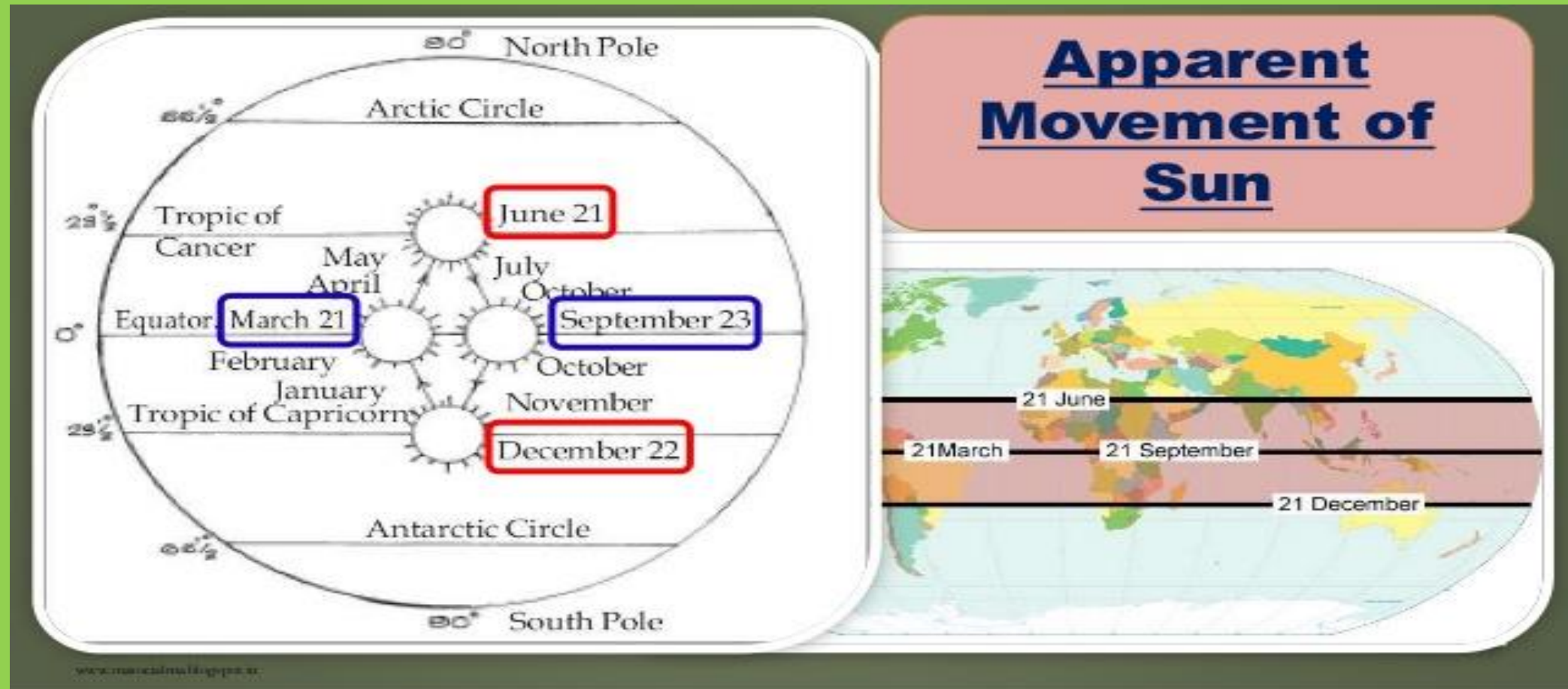
The day on which the sun and the earth are closest is known as perihelion.
The day on which the sun and the earth are farthest is known as aphelion



Perihelion always occurs near January 4th, while aphelion lands near the 4th of July.

