MATHS

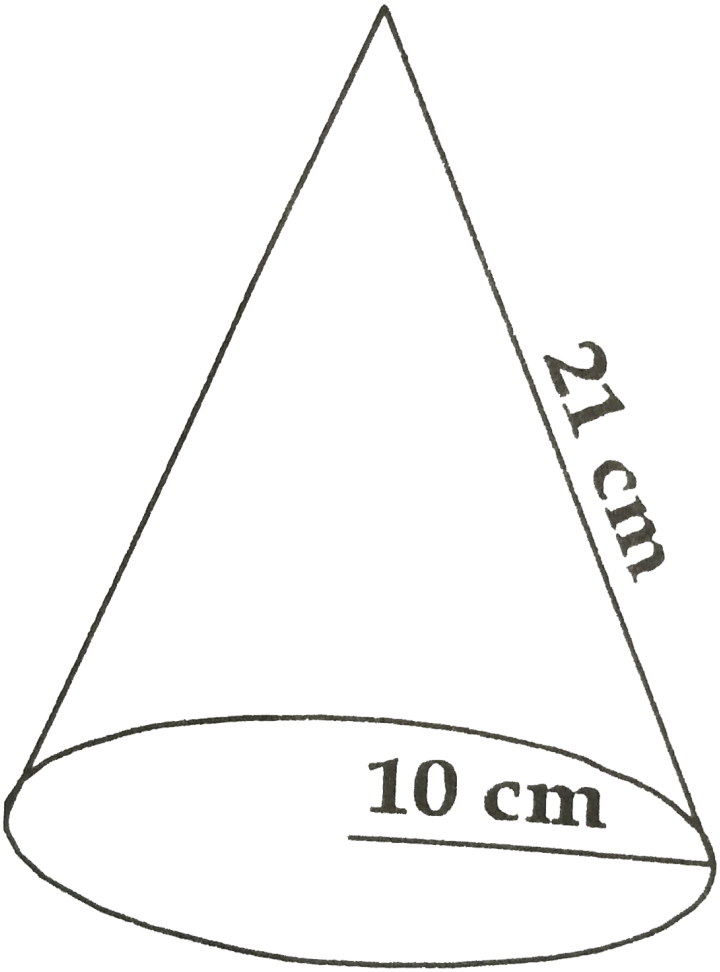
BOOKS - UNIQUE MATHS (HINGLISH)

MENSURATION

Example

1. The adjoining figure shows the measures of a Joker's cap.

How much cloth is needed to make such a



cap?

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Practice Set 7 1

1. Find the volume of a cone if the radius of its base is 1.5 cm and its perpendicular height is 5 cm.

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2. Find the volume of sphere of diameter 6 cm.

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3. Find the total surface area of cylinder if the radius of its base is 5 cm and height is 40 cm.

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4. Find the surface area of a sphere of radius 7 cm.

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5. The dimensions of a cuboid are 44 cm, 21 cm, 12 cm. It is melted and a cone of height 24

cm is made. Find the radius of its base.

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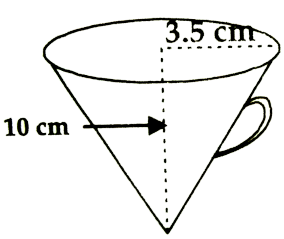
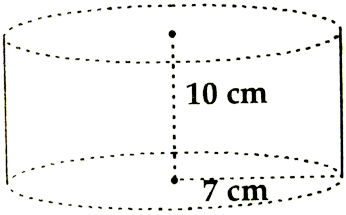
6. Observe the measures of pots in adjoiining figures (a) (b)

How many jugs of water can the cylidrical pot hold?



(a)



(b)

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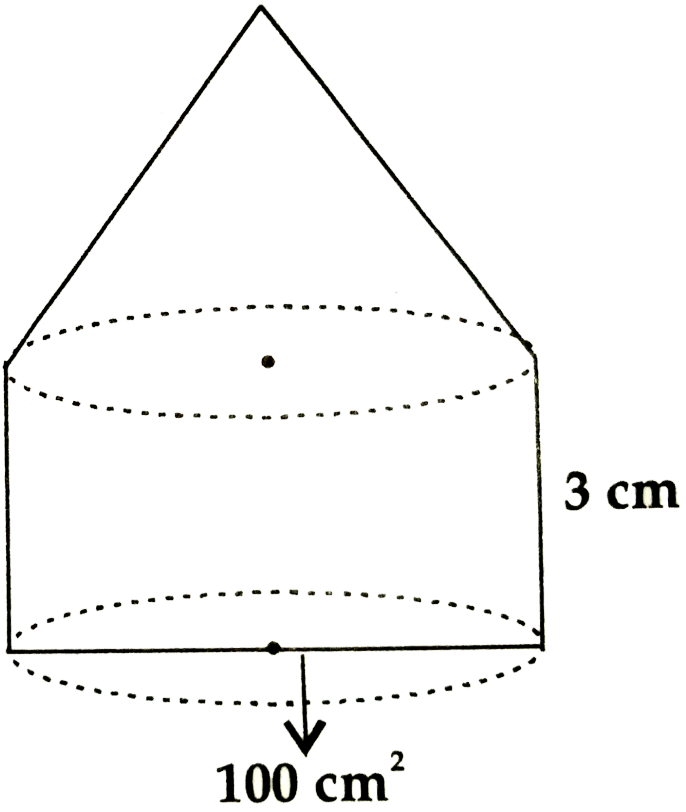
7. A cylinder and a core have equal bases. The height of the cylinder is 3 cm and the area of its base is 100^2.

The cone is placed upon the cylinder.

Volume of the soild figure so formed is

$500 \ \ \mathrm{cm}^3$. Find the total height of the figure.



