

# Activity 24

## OBJECTIVE

To construct an ellipse using a rectangle.

## MATERIAL REQUIRED

A hardboard, white paper, coloured paper, nails, nylon wire/thread, ruler, adhesive.

## METHOD OF CONSTRUCTION

1. Take a rectangular hardboard of a convenient size and paste a white paper on it.
2. Cut a rectangle MNBL of suitable dimensions from a coloured paper and paste it on the hardboard.
3. Divide this rectangle into four congruent rectangles as shown in the Fig.24.

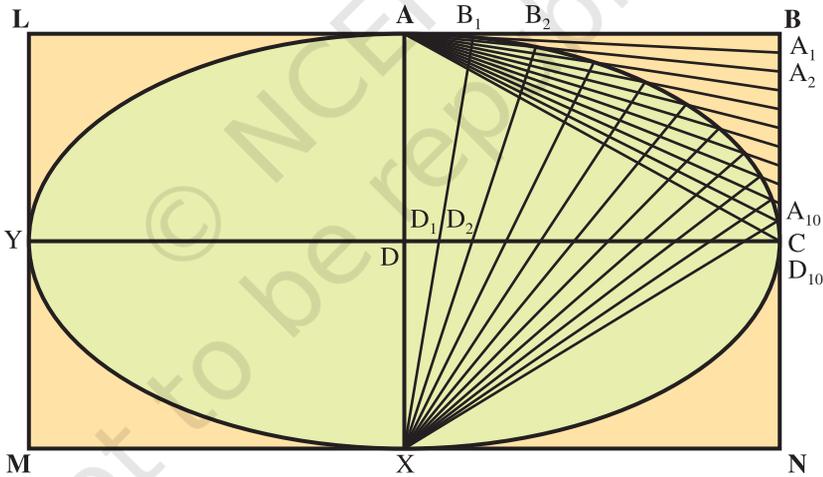


Fig. 24

4. Divide each of the sides BC and DC of the rectangle ADCB, into some equal parts, (say, 11)
5. Mark the point of subdivisions of BC as  $A_1, A_2, \dots$  and that of DC as  $D_1, D_2$ , (See Fig. 24)

6. Join the point A to points,  $A_1, A_2, \dots$  and draw the lines joining the point X to  $D_1, D_2, \dots$  (See Fig. 24)
7. Mark the point of intersection of  $AA_1$  and  $XD_1$  as  $B_1$ ,  $AA_2$  and  $XD_2$  as  $B_2$  and so on.
8. Fix nails at the points  $B_1, B_2, \dots, B_{10}$ .
9. Join the feet of nails with a nylon wire/thread, as shown in the figure.
10. Repeat the same activity for remaining three congruent rectangles and obtain a curve as shown in Fig. 24.

### DEMONSTRATION

The curve obtained looks like an ellipse. The major axis of this ellipse is the length of the rectangle MNBL and the minor axis of the ellipse is the breadth of the rectangle.

### OBSERVATION

1. Length of the rectangle MNBL = \_\_\_\_\_.
2. Breadth of the rectangle MNBL = \_\_\_\_\_.
3. Major axis of the ellipse is \_\_\_\_\_.
4. Minor axis of the ellipse is \_\_\_\_\_.

### APPLICATION

This activity may be helpful in understanding the concept such as major and minor axis of an ellipse. It is also useful in drawing elliptical designs such as in swimming pools, tables, etc.