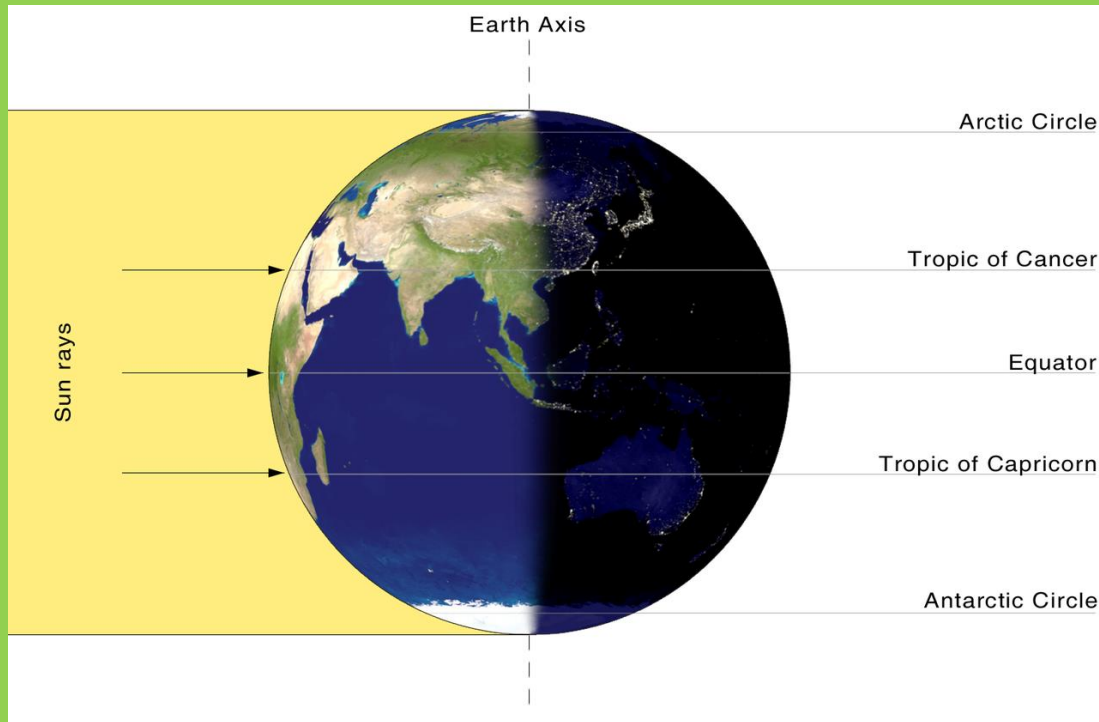
The apparent movement of the Sun

The sun shifts apparently between Tropic cancer ($23\frac{1}{2}^{\circ}$ North) and Tropic of Capricorn ($23\frac{1}{2}^{\circ}$ South)



Equinoxes

March 21 & September 23
sun will be over the Equator.
length of day and night will be equal



How long does equinox last?

12 hours

On the equinox, night and day are nearly the same length, 12 hours, all over the world. This is the reason it's called an "equinox," derived from Latin, means Equal

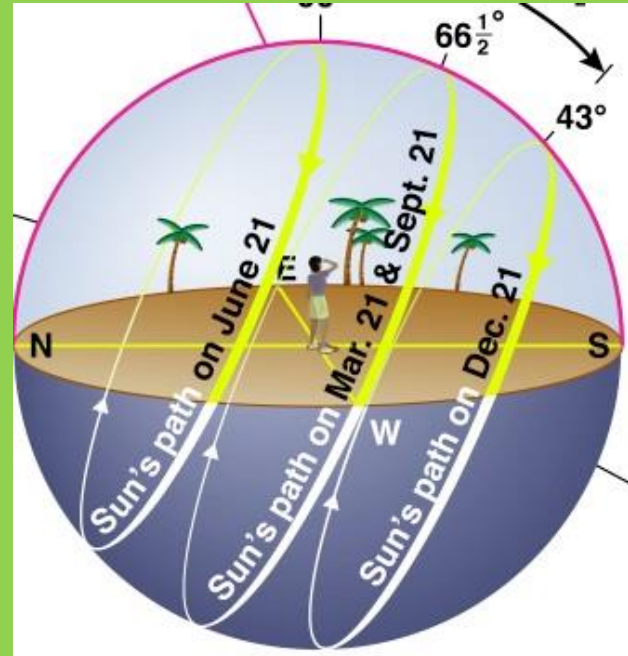


Summer Solstice

June 21

Sun will be vertically above the tropic of cancer

Longest day in northern hemisphere and the longest night in Southern hemisphere



What happens in the Northern Hemisphere on June 21?

