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**We Shall Learn**

**MOVEMENTS OF THE EARTH**

We see *varying* positions of the Sun at different times of the day. For example, the Sun is right over your head at noon, and you can feel its heat and brightness. In the evening, the Sun sets in the west. These positions of the Sun give us the impression that the Sun keeps changing its position in the sky. However, the fact is that the Sun never moves. The planets in the solar system, including the Earth, are the ones that are always in *motion*.  
The Earth has two basic movements. These movements are **rotation** and **revolution**.

**Rotation**

When you spin a top, it rotates on its axis. Similarly, the Earth also rotates on its axis. The only difference is that the axis of the Earth is invisible because it is an imaginary line. The Earth rotates in a slightly slanted position as the axis is tilted. This movement is called **rotation**. The Earth takes 24 hours to complete one rotation.

The direction of this rotation is from west to east. That is why it seems to us that the Sun rises in the east and sets in the west.

**Words to Know**  
*varying*: different  
*motion*: (here) a movement that something makes

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**Engage and Explore**

**Create Your Own Rotating Disc**

**Things needed:**

* a square-shaped thick cardboard (about 8 to 10 cm from sides)
* a used pencil (about 6 cm long)
* a pair of scissors

**Action Time:**

* Take the square cardboard and cut it into a circular shape, with the help of an adult.
* Mark the centre of the circle and make a hole using the scissors.
* Insert the pencil tightly through this hole.
* Your disc is ready. Now spin it like a top.

**Observation Time:**

* What is the name of the movement in which your cardboard disc is moving?
* Which of these form the axis of the disc, cardboard or pencil?
* Now, imagine that there was no pencil inserted through the centre of the disc. If the disc represents our planet Earth, what do you think would be the effect?

**Day and Night**

Day and night are caused by the Earth’s rotation. As the Earth rotates, a part of the planet faces the Sun, while the remaining part faces away from it. The part of the Earth that faces the Sun experiences day, while the other part that is away from the Sun experiences night.

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**Think It Over!**

Shine a torch on a globe in a dark room. You will see that only half of the globe is lit. The other half will be dark. Now, rotate the globe. The dark areas, now, become lighted and the areas that were previously lit, will go into darkness.

**What do you understand from this activity about the rotation of the Earth?** Share your observation and comments in the class.

**Check Your Understanding**

**Read the cause mentioned below and write down the effects of it on the following:**

**Cause:** The Earth rotates on its axis.

**Effect:**

* On environment ………………………………………
* On humans ………………………………………
* On birds and animals ………………………………………

**Revolution**

While rotating on its axis, the Earth also moves around the Sun along a fixed path. This fixed path is called the **orbit**, which is *elliptical* in shape. This movement of the Earth around the Sun is called **revolution**.

The Earth takes one year or **365¼ days** to complete one revolution. However, we consider one calendar year to have 365 days. The balance ¼ day (or 6 hours) is added up for four years in a row. After four years, it becomes an additional 24 hours or one day. Hence, once in every four years, an extra day is added to the month of February. As a result, in that year February has 29 days, and it is called a **leap year**. We have 366 days in a leap year. Therefore, any year divisible by four is a leap year.

**Word to Know**  
*elliptical*: oval in shape

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**Zoom In**

The Earth is not at the same distance from the Sun during its period of revolution. The point of the Earth’s orbit when the Earth is closest to the Sun is called **Perihelion**. Similarly, the point of the Earth’s orbit when the Earth is farthest from the Sun is called **Aphelion**.

**Seasons**

The movement of the Earth around the Sun brings about changes in seasons. The Earth has four main seasons—spring, summer, autumn and winter.

Seasons are caused due to the tilt of the Earth’s axis as our planet revolves around the Sun. As the tilted Earth moves in its orbit around the Sun, a certain part of our planet gets closer to the Sun. You have learnt that the Equator divides the Earth into two equal halves—the Northern Hemisphere and the Southern Hemisphere. So, when the North Pole is tilted towards the Sun (as in June), the Northern Hemisphere experiences **summer**. At the same time, the South Pole is tilted away from the Sun; therefore, the Southern Hemisphere experiences **winter**.

Also, there are times during the Earth’s revolution when the two poles are at an equal distance from the Sun, neither tilted towards the Sun nor away from it. At such times, we experience **spring** and **autumn**. The weather is neither very hot nor very cold during these seasons.

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Besides causing seasons, the tilt of the Earth causes variation in the length of days and nights. You must have noticed that during summer, the days are long and nights are short. However, in winter, it is the opposite. Days are shorter and nights are longer.