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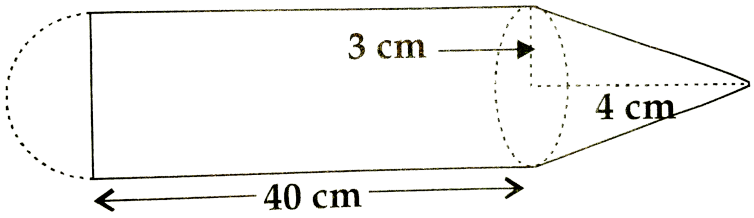
8. In the given figure , toy made -from a hemisphere , a cylinder and a cone is shown. Find the total area of the toy.



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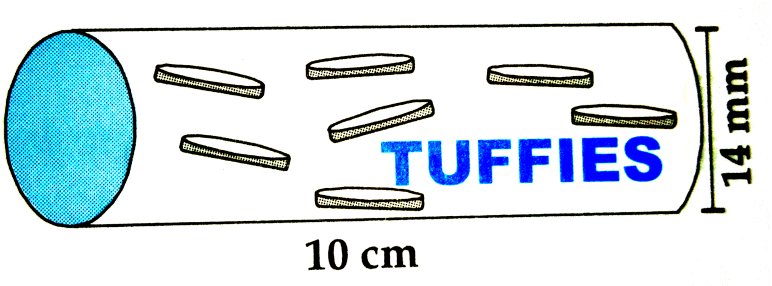
9. In the givewn figure , a cylinderical wrapper of flart tablets is shows. The radius of a tablet is 7 mm and its thickness is 5 mm. How many

in the wrapper?



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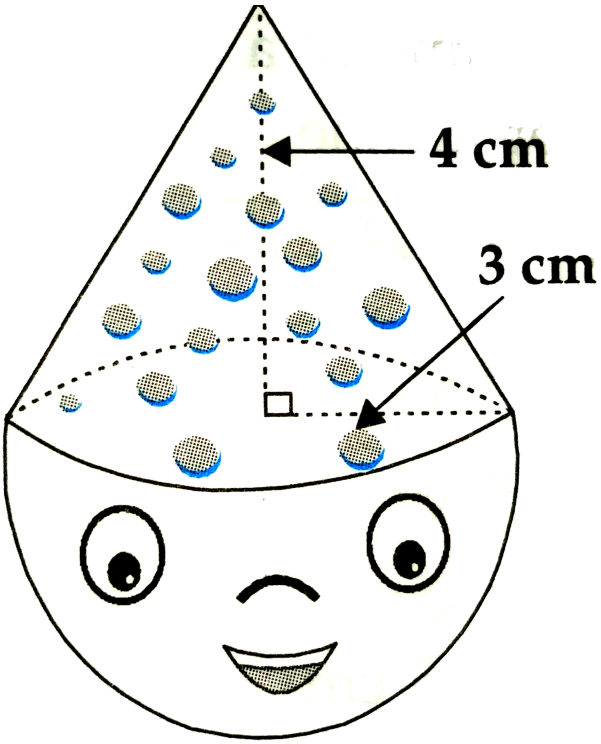
10. Given figure shows a toy. Its lower part is hemisphere and the upper part is a cone. Find the volume and the surface area of the toy from the measures shows in the figures .

$(\pi = 3.14)$



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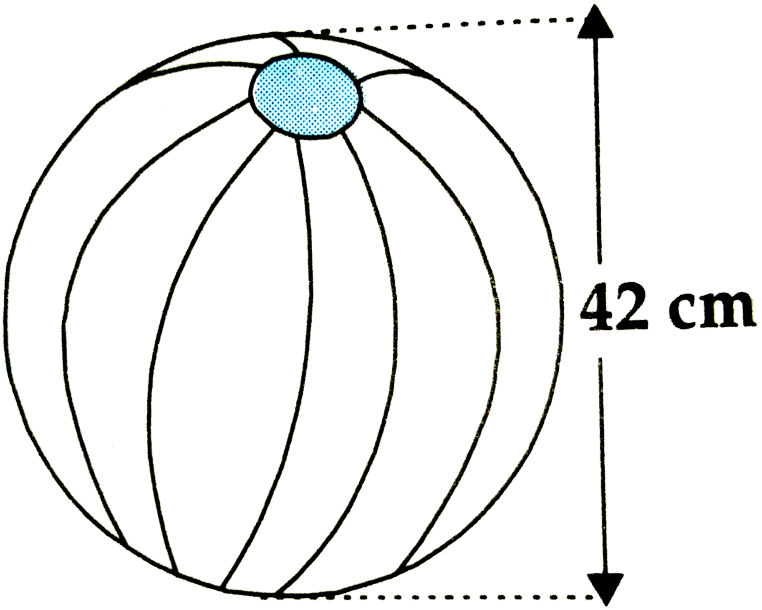
11. Find the surface area and the volume of a beach ball shown in the figure.



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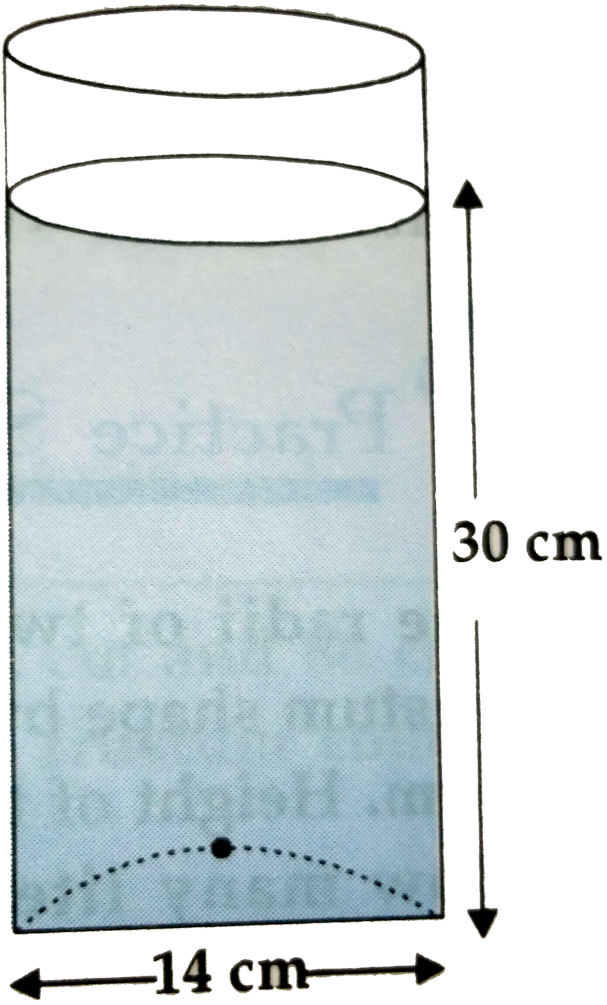
12. As shown in the figure, a cylindrical glass contains water. A metal sphere of diameter 2