The summer solstice – the longest day of the year.

Where is the Tropic of Cancer ? Why?

23.5° North of the equator because the earth tilts at that angle.

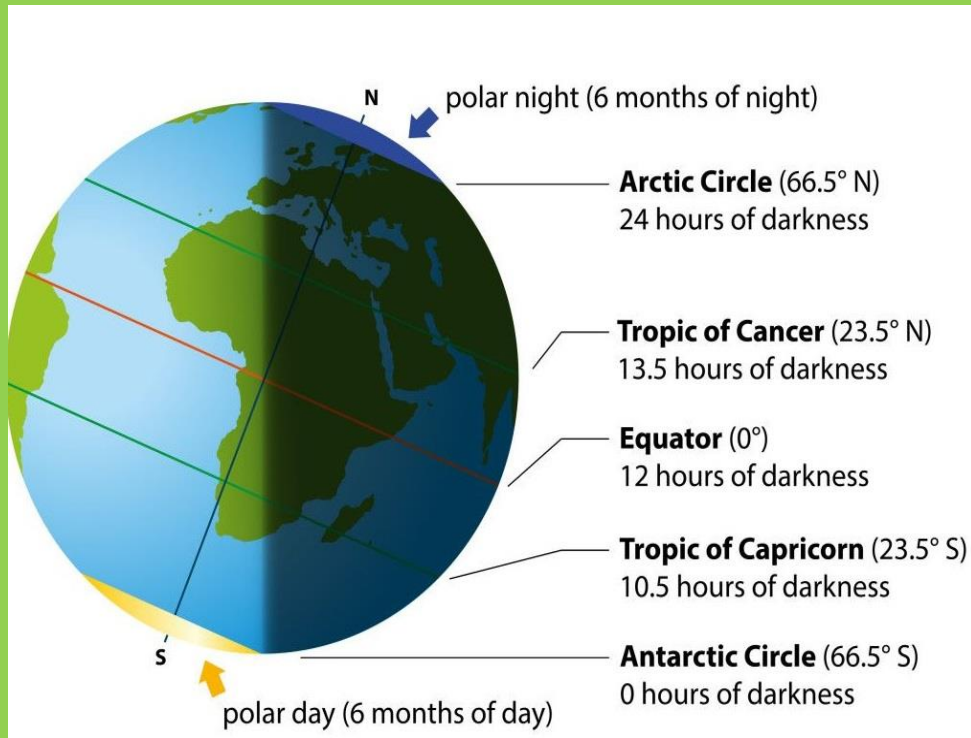


Winter Solstice

December 22

sun will be vertically above the tropic of Capricorn

longest day in the southern hemisphere and the longest night in northern hemisphere



Spring

Spring is the season of transition from winter to summer

Plants sprout and blooms



Autumn

Autumn is the season of transition from summer towards winter



What is the difference between spring and autumn?

Both autumn and spring are seasons that occur during the year. Autumn or fall happens near the end of the year, and spring arrives closer to the beginning of the year. ... The temperature in autumn gets cooler and cooler usually. In the spring, the weather is warm and sometimes rainy.

