Chapter- 1

The Globe - A Model of the Earth

STUDY NOTES

Let's Learn

The Shape of the Earth

If the Earth was flat, what would happen to a person who reaches the edge of the Earth and continues walking? He would surely fall off! But, nobody has ever fallen off the Earth in this way. What does this show? The Earth, is round. But it appears flat to us because the Earth is so much bigger than us. To see the curving surface of the Earth, you would have to fly into the sky in a rocket.

The Globe

Globe is a miniature form of the Earth. It shows us the shape and location of the continents, oceans and seas on a smaller scale.

Basic terms when we talk about Globe

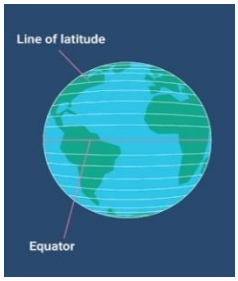
Axis - An imaginary line that runs through the North Pole and the South Pole, and around which the Earth spins.

North Pole: The end point of the axis to the north is the North Pole.

South Pole: The end point of the axis to the south is the South Pole.

To locate places on the surface of the Earth , we use two sets of imaginary lines, called Lines of Longitude and Lines of Latitude . Latitudes and longitude are marked in degrees ($^{\circ}$) and minutes ('). Sixty minutes equal one degree (60' = 1°).

Lines of latitude



Lines of Latitudes are imaginary lines on globe that run parallel to the equator across the globe in an east-west direction. They are also called parallels of Latitudes.

Equator

Equator is an imaginary line that divides the earth into two hemisphere, The Northern Hemisphere and the Southern Hemisphere .The Equator is the 0° latitude and is the largest latitude on the Earth.

Important lines of Latitudes

1) The equator or the 0° latitude
2) The Tropic of Cancer(23.5°N)
3) The Tropic of Capricorn(23.5°S)
4) The Arctic Circle(66.5°N)
5) The Antarctic Circle(66.5°S)

Features of Latitudes

1. Latitude mark the distance of a place north and south from the equator.
2. Latitudes are numbered from the equator (0°)and they increase in value as they move away from the equator towards the pole.
3. The latitudes in the Northern Hemisphere are named N and in Southern Hemisphere are named S.
4. All latitudes are at an equal distance.
5. Latitudes form complete circles, which decrease in size as they move away from equator.

6. There are 180 latitudes in all .90 latitudes on northern hemisphere and 90 latitudes on southern hemisphere .

Lines of Longitude

Longitudes are imaginary lines on the globe that runs from north-south direction .These are also called Meridians .The 0^{o}longitude is known as the Prime Meridian.

Features of longitudes

1. Longitudes mark the distance of a place east or west of Prime Meridian.
2. Longitudes are numbered from the Prime Meridian(0^{o}) .They increase in value eastwards and westwards till they meet 180^{o}longitude , which lies opposite of the Prime Meridian .
3. Longitudes or Meridians to the east of Prime meridian are numbered E and numbered W to the west of Prime meridian.
4. The meridians are equal in length and form semi-circles.
5. The distance between two meridians is not equal. They are farthest apart at the equator, and come closer towards the poles.
6. There are 360 meridians. 180 lines to the east of Prime meridians,and 180 to the west of it.
7. The prime meridian and the 180^{o} longitude together divide the Earth into two hemispheres – the Eastern Hemisphere and the Western Hemisphere.

Location of Prime Meridian

The meridian which passes through Greenwich,London where the British Royal Observatory is located is named as Prime Meridian and is numbered as 0^{o} longitude. From O^{o} longitude we count 180^{o} eastward and 180^{o} westward.