cm is immersed in it . Find the volume of the



water.

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Practice Set 7 2

1. The radii of twwo circular ends of frustum shape bucket are 14 cm and 7 cm. Height of the bucket is 30 cm. How many litwers of water it can hold? $\left(1 \text{ litre} = 1000 \text{ cm}^3\right)$

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2. The radii of ends of a frustum are 14 cm and 6 cm respectively annd its height is 6 cm. Find its

(i) curved surface area

(ii) total surface area

volume $(\pi = 3.14)$

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3. The radii of ends of a frustum are 14 cm and 6 cm respectively annd its height is 6 cm. Find its

total surface area

View Text Solution

4. The radii of ends of a frustum are 14 cm and 6 cm respectively annd its height is 6 cm. Find its volume $(\pi = 3.14)$

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5. The circumferrence of circular faces of a frustum Are 132 cm and 88 cm and its height is 24 cm. To find the curved surfacwe area of the frustum complete following aactivity. (pi= 22/7)

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Practice Set 7 3

1. Radius of a circle is 10 cm. measure of an arc of the circle is 54°. Find the area of the sector associated with the arc. $(\pi = 3.14)$

Given: radius =10cm

measure of an arc $\theta = 54^\circ$

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2. Measure of an arc of a circle is 80° and its radius iss 18 cm. Find the lenght of the arc. $(\pi = 3.14)$

[It should be $80^\circ \text{instead of } 80\text{cm}$]

Given:

radius =18cm

$\pi = 3.14$

Measure of an arc $= \theta = 80^\circ$

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3. Radius of a circle is 3.5 cm and length of its arc is 2.2 cm.

Find the area of tthe sector.

Given :

Radius =r=3.5cm

Length of an arc =l=2.2 cm

To find : Area of the sector (A)

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4. Radius of a circle is 10cm. Area of a sector is $100cm^{\circ}$. Find the area of its corresponding major sector, $(\pi = 3.14)$.

Given Radius of a circle =10cm

Area of sector $= A = 100cm^2, \pi = 3.14$

To Find: Area of corresponding major sector

Formula: (i) Are of a circle $= \pi r^2$

A(major sector) =A(circle)-A(minor sector)

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5. Area of a sector of a circle of radius 15 cm is $30cm^2$. Find the length of the arc of the sector.

Find of the sector.

Given: Radius =15cm

A(sector)=$30cm^2$

To find : The length of the arc (l)

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6. In the given figure radius of the circle is 7 cm and m(arc MBN) $= 60^\circ$

Find

(i) Area of the circle .

(ii) $A(O - MBN)$

(iii) A-(O-MCN)

Given r=7cm

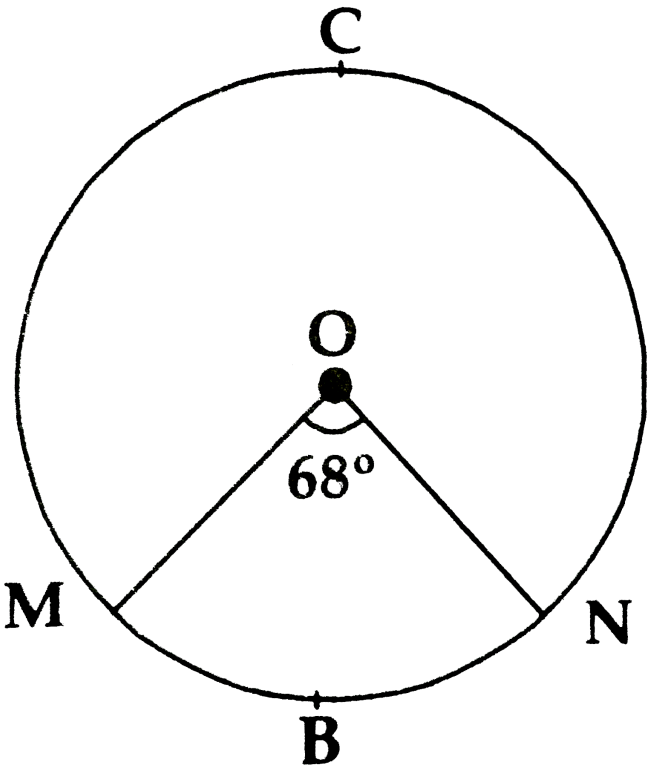
m(arc MBN) $= \theta = 60^\circ$

To find:

(i) Area of the circle

(ii) A(O-MBN)

(iii) A(O-MCN)