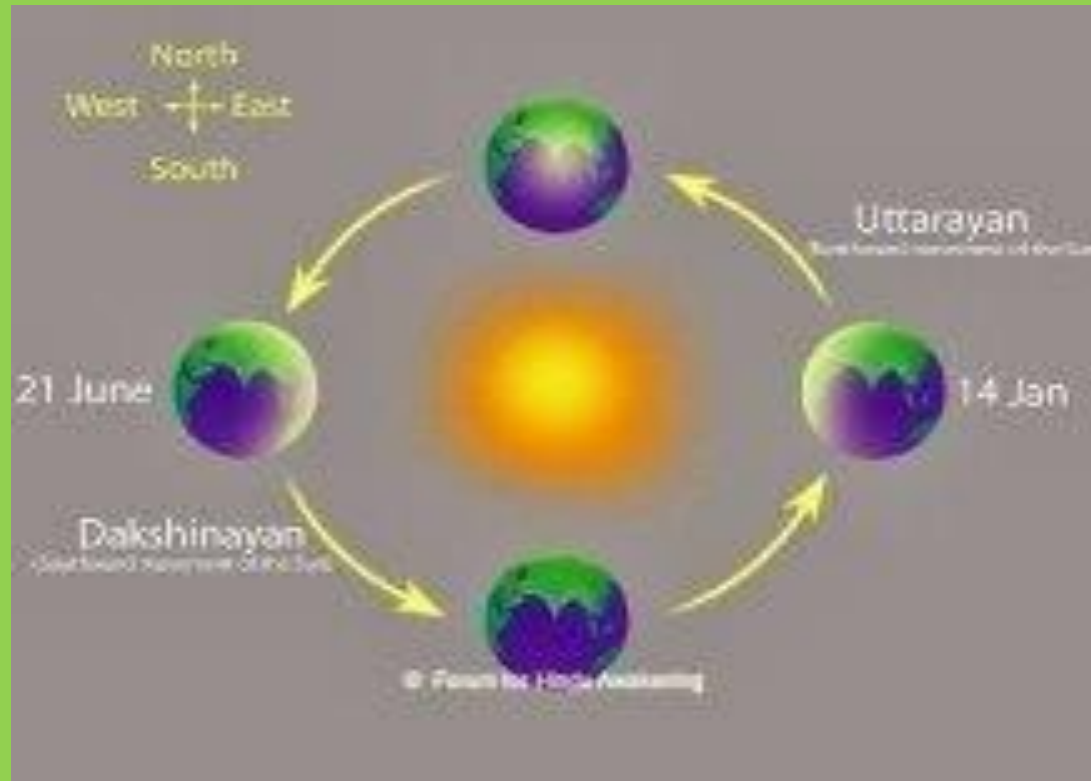


Utharayanam

The northward apparent movement of the Sun from tropic of Capricorn to Tropic of Cancer

