2. Let us Use the Graticule

Make friends with the globe!

Figure 2.1 : The Globe

Observe the globe and answer the following.

- What are the horizontal lines on the globe called?
- List the continents and oceans through which the equator passes.
- Encircle the intersection of 0° meridian and 0° parallel on the globe.
- Which oceans are spread in all the four hemispheres?
- Which continents are spread in all the four hemispheres?
- At which two parallels do all the meridians converge?

When we talk about various places, regions, rivers, roads, etc. we are actually talking with reference to the earth. The location of a place, the extent of a region and the extent of any linear feature can be described precisely with the help of parallels and meridians. Let us see how to use the graticule for this purpose.

Verify the following description with the help of a world map or a globe in the school.

- While describing the location of a place, we need to consider only one parallel and one

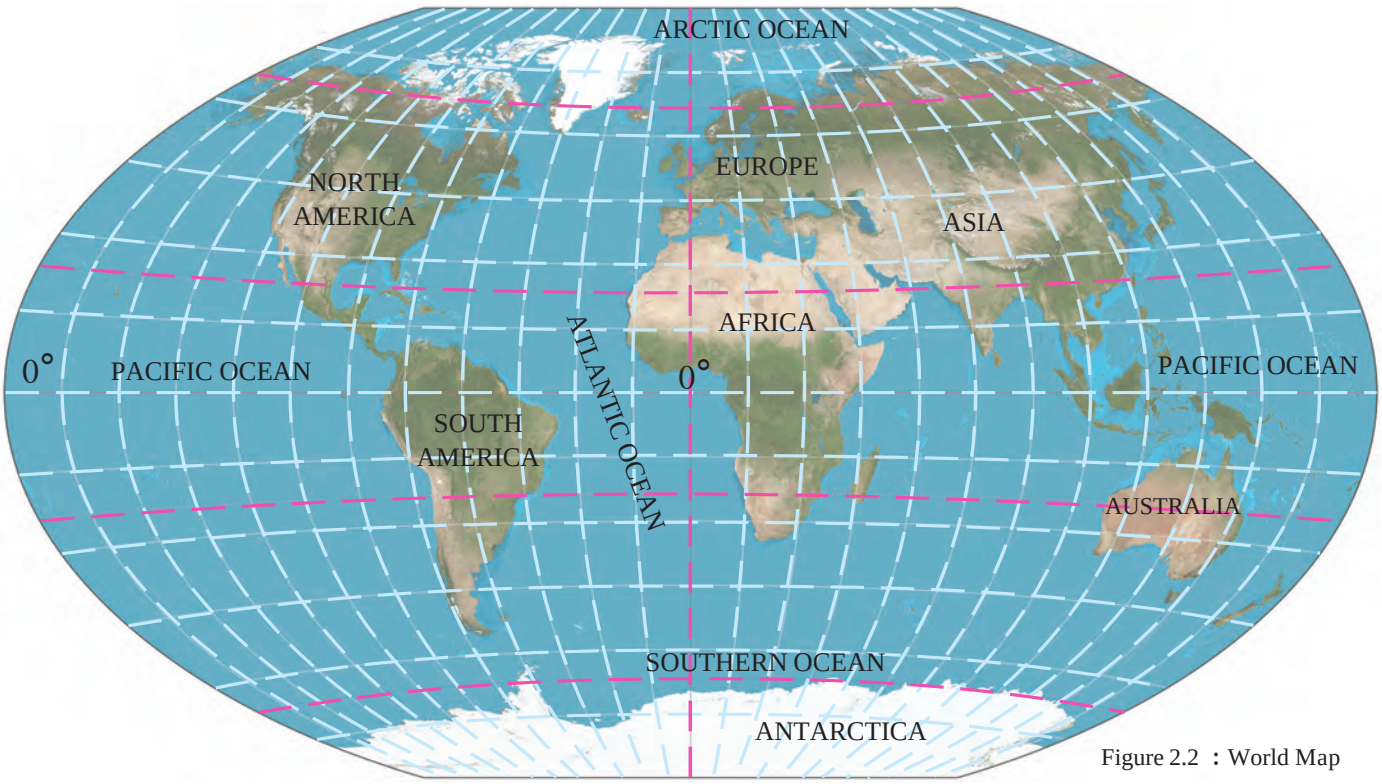


Figure 2.2 : World Map

The Equator and the Prime Meridian are labelled in degrees in figure 2.2. Can you write the values of other meridians and parallels?

meridian, e.g., Delhi is located at 28°36' 50" N latitude and 77°12' 3" E longitude.