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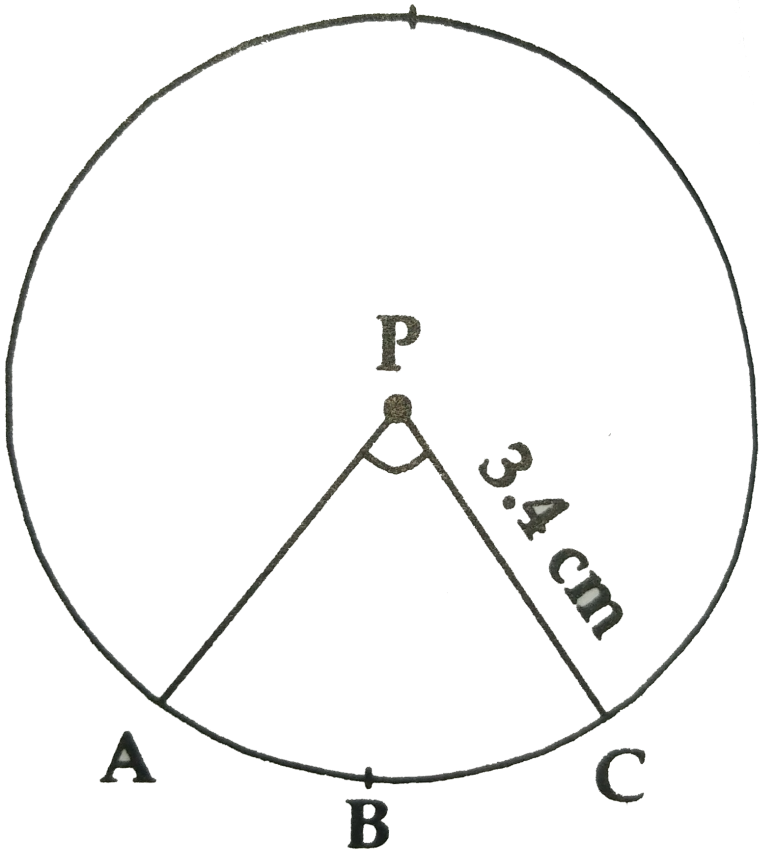
7. In the given figure radius of circle is 3.4 cm and perimeter of sector P-ABC is 12.8 cm.

Find A (P-ABC)



Given: Radius=3.4 cm

P(sector P-ABC)=12.8cm

To find: A(P-ABC)

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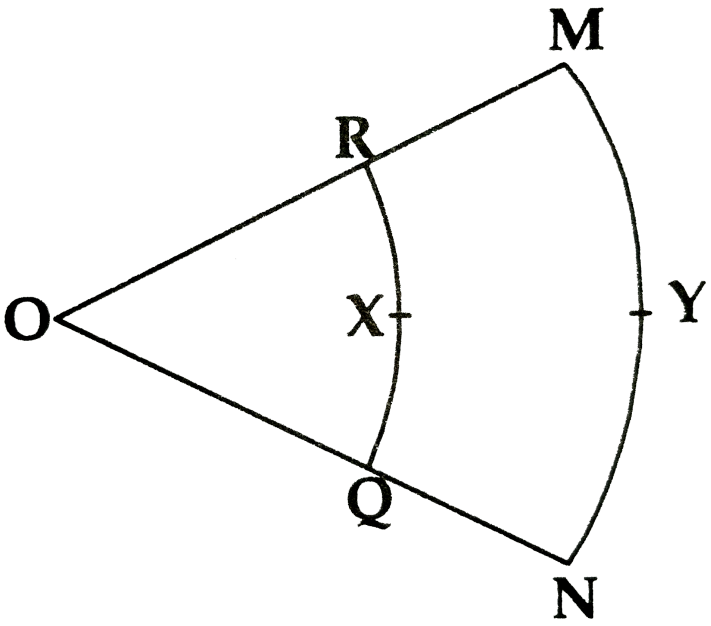
8. In the given figure, O is the center of three sector. $\angle ROQ = \angle MNO = 60^\circ$

OR =7 cm and OM =21 cm.

Find the lenghts of arc RXQ and arc MYN.



$\left(\pi = \frac{22}{7}\right)$

Given: $\angle ROQ = \angle MON = \theta = 60^\circ$

$OR = r_1 = 7cm, ON = r_2 = 21cm, \pi = \frac{22}{7}$

To find: l(arc RXQ), l(arc MYN)

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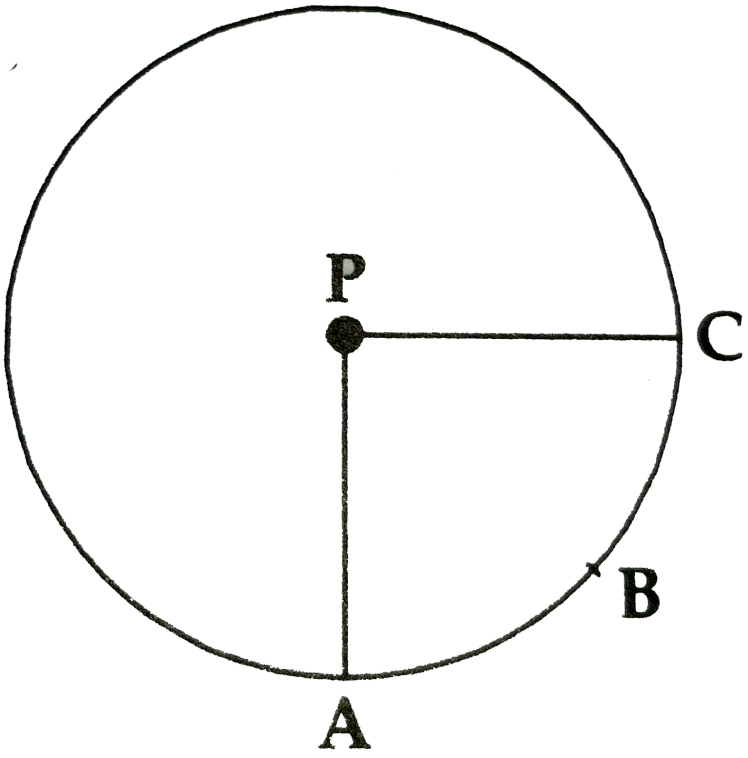
9. In the given figure, if A(P-ABC) $= 154cm^2$,

radius of the circle is 14 cm,

Find

(1) angleAPC

(2) l(arc ABC)



Given A(P-ABC) $= 154cm^2$

r=14cm, $\pi = \frac{22}{7}$

To find $(i)\angle APC (ii) l(arcABC)$

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10. Radius of a sector of a circle is 7 cm.

