1. How Seasons Occur - Part 1

Let's recall.

- How do day and night occur on the earth?
- What term is used to describe the earth's revolution around the sun?
- How long does the earth take to do so?
- In which hemispheres is our country located?
- Why don't the sun's rays fall perpendicular at all the places on the earth?

Can you tell?

Note the timings of sunrise and sunset in your area, for the following period by direct observation, or using calendars, newspapers or the Internet. A specimen table has been given below. Record the entries for the month of June, find the answers to the following questions and discuss them.

- Among the records in the table which is the longest day?
- What difference do you notice in the duration of the nights day by day?
- Guess the reason behind it.
- How did you find out the duration of the night?
- Which two dates had days and nights of the same duration?
- With the help of the table, you saw how the duration of the day and the night changes. Do you think such a change occurs everywhere on the earth?
- Use the following format to record the duration of daytime from the 19th to 28th of every month from September to December.

Geographical explanation

You must have noticed the change in the duration of daytime and the nighttime from 19th to 28th June. It takes 24 hours for the earth to rotate around itself. It rotates from west to east. The earth's rotation has enabled us to measure time in terms of days. During a single day, we experience different stages like sunrise, midday, sunset as well as daytime and nighttime.

To understand the changes in the locations of sunrise and sunset on the horizon, let us carry out the activity given on the next page.

Date	Sunrise	Sunset	Duration		Source of Information
			Day	Night	
19th June					
20th June					
21st June					
22nd June					
23rd June					
24th June					
25th June					
26th June					
27th June					
28th June					

Try this.

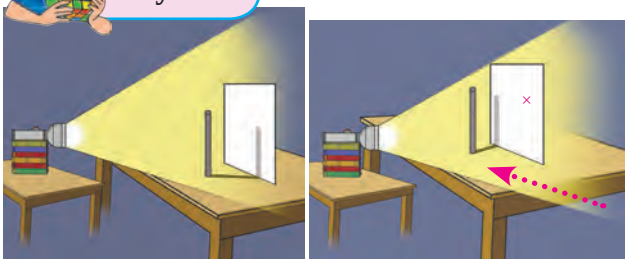

Figure 1.1 Experiment of the shadow

- Paste a large white paper on one side of the table.
- Place a torch in front of the table in such a way that it wouldn't move.
- Stand a rod or a candle between the white paper and the torch. See fig. 1.1
- Direct the light beam of the torch in such a way that the shadow of the rod/candle falls on the paper.
- Mark the position of the shadow on the paper.
- Move the table along with the rod/candle, from one side to the other slowly.
- Observe and mark the position of the shadow that falls on the paper.
- Note the change in the location of the shadow.

Geographical explanation

From this activity, you will realize that as the position of the table changes, the position of the shadow also changes. If the positions of the sunrise and the sunset on the horizon are observed for the whole year, you will realize that they keep on changing. Let us try to understand the reason behind this with the help of the next activity.

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Try this.

*(**For teachers :** This activity is to be conducted throughout the year. Start this within eight days after the school opens. Continue it till the end of December. Make observations once in a week at the time of sunrise or sunset as per your convenience).*

- Take a thick stick about 1.5 to 1.7 m long.
- Keeping some distance, fix the stick near a wall that receives sunlight at the time of sunrise or sunset throughout the year. (Remember that the stick has to be fixed at this spot for a period of about one year.)

Figure 1.2 Experiment

- After the observation, mark the position of the shadow for that date.
- If the position of the shadow changes, measure and note the distance between the earlier and the changed position.
- During the period of this activity, observe the place of sunrise and the sunset on the horizon as well.

(The next part of the lesson should be dealt with in the month of September)

- Study the duration of daytime and nighttime on the basis of observations from the table for the month of September.
- What was the direction of the shadow of the stick in the month of September?
- On which day was the duration of the day and the night the same?

Think about it.

☞ If the position of the shadow on the wall moves towards the north, in which direction does the location of sunrise or sunset appear to shift?

Note : The second half of this lesson (Chapter 8) should be handled in the class around 22nd of December. Before that, record the observations as explained above.