

## Right Circular Cone

### Objective

To make a cone of given slant height and the circumference of circular base from circular portion experimentally.

### Prerequisite Knowledge

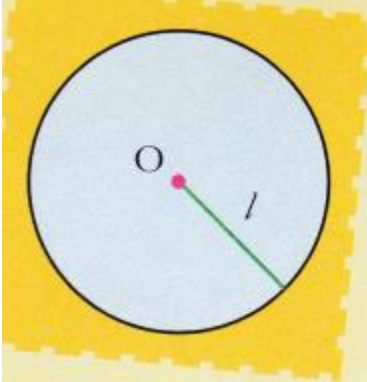
1. Circumference of the circle.
2. Concept of sector of a circle.
3. Concept of pythagoras theorem.

### Materials Required

Coloured chart papers, a pair of scissors, cello tape, geometry box.

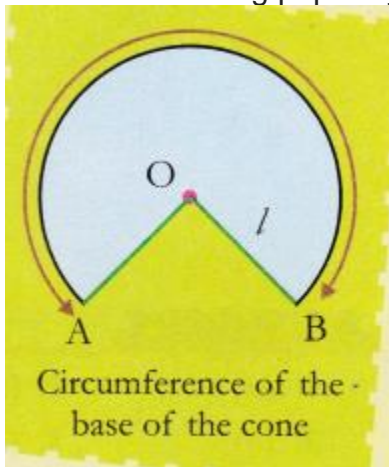
### Procedure

1. Draw and cut a circle from a coloured chart paper of radius equal to the given slant height say 'l' of the cone.



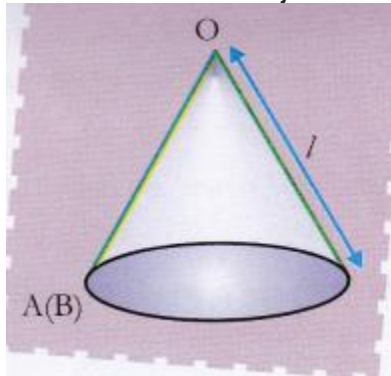
2. Mark a sector OAB such that major AB = circumference of the base of cone. i.e, if r be the radius of cone then length of major arc AB =  $2\pi r$ .
3. Cut the sector AOB.

4. Fold the remaining paper by bringing the two radii OA and OB together.



### Observation

When two radii are joined together, a cone is formed.



### Result

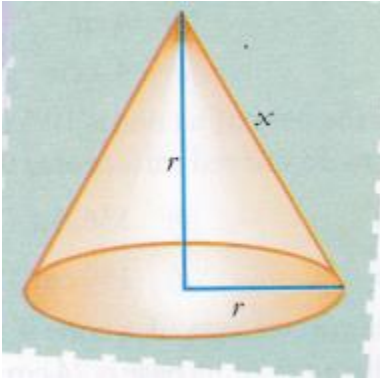
A cone of given slant height and circumference of base can be made experimentally.

### Learning Outcome

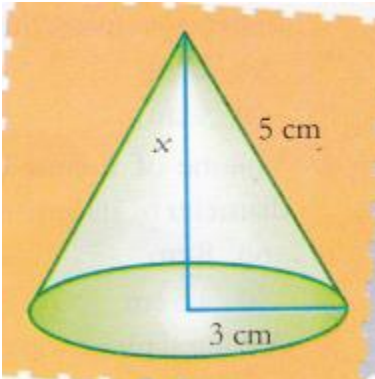
Students will learn how to make a cone of given slant height and circumference of base from the sector of a circle. They will also learn how the radius of the circle becomes the slant height of the cone and the arc length of the circle becomes the circumference of the base of the cone.

### Activity Time

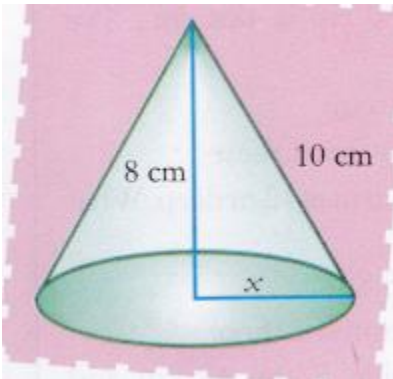
1. Find  $x$ .