GMT

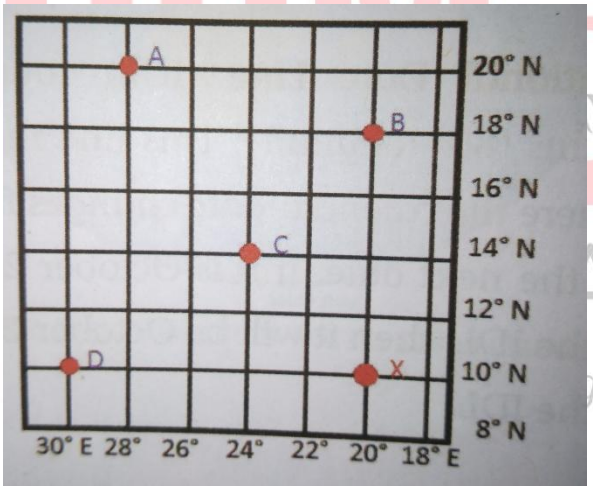
GMT is Greenwich Mean Time through which the O^o degree longitude i.e Prime Meridian has passed .The GMT is used to calculate the time at all other places on the Earth .It is also used to calculate the longitude of a place .

IDL

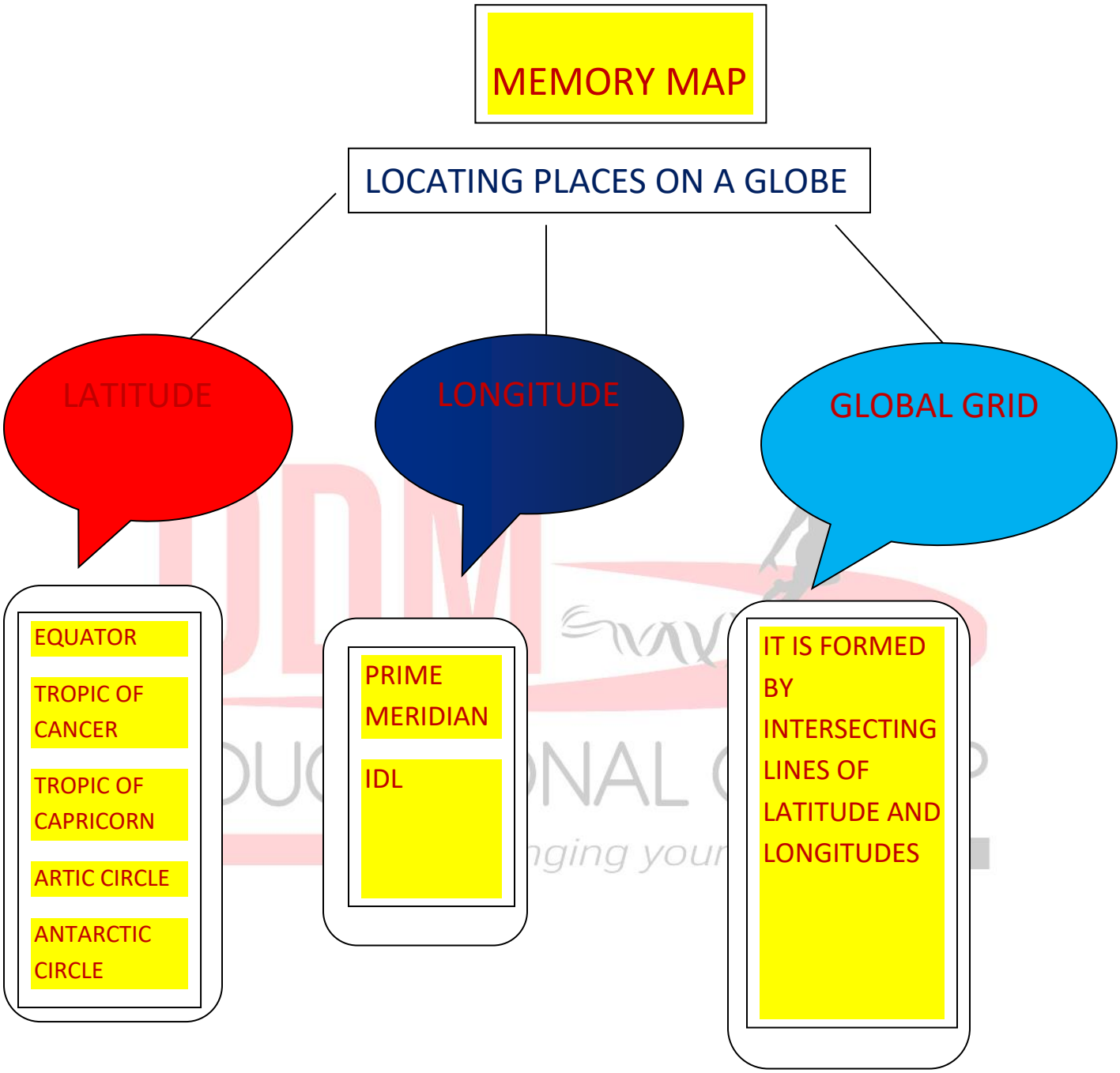
IDL is the International Date Line roughly follows the 180^o longitude.This line marks the place where the calendar date changes from one date to the next date.

