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**2 Latitudes and Longitudes**

**LET’S GET STARTED**

Ankit is very happy. His uncle, who lives in Canada, is coming to visit him in India.

**1**

* *When are you coming to Delhi, Uncle? It will be so much fun to have you with us!*
* *It will be soon, dear! First, I’ll have to go to Frankfurt and then to Istanbul for some work.*

**2**

* *My uncle is always travelling to these amazing places.*
* *Let me check the map and find out the location of these places.*

**3**

* *I am going on an adventure trip to beautiful places, just like my uncle. I have this map to guide me!*

**Learning Outcomes**

At the end of this lesson, learners will be able to:

* **differentiate** between relative and absolute locations.
* **identify** the important latitudes and longitudes.
* **demonstrate** how a grid is useful for finding places.

**Let’s Talk**

* *If you have to tell someone the location of a place, how will you do that?*

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**We Shall Learn**

**Ways of describing a location**

* relative location
* absolute location

**The absolute location of a place on the Earth can be determined by using:**

* latitudes
* longitudes

**LOCATION**

A location is a place where something happens or where someone or something is positioned. There are two ways of describing a location — relative and absolute.

**Relative Location**

When the position of a place is described in relation to other places, it is called a **relative location**.

* For example, you may describe the location of your house to your friend by stating how it is related to other places nearby like, ‘It is to the left of the big mall, or just past the park.’
* We can use familiar landmarks and directions such as ‘right’, ‘left’ or ‘straight ahead’ to give relative locations.

**Absolute Location**

An **absolute location** tells us the exact position where a place is located on the surface of the Earth.

* Your home address describes the absolute position of your house on the Earth.
* You can also know about the absolute location of your place from a map.
* An absolute location is the description of a place independent of any other place.

**Word to Know**  
*landmark*: (here) a prominent or well-known feature of a landscape

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**Think It Over!**

*Which type of location will help aeroplane pilots drop aid packages at a specific place?*

**LOCATING PLACES ON EARTH**

A globe has an **axle** that helps it to spin. The Earth also spins on an imaginary axle, which is known as the axis of the Earth. The two ends of the Earth’s axis are known as poles. The point at the top is known as the North Pole, and the point at the bottom is known as the South Pole.

The Equator is an imaginary line that divides the Earth into two equal halves, known as **hemispheres**. The half of the Earth above the Equator is called the **Northern Hemisphere** and the half below the Equator is called the **Southern Hemisphere**.

A globe or a map has a number of lines drawn on it. In reality, there are no lines on the Earth’s surface. These are imaginary lines that help us to find out the absolute location of a place on the Earth.

**LATITUDES**

The imaginary lines in each hemisphere drawn parallel to the Equator up to the poles are called **parallels of latitude**. Since the Earth is round, these lines are circular. They run in an east–west direction around the globe.

**The Equator is the most important line of latitude.**

**Word to Know**  
*axle*: a long straight piece of metal that connects two rotating items

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Latitudes are measured in **degrees**. The starting point for measuring the degrees of latitude is the Equator. The diagram given here shows that the Equator is at 0° latitude. The value of all other latitudes is followed by the letter N for Northern Hemisphere or S for Southern Hemisphere. For example, the latitude next to the Equator in the Northern Hemisphere is 1° N.

As we move further northwards, the lines of latitudes are numbered as 2° N, 3° N, 4° N and so on until we reach 90° N, which is the North Pole. The latitudes in the Southern Hemisphere are numbered in the same way till we reach the South Pole, which is located at 90° S.

The Equator, also known as the **Great Circle**, is the longest latitude. As we move northwards or southwards from it, the latitudes decrease in size till they are reduced to a dot at the poles.

**Important Lines of Latitudes**

Apart from the Equator and the poles, there are four other important lines of latitudes:

* Tropic of Cancer (23½° N)
* Tropic of Capricorn (23½° S)
* Arctic Circle (66½° N)
* Antarctic Circle (66½° S)

**Word to Know**  
*degrees*: measurements that are often expressed as a number followed by the symbol (°)

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**Engage and Explore**

Tropic of Cancer (23½° N) roughly divides India into two equal parts. Refer to Macmillan Junior School Atlas and list the states it passes through.

**Check Your Understanding**

**Fill in the blanks.**  
There are a total of \_\_\_ lines of latitude—90 lines north of the Equator, \_\_\_ lines south of the Equator.

**LONGITUDES**

**Longitudes**, also known as **meridians**, are imaginary lines that run from the North Pole to the South Pole. They, too, are numbered like latitudes.