If measures of arc of the sector is

(i) 30°

(ii) 210°

(iii) three right angles

Find the area of the sector in each case.

Given:

Radius of sector r=7cm

$\theta_1 = 30^\circ, \theta = 210^\circ,$

$\theta_3 =$ three right angles

To find: Area of sector in each case.

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11. The area of a minor sector of a circle its $3.85cm^2$ and the measure of its centra angle is 36°. Find the radius of the circle.

Given: At (minor sector) $= 3.85cm^2$

m(central angle) $= \theta = 36^\circ$

To find : Radius of the circle (r)

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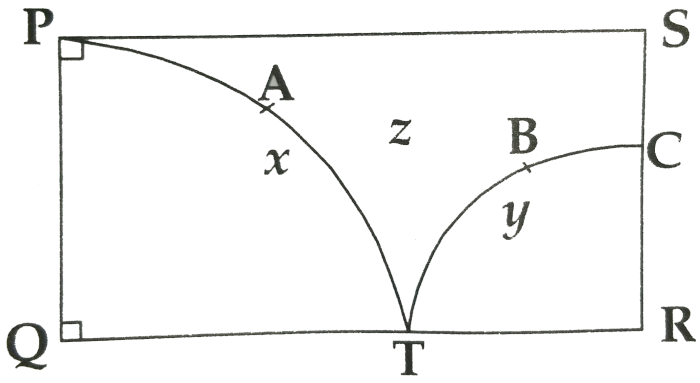
12. In the given figures $\square PQRS$ is rectangle .

If PQ=14, QR =21 cm , Find the area of the parts

x,y and z



Given $\square PQRS$ is reactangle

PQ=14cm, QR=21cm

To find: x, y and z

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13. ($\triangle LMN$) is an equilateral triangle .

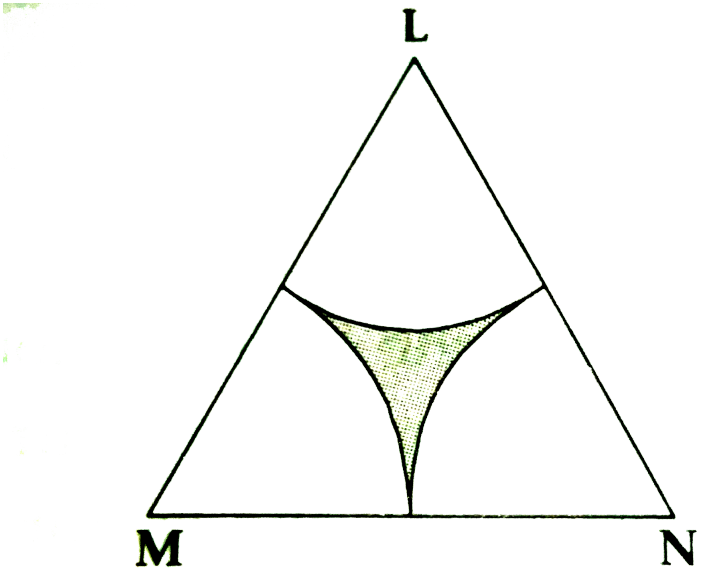
LM =14 cm. As shown in figure three sectors are drawn with vertices as certres and radius 7 cm.

Find (1) $A(\triangle LMN)$

(2) Area of any onne of the sectors.

(3) Total area of all the three sectors.

(4) Area of ther shaded region.



Given:

$\triangle LMN$ is an equilateral triangle.

LM=14cm

Radius of each sector =r=7cm

To find: (1) $A(\triangle LMN)$ (2) Area of any sector

(3) Total area of three sector

(4) A(shaded region)

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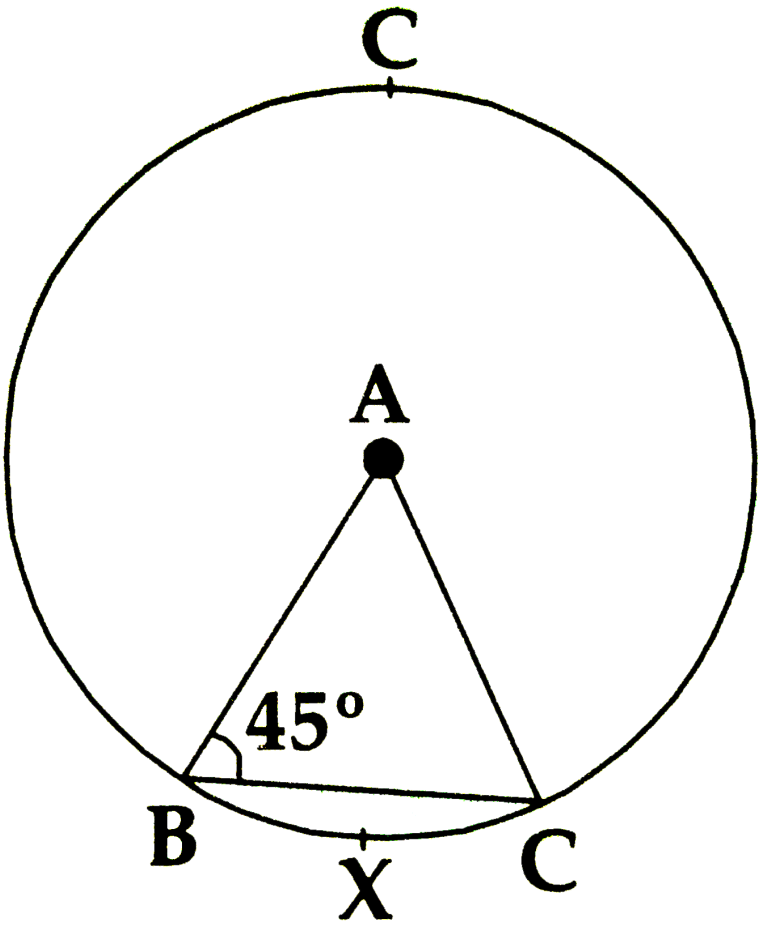
Practice Set 7 4

1. In given figure A is the centre of the circle.

$\angle ABC = 45^\circ$ and $AC = 7\sqrt{2}cm.$

Find the area of segement BXC.



