Right Circular Cylinder

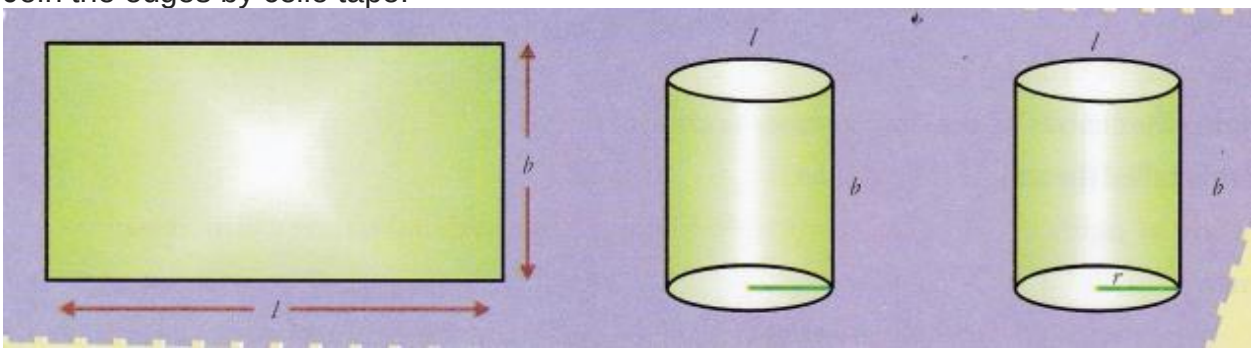
Objective
To make a right circular cylinder of given height and circumference of circular base from a given rectangle experimentally.

Prerequisite Knowledge
Formula for the circumference of a circle.

Materials Required
Coloured papers, a pair of scissors, fevicol, cello tape, pencil, ruler.

Procedure

1. Draw and cut a rectangle of length = l and breadth = b from a coloured sheet of paper.
2. Curve the paper so that the two shorter sides come together.
3. Join the edges by cello tape.



4. Write your observation.

Observation

1. Rectangle transforms into a cylinder. Let radius of this cylinder be r.
2. Height of the cylinder = breath of rectangle, i.e., b = h.
3. Circumference of the base = length of rectangle, i.e., l = 2πr.

Result
A right circular cylinder can be made of the height and circumference of circular base from the rectangle of desired length and breadth.

Learning Outcome
Students will learn to make a cylinder of given height and circumference of the circular

base.
Circumference of base = length of the rectangular sheet

Activity Time

Make a right circular cylinder of height 7 cm and circumference of base 20 cm.

Viva Voce

Question 1.
What is a cylinder ?
Answer:
On folding a rectangular sheet along the length or breadth, we get shape called cylinder.

Question 2.
Is there any vertex of the cylinder ?
Answer:
No.

Question 3.
What is the volume of a cylinder ?
Answer:
$\pi r^2 h$. Where r = radius of base, h = height of cylinder.

Question 4.
If r of cylinder is doubled, then by how much its volume will increase ?
Answer:
Four times.

Question 5.
What is the axis of cylinder ?
Answer:
Line joining the centres of the circular cross-sections of a cylinder is called the axis of the cylinder.

Question 6.
If the height of right circular cylinder is doubled then by how much its volume will increase ?
Answer:
Two times.

Question 7.
If the height of a circular cylinder is reduced to one-nineth and the radius of its base is trippled, then what will be the effect on the volume of the cylinder ?
Answer:
No change in the volume of the cylinder.

Question 8.
If the radius of the base of a right-circular cylinder is halved keeping the height same, find the ratio of the volume o'f the reduced cylinder to that of the original cylinder.
Answer:
1:4.

Multiple Choice Questions

Question 1.
The volume of a cylinder with radius 12 cm and height 28 cm is
(a) 12672 cm^3
(b) 16272 cm^3
(c) 12627 cm^3
(d) None of these

Question 2.
A cylindrical tank has a capacity of 6160 m . If the diameter of its base is 28 m, then its depth is
(a) 12 m
(b) 10 m
(c) 8 m
(d) none of these

Question 3.
Curved surface area of a right circular cylinder is
(a) $\pi r^2 h$
(b) $2\pi rh$
(c) $2\pi r(h + r)$
(d) none of these

Question 4.
The circumference of the base of a cylindrical vessel is 132 cm and its height is 25 cm.

How many litres of water can it hold ?
(a) 3.465 l
(b) 34.65 l
(c) 346.5 l
(d) none of these

Question 5.
The radius and height of a cylinder are in the ratio 5:7 and its volume is 550 cm^3. Then its radius is
(a) 7 cm
(b) 12 cm
(c) 5 cm
(d) none of these

Question 6.
The radii of two cylinders are in the ratio 2: 3 and their heights are in the ratio 5 : 4. Then the ratio of their volumes is
(a) 5:9
(b) 5:7
(c) 7:9
(d) none of these

Question 7.
Volume of a right circular cylinder which has height 21 cm and the base radius 5 cm is
(a) 1650 cm^3
(b) 1056 cm^3
(c) 1605 cm^3
(d) 1560 cm^3

Question 8.
Find the depth of a cylindrical tank of radius 28 m, if its capacity is equal to that of a rectangular tank of size 28 m x 16 m x 11 m.
(a) 2 m
(b) 3 m
(c) 4 m
(d) none of these

Question 9.
The diameter of a roller is 84 cm and its length is 120 cm. It takes 500 complete revolutions to move once over to level the playground area of the playground in m is
(a) 1845 m^2
(b) 1854 m^2
(c) 1584 m^2
(d) none of these

Question 10.
A metallic pipe is 77 cm long. The inner diameter of a cross section is 4 cm, the outer diameter being 4.4 cm. Then its inner curved surface area is
(a) 869 cm^2
(b) 968 cm^2
(c) 980 cm^2
(d) 960 cm^2

Answers

1. (a)
2. (b)
3. (b)
4. (b)
5. (c)
6. (a)
7. (a)
8. (a)
9. (c)
10. (b)