- For describing the extent of a region we need to consider two parallels and two meridians at the extreme ends of the region. For example, the extent of Australia is described as 10°30' S to 43°39' S latitude and 113° E to 153° E longitude.
- For describing the extent of linear features like a river, road etc., we need to consider the latitude and longitude of their terminal points. For example, the River Nile in Africa originates in Lake Victoria, flows north and meets the Mediterranean Sea near the city of Alexandria in Egypt. The location of Lake Victoria is 0° 45' 21"S latitude and 33° 26' 18"E longitude. Similarly, the location of Alexandria is 31°12'N latitude and 29° 55'07"E longitude. These latitudes and longitudes are considered to describe the extent of the River Nile. This extent is from 0°45'S latitude and 33°26'E longitude (origin) to 31°12'N latitude and 29°55'E longitude (up to the mouth).

✻ Let's use the graticule.

Answer the following questions about location and extent with the help of figure 2.3.

- Which latitude and longitude define the location of the capital of Brazil – Brasilia?
- What would be the longitudinal extent of Brazil that spreads from 5° 15' N to 33° 45' S latitude?
- In which hemispheres does Brazil extend in the north - south direction?
- In which hemisphere does Brazil extend in the east - west direction?
- Which parallels and meridians should be used to describe the extent of River Sao Francisco?
- Describe the location of Marajo island using the graticule.