**Zoom In**

Sure you have witnessed different seasons and experienced changes that come with each season. It is important to make changes in our lifestyle with changes in seasons for a healthy body. For example, we must dress according to the season and eat seasonal fruits and vegetables.

Changing your lifestyle with changes in seasons has environmental benefits too. For example, seasonal fruits and vegetables are grown in natural conditions without chemical fertilisers and pesticides that are harmful for the environment. By eating seasonal fruits and vegetables you contribute greatly towards environmental health.

**Solstices and Equinoxes**

In the Northern Hemisphere, the days during summer continue to be long, till **21 June**. This is the longest day of the year and is known as the **summer solstice**. On this day, the rays of the Sun fall directly on the **Tropic of Cancer**. After that, the length of the day slowly begins to decrease.

On the other hand, during winter in the Northern Hemisphere, the days continue to be short, till **22 December**. This is the shortest day of the year and is known as the **winter solstice**. On this day, the rays of the Sun fall directly on the **Tropic of Capricorn**. After this date, the length of the day begins to increase.

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There are two days in the whole year when the days and nights are equal in length. On these two days, the rays of the Sun fall directly on the Equator. These days are called **equinoxes**. There are 12 hours of daylight and 12 hours of night on such days. In the Northern Hemisphere, **21 March** and **23 September** are known as **spring or vernal equinox** and **autumnal equinox**, respectively.

**Revolution of the Earth causes different seasons.**

**Zoom In**

* At the North Pole and the South Pole, the Sun does not set for six months during summer. Similarly, during winter at the poles, the Sun does not rise for another six months.
* In the Northern Hemisphere, people in certain places of Norway, Sweden and Iceland see the Sun at midnight from May to July.

Ready for **Pages 7–8**? Here they come!

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**Chapter Checklist**

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

☐ The Earth has two different movements: rotation and revolution.  
☐ The spinning of the Earth on its tilted axis is called rotation.  
☐ Rotation of the Earth causes day and night and it takes 24 hours to complete one rotation.  
☐ The movement of the Earth around the Sun on a fixed path (orbit) is called revolution and it takes 365¼ days to complete one revolution.  
☐ Seasons occur due to the revolution of the Earth around the Sun.  
☐ The tilt of the Earth causes variation in the length of days and nights.  
☐ The summer and winter solstices and the spring and autumn equinoxes take place at particular days in the year.

**EXERCISES**

**I. Choose the correct option.**

1. The Earth has \_\_\_\_\_\_ basic movements.  
   a. two ☐ b. three ☐ c. four ☐ d. five ☐
2. The Sun appears to rise in the \_\_\_\_\_\_ due to the rotation of the Earth.  
   a. east ☐ b. west ☐ c. north ☐ d. south ☐
3. The fixed path along which the Earth moves around the Sun is called the \_\_\_\_\_\_.  
   a. axis ☐ b. tilt ☐ c. orbit ☐ d. movement ☐
4. If 2020 was a leap year, which would be the next?  
   a. 2022 ☐ b. 2024 ☐ c. 2026 ☐ d. 2028 ☐
5. Which of the following countries celebrate Christmas during summer?  
   a. India ☐ b. Canada ☐ c. South Africa ☐ d. Japan ☐

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**II. Rearrange the jumbled words.**

1. TAINORTO ➜ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. OUONTILERV ➜ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. LOTSECSI ➜ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. XIOQUEN ➜ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. LNARVE ➜ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**III. The underlined word in each sentence is incorrect. Replace it with the correct word.**

1. The movement of the Earth on its own axis is called *revolution*. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. The Earth takes 28 hours to complete one rotation. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. The *revolution* of the Earth causes day and night. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. The movement of the Earth around the *Moon* on its orbit is called revolution. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. Seasons change because of the Earth’s *rotation* around the Sun. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**IV. Answer the following questions.**

1. In which direction does the Earth rotate? What happens due to this movement?
2. Write the main differences between rotation and revolution.
3. How many days are there in the month of February in a leap year? Why is it so?
4. Why does the Northern Hemisphere have winter in December?
5. What is a solstice?

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

The Sun gives almost the same amount of heat and light throughout the year, but some months are cold while others are hot. Why does this happen?

**ACTIVITY CORNER**

**Mandala Leaf Art**

You must have noticed dry leaves falling off trees. Here is a great way to use these leaves for a DIY activity.

**Step 1:** Collect different types of leaves: Place the leaves between the pages of a book for 1–2 weeks.