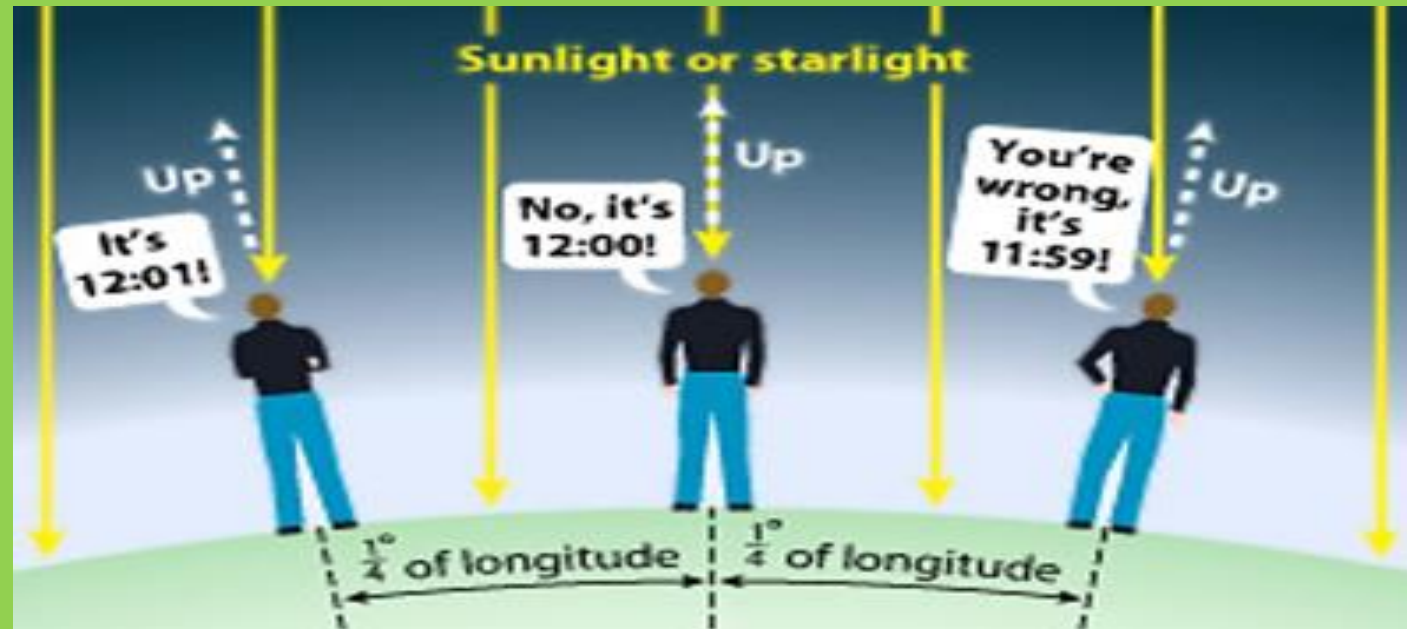
Dakshinayanam

The southward apparent movement of the Sun from tropic of Cancer to Tropic of Capricorn



Local time

The time estimated at each place based on the apex position of the sun

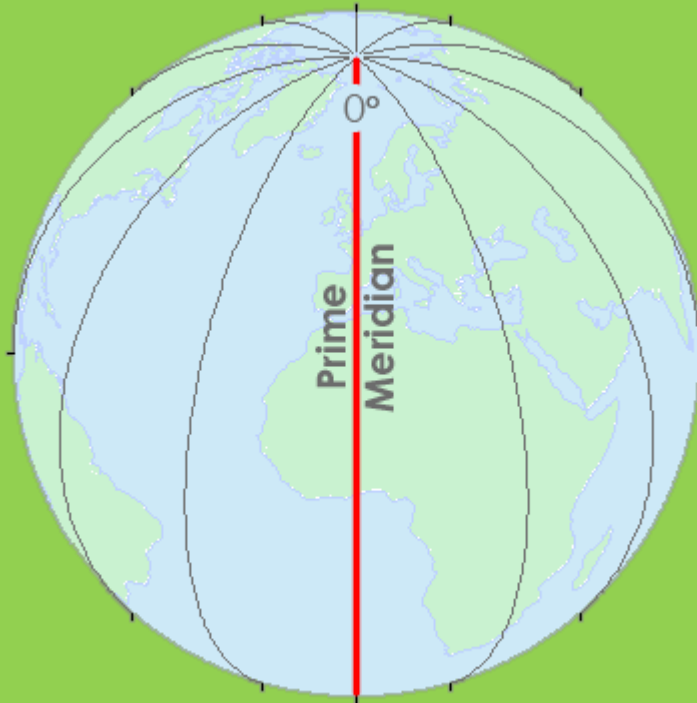


What is difference between local time and standard time?

The local time of a particular place refers to the time determined under the basis of the sun's apparent movement. On the other hand, the standard time refers to the fixed time of several places in a given region that fall under the same standard meridian.

Greenwich Meridian

The zero degrees longitude is known as Greenwich meridian



What is Greenwich meridian and why is it important?