Given: In the circle with centre 'A'

$\angle ABC = 45^\circ$ and $AC = 7\sqrt{2}cm$

To find : segment BXC

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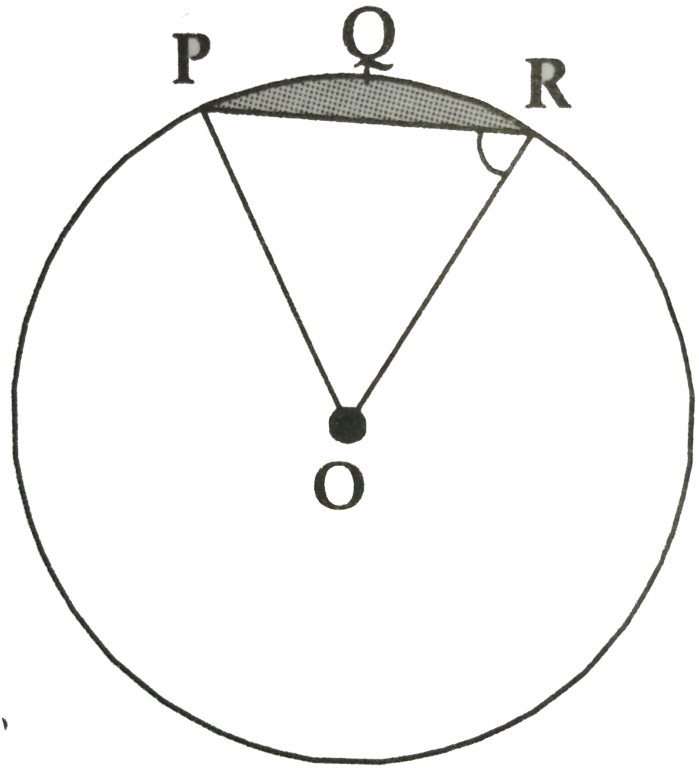
2. In the adjoining figure, O is the centre of the circle.

m(arc PQR) $= 60^\circ$ OP=10 cm

Find the area of the shaded region.



Given $\theta = 60^\circ, r = 10cm$

$\pi = 3.14, \sqrt{3} = 1.73$

To find: A(shaded region)

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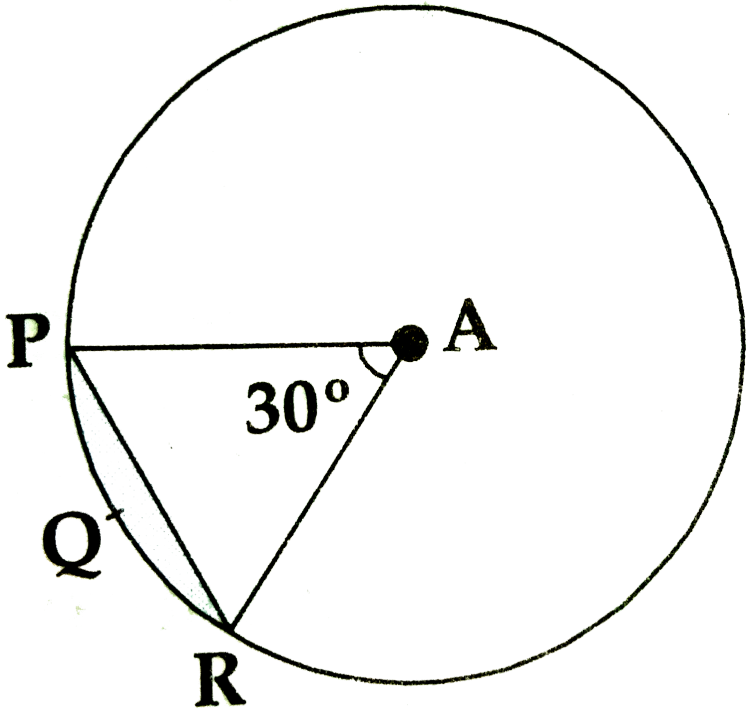
3. In the adj. Figure if A is the centre of the circle $\angle PAR = 30^\circ$, AP=7.5 , Find the area of the segement PQR. $(\pi = 3.14)$



Given : Radius AP=r=7.5

$\angle PA = \theta = 30^\circ$

To find: sement PQR

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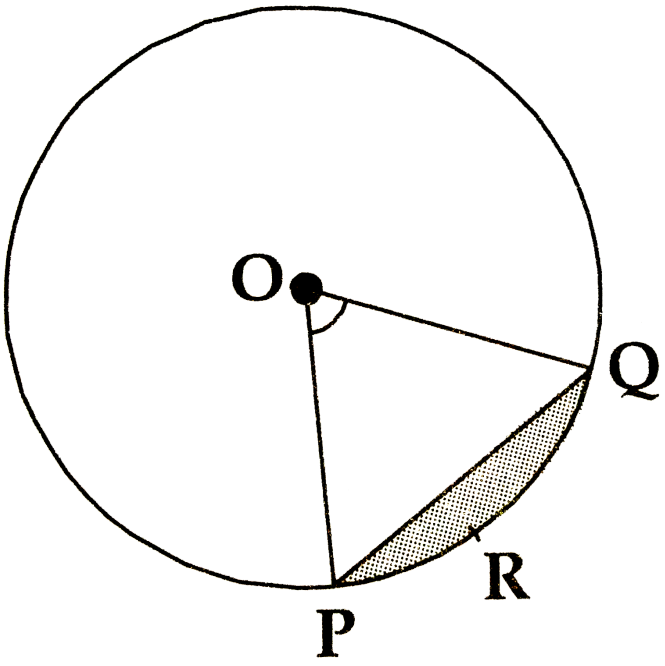
4. In the given figure, if O is the centre of the circle , PQ is a chord.