According to an international agreement, the longitude passing through the **Royal Observatory at Greenwich in England, United Kingdom**, is accepted as 0° longitude. It is called the **Prime Meridian**. The Prime Meridian is the starting point for measuring longitudes. Other longitudes are drawn to the east and west of the Prime Meridian.

* The meridians of longitude to the east of the Prime Meridian are numbered from 1° E up to 180° E. Similarly, the meridians of longitude to the west of the Prime Meridian are numbered from 1° W up to 180° W. There are 360 lines of longitude, including the Prime Meridian.

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The Prime Meridian and 180° longitude create a circle and divide the Earth into two equal parts. The area between 0° longitude and 180° E is called the **Eastern Hemisphere**, and the area between 0° longitude and 180° W is called the **Western Hemisphere**. However, 180° E and 180° W is the same longitude. The **International Date Line** runs along it.

* The distance between two longitudes is **maximum** at the Equator. The distance **decreases** as one moves towards the poles, where the longitudes meet.

**Zoom In**

The Prime Meridian passes through these countries — the United Kingdom, France, Spain, Algeria, Mali, Burkina Faso, Togo and Ghana.

**Check Your Understanding**

**Fill in the blanks.**  
There are a total of \_\_\_ lines of longitude, including the Prime Meridian.

**GRID**

Longitudes and latitudes criss-cross each other to form a network of lines known as **grid**. The points in the grid where latitudes and longitudes intersect each other is called **coordinates**. Coordinates help us to locate any place or point on the Earth.

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**Engage and Explore**

In the grid given below, the columns are labelled on the top with the letters A, B, C and D. The rows are labelled with the numbers 1, 2, 3 and 4.

Ravi’s house is located in the grid box/square formed in column A, row 4. The name of the grid box/square is A4. Similarly, Makhija Hospital is located at B2.

**Find Out**

1. In which grid (box/square) Ravi’s school and Panache Shopping Mall are located. Write your answers here:
   * Ravi’s school \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   * Panache Shopping Mall \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Let us now do a similar activity on a map.

1. Look at the map (on the next page) to find out in which grid the following towns/cities are located.
   * Tehri \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   * Rudrapur \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   * Nainital \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   * Haridwar \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**UTTARAKHAND Major Cities**

**Chapter Checklist**

**Tick (✓) the concepts you have understood.**

☐ The Equator divides the Earth into two equal halves — the Northern Hemisphere and the Southern Hemisphere.  
☐ Latitudes are imaginary lines running parallel to the Equator.  
☐ Longitudes are imaginary lines running from the North Pole to the South Pole.  
☐ The Prime Meridian and 180° longitude divide the Earth into two halves — the Eastern Hemisphere and the Western Hemisphere.  
☐ The grid boxes/squares formed by latitudes and longitudes help us to locate a place on the Earth.

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**EXERCISES**

**I. Choose the correct option.**

1. Which of the following options represents the absolute location of a village?  
   a. It is located in the middle of the Himalayas.  
   b. It is located close to the state capital.  
   c. It is located at 10° N and 20° E.  
   d. It is located 20 km from the main town.
2. The half of the Earth between the North Pole and the Equator is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Hemisphere.  
   a. Eastern ☐ b. Western ☐ c. Northern ☐ d. Southern ☐
3. The longitude next to the 10° E towards the east is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.  
   a. 5° E ☐ b. 9° E ☐ c. 11° E ☐ d. 15° E ☐
4. Which of the following latitudes is the longest?  
   a. 0° ☐ b. 20° S ☐ c. 45° S ☐ d. 90° N ☐
5. Which of the following latitudes is closest to the Tropic of Capricorn?  
   a. 0° ☐ b. 20° S ☐ c. 45° S ☐ d. 90° S ☐

**II. Match the following.**

1. Equator — \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Prime Meridian — \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Arctic Circle — \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Western Hemisphere — \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. Tropic of Cancer — \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Options:  
a. 66½° N latitude  
b. a latitude which lies in the middle of the Earth, at an equal distance from the North Pole and the South Pole  
c. a longitude that passes through Greenwich, London  
d. 23½° N latitude  
e. area between 0° and 180° W

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**III. Rearrange the jumbled words.**

1. TUDELATI — \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. LONDETUGI — \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. ROTAQUE — \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. ANDIRIME — \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. RDIG — \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**IV. Answer the following questions.**

1. How can we locate a place on the Earth?
2. Mention one similarity and one difference between latitudes and longitudes.
3. How are latitudes numbered?
4. Define Prime Meridian.
5. What is a grid?
6. Draw a labelled diagram to show the important lines of latitudes.

**V. Think It Over! (HOTS)**

1. Discuss why are latitudes and longitudes important, even though these are imaginary lines.
2. The distance between two longitudes is maximum at the Equator. Can you give a reason why it is so?