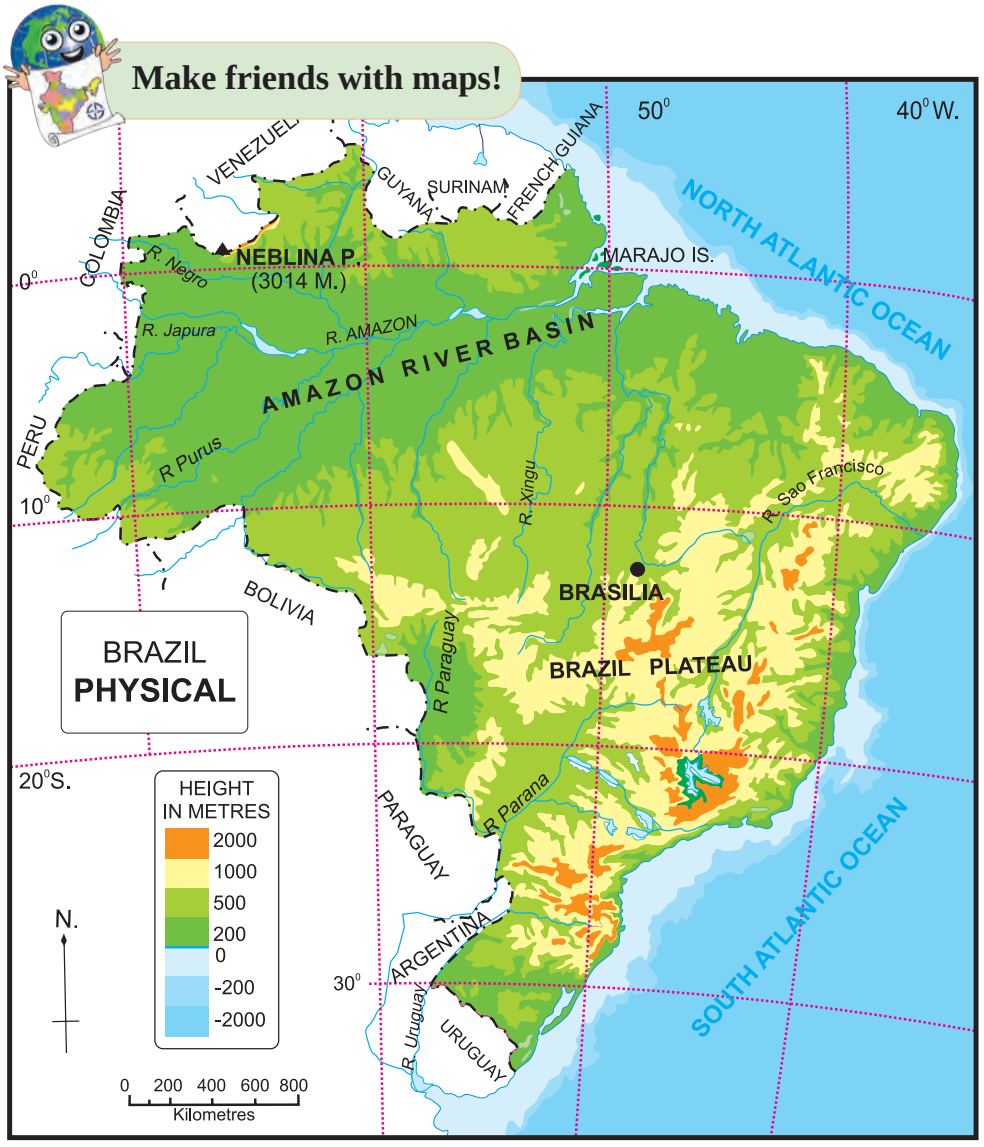


Figure 2.3 : Map of Brazil

⁎ Important Parallels and Meridians

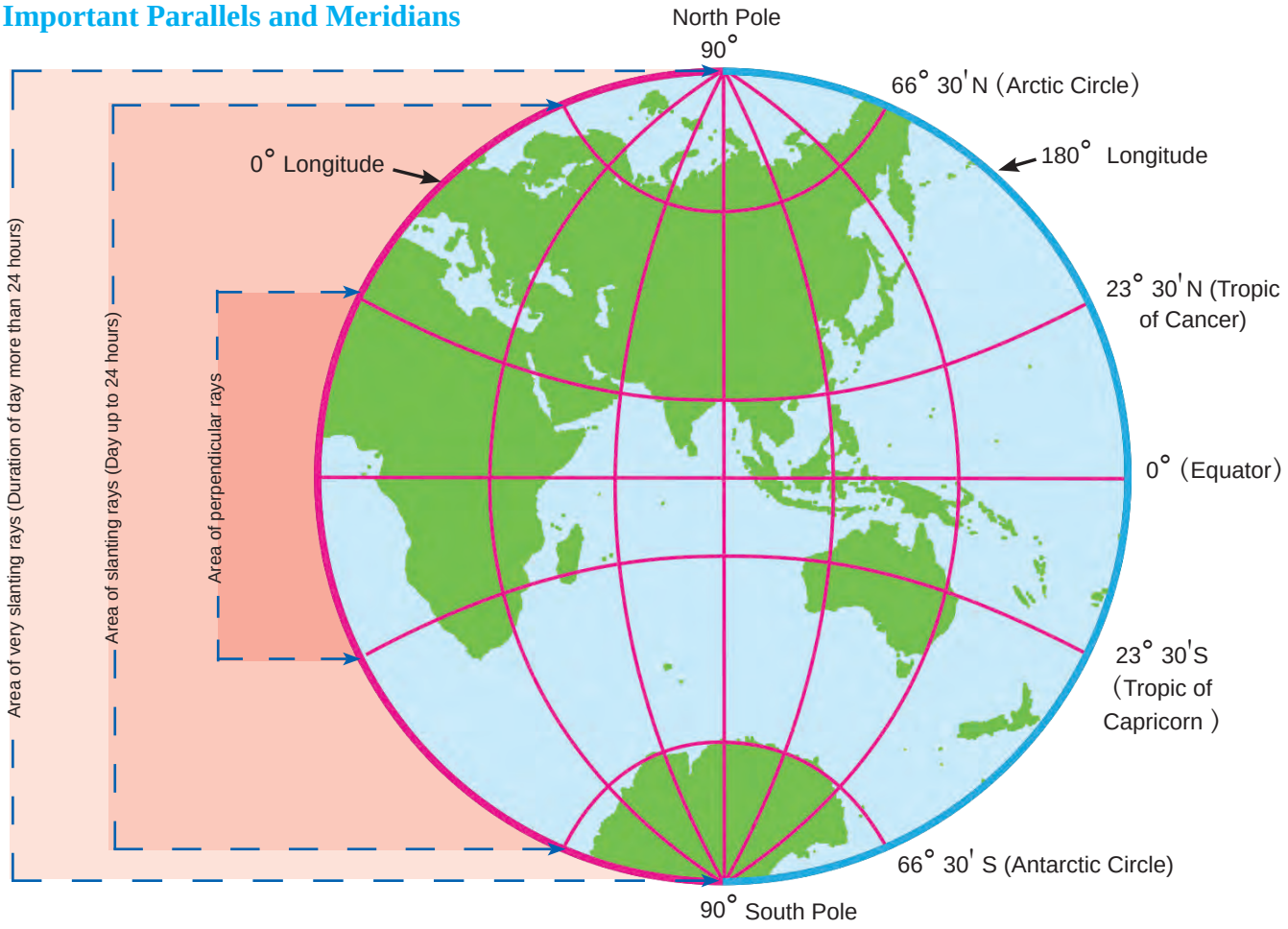


Figure 2.4 : Important Circles

Let us get acquainted with some important parallels and meridians.

- All places between 23° 30' north and south of equator receive perpendicular rays on two days in a year. Other areas of the earth never get perpendicular rays. The parallels at 23° 30' N and 23° 30' S of equator are called Tropic of Cancer and Tropic of Capricorn respectively.
- The parallels at 66° 30' north and south of the equator are also important parallels. In the area between these two parallels, throughout the year, daytime lasts within the limit of 24 hours. These are called the Arctic Circle and the Antarctic Circle respectively.
- Depending on the seasons, daytime (sun being visible in the sky) can be greater than 24 hours in the areas between the polar circles and the Poles. The maximum duration of the sun's appearance in the sky can be of six months at the Poles based on the seasons. During this period, the sun continues to move in a spiral on the horizon.

Think a little!

Which important parallel passes through India? Which areas do not get perpendicular sunrays? Which region receives perpendicular rays on two days in a year? Show these regions by different colours on a map of India.

We have seen in Std V that the earth's axis is inclined. These important parallels arise because of its inclination by 23° 30'.

- Due to the duration and intensity of sunlight,

Do you know?

Vatican City is known as the smallest country in the world. It is spread over an area of 0.44 sq. km. This country is located within Italy on the Italian peninsula. See the latitudinal and longitudinal extent of this country in figure 2.5. From west to east and also from north to south, there is no difference in the degrees or minutes of latitude or longitude but the difference is only in seconds. From this, you will get an idea about the use of the smaller units of minutes and seconds in angular measurements.