$\angle POQ = 90^\circ$ area of shaded region is $144cm^2$, Find the radius of the circle . (pi =3.14)



$\angle POQ = \theta = 90^\circ$

A(shaded ergion)=A(segment PRQ)

$= 114cm^2, \pi = 3.14$

To find: radius of the circle (r)

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5. A chord PQ of a circle4 with radius 15 cm subtends an angle of 60° with the centre of the circle.

Find the area of the inor as well as the major segement. $(\pi = 3.14, \sqrt{3} = 1.73)$

Given: r=15cm, $\theta = 60^\circ$

To find A(minor segment)

A(major segment)

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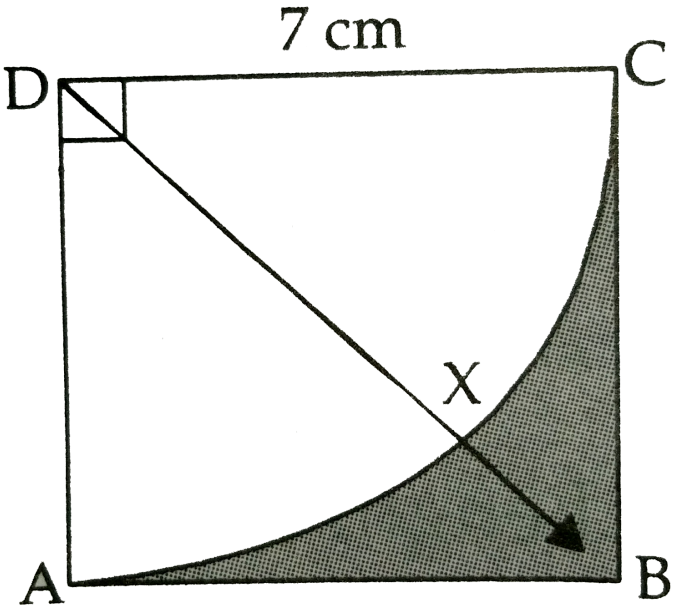
Activity

1. In the given figure, side of square ABCD is 7cm. With centre D and radius DA, sector D-AXC is drawn. Fill in the following boxes

properly and find out the area of the shaded



region.

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2. A washing tub in the shape of a frustum of a cone has height 21 cm.

The radii of the circular top and bottom are 20 cm and 15 cm respectively. What is the capcity of the tube? $\left(\pi = \frac{22}{7}\right)$

Given: A washing tub is in the shape of frustum. $r_1 = 20cm, r_2 = 15cm, h = 21cm$

To find : Capacity of the tub.

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3. Some plastic balls of radius 1 cm were melted and cast into a tube.

The thickness , lenght and outer radius of the

tube were 2 cm, 90 cm and 30 cm respectiveloy.

How many balls were melted to make the tube?

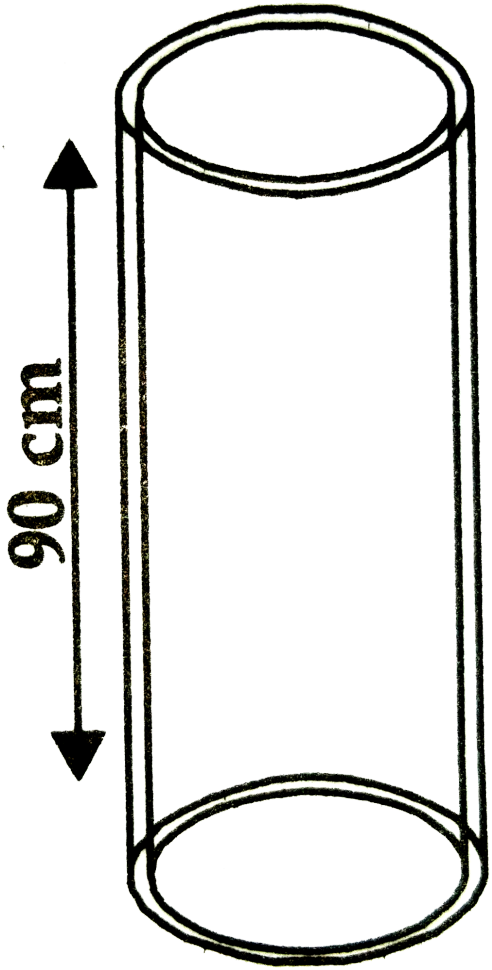
Given : For plastic ball, radius =r=1cm

For table, Thickness $x = 2cm$

Length =h=90cm

Outer radius $= R_2 = 30cm$

To find: No. of balls melted to make a tube



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4. A metal parallelopiped of measures $16cm \times 11cm \times 10cm$ was melted to amke coins . How many coins werre made if the thickness and diameter of each coin was 2 mm and 2 cm respectively?

Given: For parallelopiped,

Length =L=16cm, Breadth=B=11cm, Height =H=10cm

For coins (cylinder)

Thickness =h=2mm

$$= \frac{2}{10}cm, \ = 0.2cm$$

$$Radius = r = \frac{\text{Diameter}}{2} = \frac{2cm}{2} = 1cm$$

To find: Number of coin made

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5. The diameter and lenght of roller is 120 cm and 84 cm respectively.

To level the ground, 200 rotations of the roller are requried.

Find the expenditure to level the ground at the rate of Rs. 10 per sq.m.

Given:

For roller

Radius r=$\frac{\text{Diameter}}{2} = \frac{120cm}{2} = 60cm$

Length =height =h=84cm

No. of rotation =n=200

Rate of levelling=Rs 10per sq. m.

