

Activity 28

OBJECTIVE

To form a cone from a sector of a circle and to find the formula for its curved surface area.

MATERIAL REQUIRED

Wooden hardboard, acrylic sheets, cellotape, glazed papers, sketch pens, white paper, nails, marker.

METHOD OF CONSTRUCTION

1. Take a wooden hardboard of a convenient size and paste a white paper on it.
2. Cut out a circle of radius l from a acrylic sheet [see Fig. 1].
3. Cut out a sector of angle θ degrees from the circle [see Fig. 2].
4. Bring together both the radii of the sector to form a cone and paste the ends using a cellotape and fix it on the hardboard [see Fig. 3].

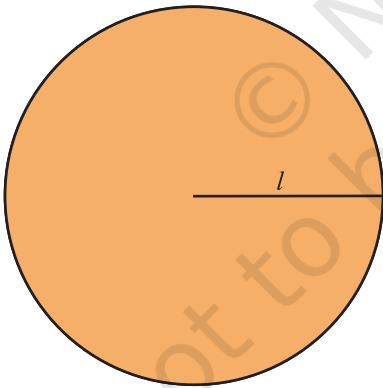


Fig. 1

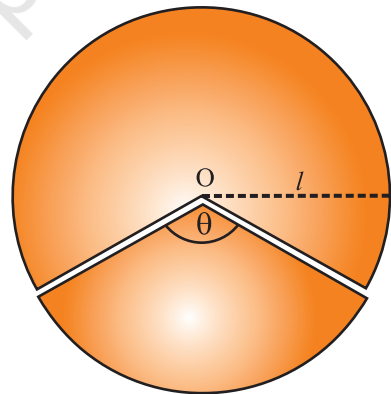


Fig. 2

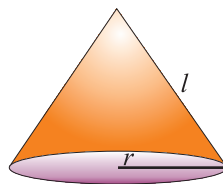


Fig. 3

DEMONSTRATION

1. Slant height of the cone = radius of the circle = l .
2. Radius of the base of the cone = r .
3. Circumference of the base of the cone = Arc length of the sector = $2\pi r$.
4. Curved surface area of the cone = Area of the sector

$$= \frac{\text{Arc length}}{\text{Circumference of the circle}} \times \text{Area of the circle}$$

$$= \frac{2\pi r}{2\pi l} \times \pi l^2 = \pi r l.$$

OBSERVATION

On actual measurement :

The slant height l of the cone = _____, r = _____

So, arc length l = _____,

Area of the sector = _____, Curved surface area of the cone = _____

Therefore, curved surface area of the cone = Area of the sector.

Here, area is in square units.

APPLICATION

The result is useful in

1. estimating canvas required to make a conical tent
2. estimating material required to make Joker's cap, ice cream cone, etc.