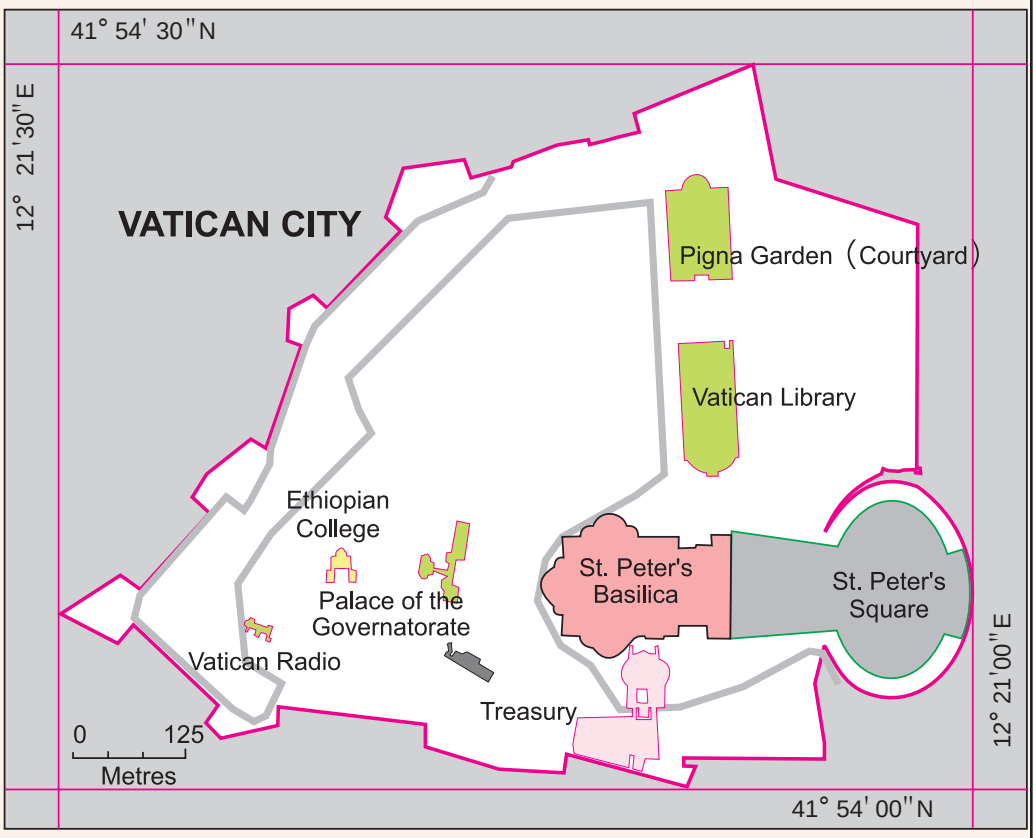


Figure 2.5 : Map of Vatican City

different temperature zones are formed on the earth. These zones give rise to pressure belts.

- Variation in the intensity of sunlight leads to regional diversity in plant and animal life.
- The 0° longitude or Prime Meridian is an important meridian. The main purpose of this is to fix the global standard time and coordinate the standard times of different countries. This meridian is also called as Greenwich Meridian. Global standard time is known as GMT – Greenwich Mean Time.
- The 180° meridian is also important. From the Prime Meridian, other meridians are marked east and west up to 180°. The 180° meridian lies opposite to the Prime Meridian. The International Date Line is marked with reference to this meridian.
- The equator as well as all pairs of opposite meridians form Great Circles. Great Circles are used for finding the minimum distance between any two places on the surface of the earth.

Think a little!

(1) Find on the globe, the meridians opposite to the ones mentioned below:
90° E, 170° W, 30° E, 20° W.

(2) What do you observe?

Use your brain power!

In what direction should an aeroplane fly in order to cover the shortest distance between Kolkata and Chicago?

I can do this!

- *Show the important meridians and parallels on the map.*
- *Identify and make use of the important parallels and meridians.*
- *Describe the location and extent of any place, region, river, road, etc. in the world precisely.*

Exercises

(A) Put a tick mark against the correct option in the space given.

(1) 66° 30' North parallel means

Arctic Circle ☐ Equator ☐
Antarctic Circle ☐

(2) Which parallel bisects the earth?

Tropic of Cancer ☐

Tropic of Capricorn ☐ Equator ☐

(3) What is the angular distance of the Arctic Circle from North Pole?

66° 30' ☐ 90° ☐ 23° 30' ☐

(4) Where do the Prime Meridian and the equator intersect each other?

Southern Ocean ☐

Atlantic Ocean ☐
African Continent ☐

(5) Up to which parallels from the equator can the sun's rays be perpendicular?

Tropic of Cancer and Tropic of Capricorn ☐

Arctic and Antarctic Circles ☐
North and South Poles ☐

(6) What would be the latitude of a place on the South Pole?

90° S ☐

90° N ☐
0° ☐

(B) Read the following statements and correct the wrong ones.

(1) While describing the location of a place mentioning the meridian is sufficient.

(2) For describing the extent of a region, it is necessary to assume the latitude and longitude of the centre of the adjoining region.

(3) Location of a road can be described only with a map.

(4) 0° East meridian and 180° East meridian.

(5) The extent of a road or a river course is described with the help of the latitude of a point in the source and the longitude of a point at the end.

(6) 8° 4'N parallel to 37° 66° N parallel is the correct description of a location.

(C) Find the locations of following cities from a world map, a map of India or a Globe and write down the latitude and longitude of each of them.

(1) Mumbai
(2) Guwahati
(3) Srinagar
(4) Bhopal
(5) Chennai
(6) Ottawa
(7) Tokyo
(8) Johannesburg
(9) New York
(10) London

(D) Find and write down the extent of the following. (Check them on the internet/ mobile).