The Global Grid

The latitudes and longitudes together form a network of lines, or a grid, on the globe. This is known as the global grid. If we know the longitude and latitude of a place we can locate it accurately on the global grid.



For example, the city X is located at 10° N and 20° E.


MEMORY MAP
LOCATING PLACES ON A GLOBE
LATITUDE
LONGITUDE
GLOBAL GRID
EQUATOR
TROPIC OF CANCER
TROPIC OF CAPRICORN
ARTIC CIRCLE
ANTARCTIC CIRCLE
PRIME MERIDIAN
IDL
IT IS FORMED BY INTERSECTING LINES OF LATITUDE AND LONGITUDES

Let's know more

What number does these lines represent:

- South Pole –
- Tropic of Cancer–
- Antarctic Circle –
- Tropic of Capricorn –

Let's Do

A. Fill in the blanks.

1. The Earth rotates along an imaginary line called the _____.
2. The Earth is divided into two hemispheres along an imaginary line called the _____.
3. _____ are lines that run parallel to the Equator.
4. On a globe,the lines running between the two poles are called _____.
5. The latitude marked 23 1/2 ° S is known as the _____ of _____.
6. The meridian marked 0° is called the _____ Meridian.

B. Match the columns.

1. Arctic Circle	a. 23.5°N
2. Antarctic Circle	b. 66.5°N
3. Tropic of Cancer	c. 0°meridian
4. Greenwich	d. 66.5°S

Understand and Answer

C. Answer the following questions.

1. How is the globe useful?

2. Why are latitudes and longitudes drawn on the globe?

3. What is the Prime Meridian?

4. If a place has a latitude of 10° N, is it in the Northern or Southern Hemisphere?

5. We know that the nearer a place is to the poles, the colder it is likely to be. Which city, in a) and b) below, is likely to be colder?

a. City X: latitude 30° N, longitude 25° W, or City Y: latitude 60° N, longitude 20° E.

b. City W: latitude 40° S, longitude 75° E, or City Z: latitude 75° S, longitude 50° W.

Teacher's Note

Eratosthenes was a geographer, thinker and astronomer, who lived in Greece around the 2nd century BCE. He was one of the first people to calculate the circumference of the Earth which we are following still now. He also created the first map of the world, using parallels and meridians .So , Eratosthenes has divided the globe into how many degrees, each degree into how many minutes and each minutes into how many seconds?

Improve your G. K

- The line that connects the North Pole and the south Pole on one side of the Earth is called the Prime meridian.
- India's standard time is 82.5° E.
- The sun rises first in New Zealand.
- Eartha, is the world's largest 3D model of globe in USA.

ANSWER KEY

Let's know more

- 90°S
- 23.5°N
- 66.5°S
- 23.5°S

Let's Do

A. 1. Axis
2. Equator
3. Latitudes
4. Longitude
5. Tropic of Capricorn
6. Prime

B. 1. Arctic Circle - b. 66. 5°N

2. Antarctic Circle - d. 66. 5°S

3. Tropic of Cancer - a. 23. 5°N

4. Greenwich - c. 0°meridian

Understand and Answer

C. 1. The globe is a small model of the Earth. Globe is used to show the shape and location of the continents, oceans and seas, countries, and the location of important cities.

2. To locate places on the globe, latitudes and longitudes are drawn on it.

3. The longitude running through the old Royal Observatory at Greenwich near London is marked 0°. It is called the Greenwich Meridian or the Prime Meridian.

4. If a place has a latitude of 10° N, it is in the Northern Hemisphere.

5. a. City Y is colder

b.City Z is colder