2. Find  $x$ .



3. Find  $x$ .



4. Make a right circular cone of given slant height  $13\text{ cm}$  and base radius  $5\text{ cm}$ . Also find its height by measurement and by calculation.

### Viva Voce

#### Question 1.

How many vertices are there in a right circular cone ?

**Answer:**

One

#### Question 2.

What is the relation between radius of base, height of cone and slant height of cone ?

**Answer:**

$l^2 = r^2 + h^2$ , where  $l$  = slant height,  $r$  = radius,  $h$  = height.

**Question 3.**

What are different parts of a cone ?

**Answer:**

Circular base, vertex, curved surface

**Question 4.**

Give two examples of a right circular cone.

**Answer:**

Birthday cap, cone of ice cream

**Question 5.**

If the height of a cone is equal to the radius of base of the cone, then find the slant height of the cone

**Answer:**

Slant height =  $\sqrt{2}$  x Height of cone

**Question 6.**

What is the slant height of a cone ?

**Answer:**

It is the distance of the vertex from any point on the base (circumference of circle).

**Question 7.**

What is the curved surface area of a cone ?

**Answer:**

$\pi rl$ , where  $r$  = radius of cone,  $l$  = slant height of the cone.

**Question 8.**

What is the volume of a cone ?

**Answer:**

$\frac{1}{3} \pi r^2 h$ , where  $r$  = radius of cone and  $h$  = height of cone.

**Multiple Choice Questions**

**Question 1.**

Radius of the base of a cone is 5 cm and slant height is 13 cm. Then height of the cone is

- (a) 12 cm
- (b) 8 cm
- (c) 18 cm
- (d) none of these

**Question 2.**

If the height of the cone is 6 cm and the radius of its base is 8 cm, then slant height is

- (a) 2 cm
- (b) 10 cm
- (c) 14 cm
- (d) none of these

**Question 3.**

If the height and slant height of a cone are 3 cm and 5 cm respectively, then the radius of its base is

- (a) 2 cm
- (b) 8 cm
- (c) 4 cm
- (d) none of these

**Question 4.**

Volume of a cone of height 9 cm is  $4871 \text{ cm}^3$ . The diameter of its base is

- (a) 8 cm
- (b) 9 cm
- (c) 4.5 cm
- (d) none of these

**Question 5.**

A conical pit of top diameter 3.5 m is 12 m deep. What is the capacity in kilolitre ?

- (a) 38.5 kl
- (b) 3.85 kl
- (c) 385 kl
- (d) none of these

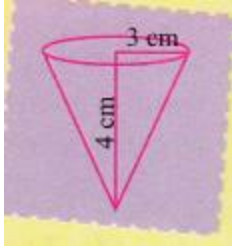
**Question 6.**

A right triangle ABC with side 5 cm, 12 cm and 13 cm is revolved about the side 12 cm. What is the volume of the solid so obtained ? [Take  $\pi = 3.14$ ]

- (a)  $314 \text{ cm}^3$
- (b)  $341 \text{ cm}^3$
- (c)  $143 \text{ cm}^3$
- (d) none of these

**Question 7.**

Find the volume of a conical bucket as shown in the fig.



- (a)  $37.7 \text{ cm}^3$
- (b)  $37 \text{ cm}^3$
- (c)  $36.7 \text{ cm}^3$
- (d)  $36 \text{ cm}^3$

**Question 8.**

Radius of the base of a cone is 3 cm and slant height is 5 cm. The height of the cone is

- (a) 3 cm
- (b) 4 cm
- (r) 5 cm
- (d) 4.1cm

**Question 9.**

Diameter of the base of a cone is 10.5 cm and its slant height is 10 cm. Its curved surface area is

- (a)  $165 \text{ cm}^2$
- (b)  $156 \text{ cm}^2$
- (c)  $160 \text{ cm}^2$
- (d)  $150 \text{ cm}^2$

**Question 10.**

Find the total surface area of a cone if its slant height is 21 m and diameter of its base is 24 cm.

- (a)  $1244.57 \text{ m}^2$
- (b)  $1442.57 \text{ m}^2$
- (c)  $1440.57 \text{ m}^2$
- (d)  $1441.57 \text{ m}^2$

## Answers

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