(1) Maharashtra (State)

(2) Chile (A country)

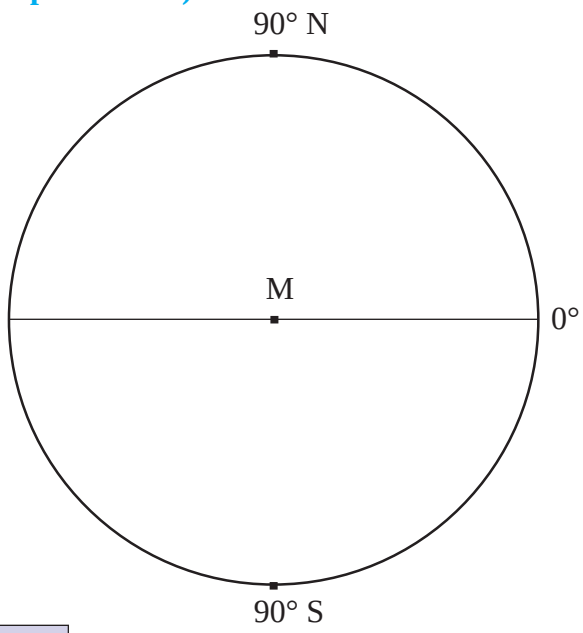
(3) Australia (A continent)

(4) Sri Lanka (An island)

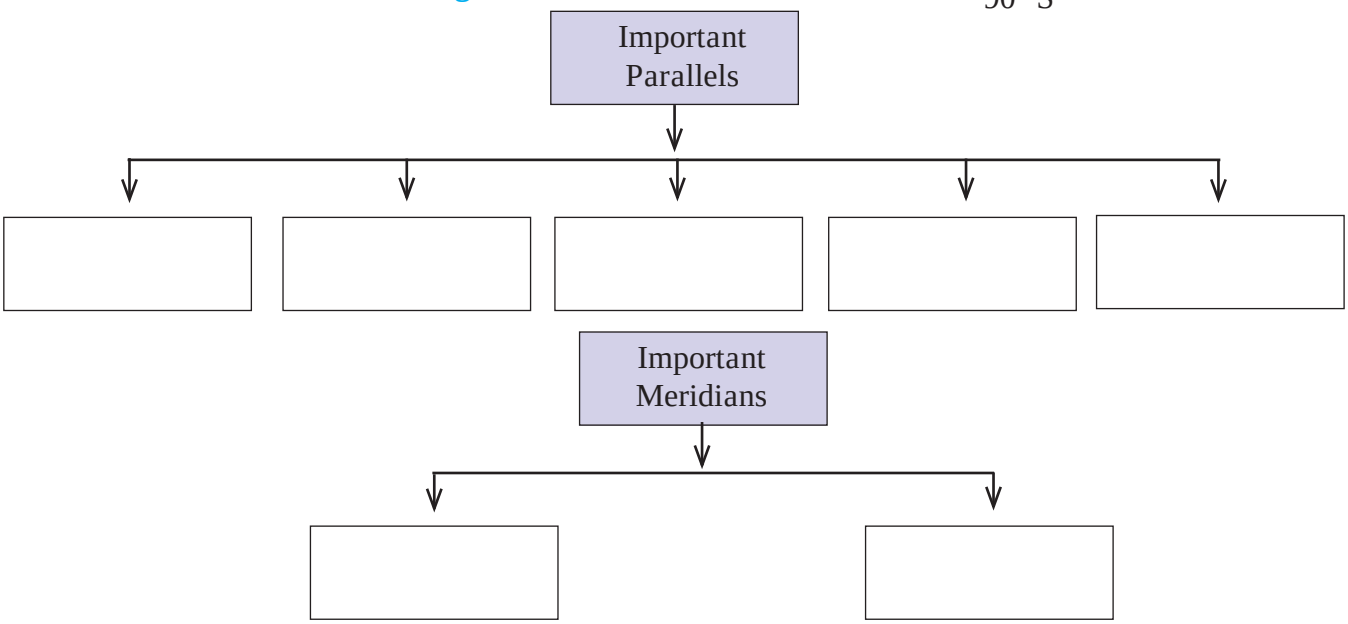
(5) Trans Siberian Railway of Russia

(Starting point - St. Petersburg, Terminal Point -Vladivostok)

(E) Draw important parallels and meridians in the figure given below and label them with appropriate angular measures. (Use the protractor.)



(F) Write the important parallels and meridians in the following table:



*** Activity:**

Find the latitudinal and longitudinal location of your school with the help of your teacher. Display the same on the board at a suitable location in your school.

Websites for reference

- http://www.kidsgeog.com
- http://www.youtube.com
- http://www.wikihow.com
- http://www.latlong.com

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