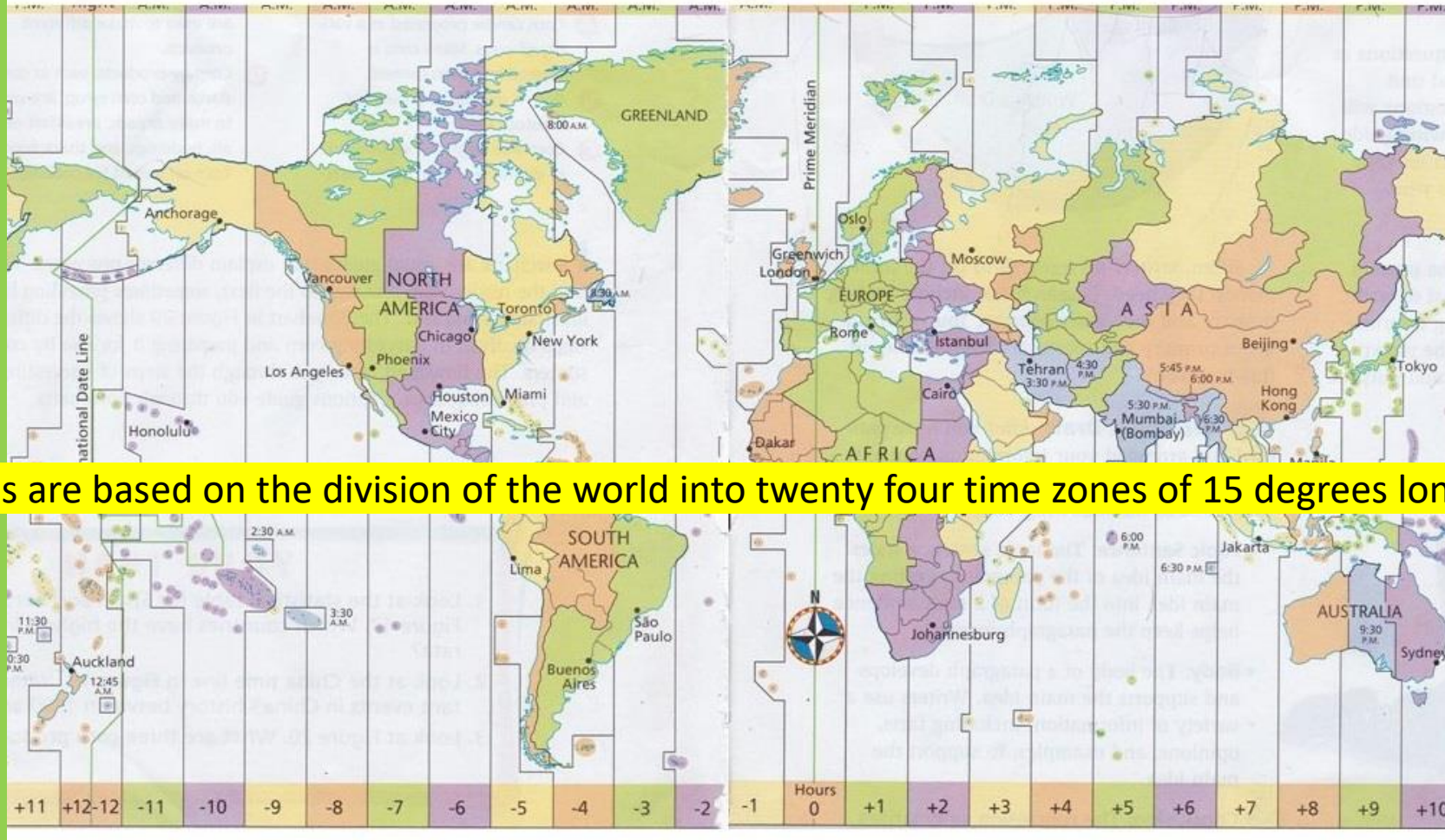
Greenwich meridian, imaginary line used to indicate 0° longitude that passes through Greenwich(London), and terminates at the North and South poles. ... The Greenwich meridian also serves as the basis for the world's standard time zone system



Time Zones

Based on the Greenwich Meridian, the world is divided into 24 zones, each with a time different of one hour.

Time Zone Map of the World



Time zones are based on the division of the world into twenty four time zones of 15 degrees longitude each.

Standard Meridian

Each country in the world considers the longitude that passes almost through its middle as the standard meridian

Indian Standard Time.

The local time at the standard meridian of India ($82\frac{1}{2}^{\circ}$ E) is considered as the Standard Time of India. This is known as the Indian Standard Time



What is the standard meridian of India?

82.5° east

The standard meridian of India is the 82.5° east longitude which passes through Allahabad. This is five and a half hours ahead of 0° meridian (Greenwich)

International Date Line

180 d Longitude is known as international date line

It is drawn completely over oceans avoiding land masses

It is not a straight line

The travelers who cross this line from the east advancing one day and those who cross the line from the west deduct one day.



What happens when you cross the international date line?
When you cross the IDL, the day and date change. If you cross it traveling westward, the day goes forward by one, and the date increases by one. If you cross it traveling eastward

Why is the international date line not straight?
The International Date Line (IDL) passes through the Pacific Ocean. It is an imaginary line, like longitudes and latitudes. To avoid any confusion of date, this line is drawn through where the sea lies and not land. Hence, the IDL is drawn in a zig-zag manner

