DEMONSTRATION

1. Length of the rectangular paper = l = circumference of the base of the cylinder = $2\pi r$, where r is the radius of the cylinder.

2. Breadth of the rectangular paper = b = height (h) of the cylinder.

3. The curved surface area of the cylinder is equal to the area of the rectangle = $l \times b = 2\pi r \times h = 2\pi rh$ square units.

OBSERVATION

On actual measurement :

l = ..., b = ...,

$2\pi r = l$ = ..., $h = b$ = ...,

Area of the rectangular paper = $l \times b$ = ...

Therefore, curved surface area of the cylinder = $2\pi rh$.

APPLICATION

This result can be used in finding the material used in making cylindrical containers, i.e., powder tins, drums, oil tanks used in industrial units, overhead water tanks, etc.

Activity 31

OBJECTIVE

To obtain the formula for the surface area of a sphere.

MATERIAL REQUIRED

A ball, cardboard/wooden strips, thick sheet of paper, ruler, cutter, string, measuring tape, adhesive.

METHOD OF CONSTRUCTION

1. Take a spherical ball and find its diameter by placing it between two vertical boards (or wooden strips) [see Fig. 1]. Denote the diameter as d.

2. Mark the topmost part of ball and fix a pin [see Fig. 2].

3. Taking support of pin, wrap the ball (spirally) with string completely, so that on the ball no space is left uncovered [see Fig. 2].

4. Mark the starting and finishing points on the string, measure the length between these two marks and denote it by l. Slowly, unwind the string from the surface of ball.

5. On the thick sheet of paper, draw 4 circles of radius 'r' (radius equal to the radius of ball).
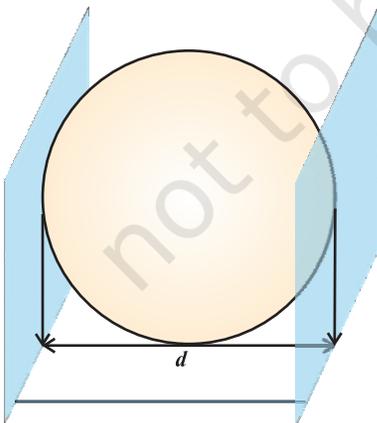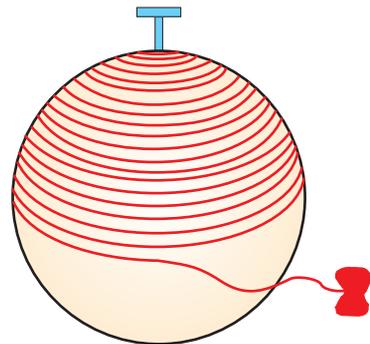

Fig. 1

Fig. 2