Activity 25

Objective

To construct an ellipse with given major and minor axes.

Material Required

A hardboard, white paper, nylon wire/thread, adhesive, chart paper.

Method of Construction

1. Take a rectangular sheet of a hardboard of a convenient size and paste a white paper on it.
2. Mark a point O on it and draw two concentric circles with centre O and radii as given semi-major and semi-minor axis of the ellipse. Mark one of the diameter of bigger circle as AOB and call it a horizontal line (see Fig. 25)

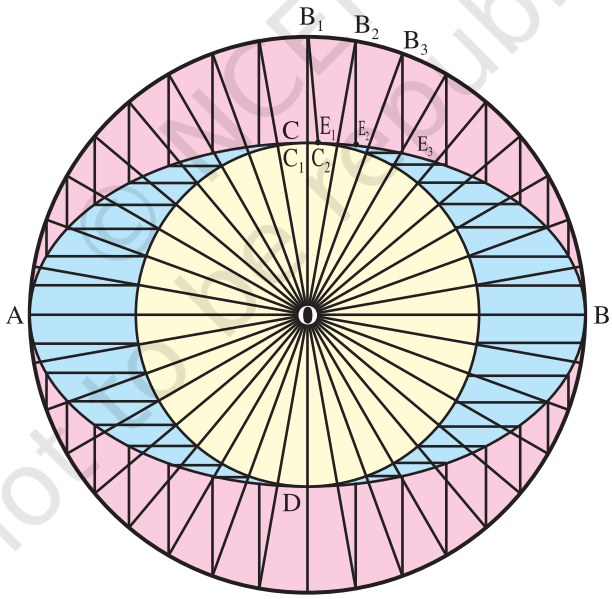

Fig. 25

3. Draw radii of the circles in such a way that the angle between two consecutive radii is the same, say 10º.

4. Take any radius OB_1 of the bigger circle cutting the smaller circle at C_1. Draw a horizontal line through C_1 and draw a perpendicular (vertical line) from B_1 to this horizontal line and obtain point E_1 (see Fig. 25).
5. Repeat this process for all the radii OB_2, OB_3, and so on of the bigger circle and obtain the points E_2, E_3, ... and so on.
6. Fix the nails at the points E_1, E_2, E_3, ... and join the feet of the nails by a nylon wire/thread and obtain a curve (see Fig. 25).

Demonstration

1. The curve obtained looks like an ellipse.
2. Major axis of the ellipse is AOB and the minor axis of the ellipse is COD, where COD is the diameter of the smaller circle perpendicular to diameter AOB.

Observation

1. OA = _____, OB = _____.
2. OC = _____, OD = _____.
3. Major axis of the ellipse _____, Minor axis of the ellipse = _____.
4. Points E_1, E_2, ... lie on _____ .

Application

This activity may be used in constructing elliptical designs using thread work and also in explaining concepts such as major and minor axis of an ellipse.