The expenditure to level the groun

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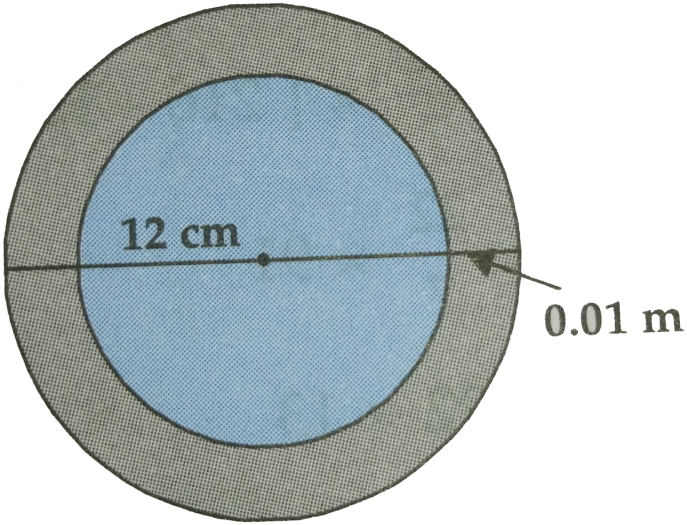
6. The diameter and thickkness of a hollow metals sphere are 12 cm and 0.01 m respectively. They density of the metal is 8.88 gm per cm^3.

Find the outer surface area and mass of the sphere.



Given

For hollow metal sphere

Outer radiu $= r^2 = \dfrac{\text{Diameter}}{2}$

$= \dfrac{12}{2} = 6cm$

Thickness $= x = 0.01m = 0.01 \times 100cm$

Thickness =x=1cm

Inner radius $= r_1 = r_2 - x$

Density $= 8.88gmpercm^3$

To find (i) Outer surface area

(ii) Mass of sphere

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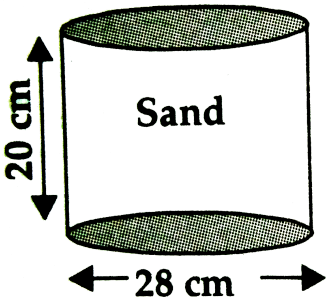
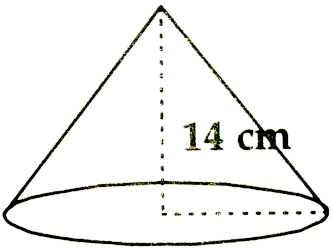
7. A cylindrical bucket of diameter 28 cm and heigt 20 cm full of sand. When the sand in the bucket was poured on the ground, the sand got converted into a shape of acone if the height of the cone was 14 cm, What was the base area of the cone?



Bucket full of sand



Cone of sand poured on the ground

Given :

For cylinderical bucket,

$$r = \frac{\text{Diameter}}{2} = 14cm$$

h=20cm

To find: Base area of the cone

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8. The radius of a metallic sphere is 9 cm. It was melted to make a wire of diameter 4mm. Find the lenght of the wire.

Given :

For sphere, r=9cm

For wire (cylinder) $= r = \frac{4mm}{2}$

$r = 2mm = \frac{2}{10} = 0.2cm$

To find: length of the wire

View Text Solution

9. The area of a sector of a circle of 6 cm radius is 15pi s.q.

Find the measure of the arc and lenght of the arc corresponding too the sector.

Given : For, sector, Radius =R=6cm

A(sector) $= 15\pi sq.\ cm$

To find:

(i) Measure of arc= θ

(ii) length of arc corresponding to sector (l)

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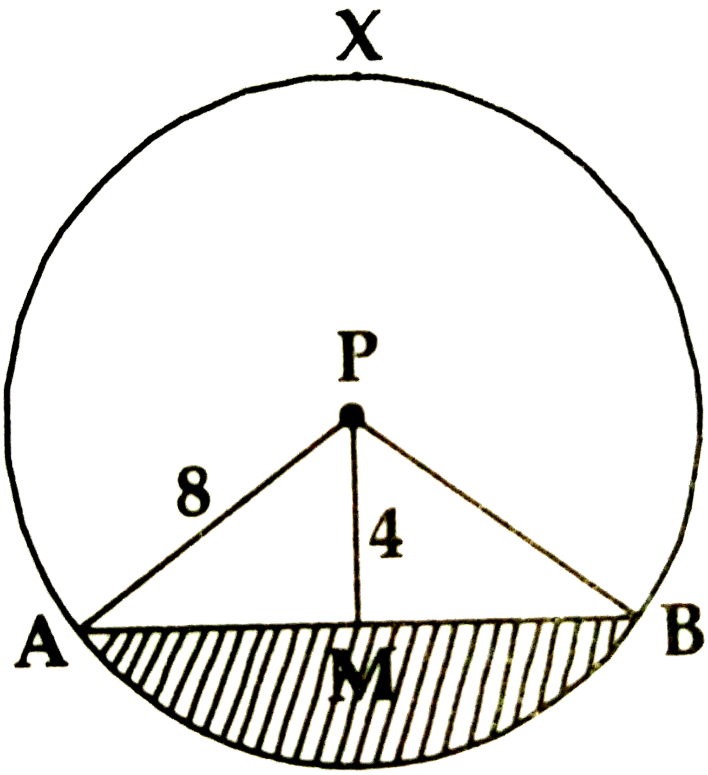
10. In the given figure, seg AB is a circle with centre p.

If PA=8 cm and distance of chord AB from the centre P is 4cm, find the area of the shadd portion. $\left(\pi = 3.14, \sqrt{3} = 1.73\right)$

Given: In the circle P, seg AB is chord. Seg $PM \perp AB, PA = 8cm,$ Distance of chord from centre P=PM=4cm, $\pi = 3.14, \sqrt{3} = 1.73$

To find: Area of shaded region.



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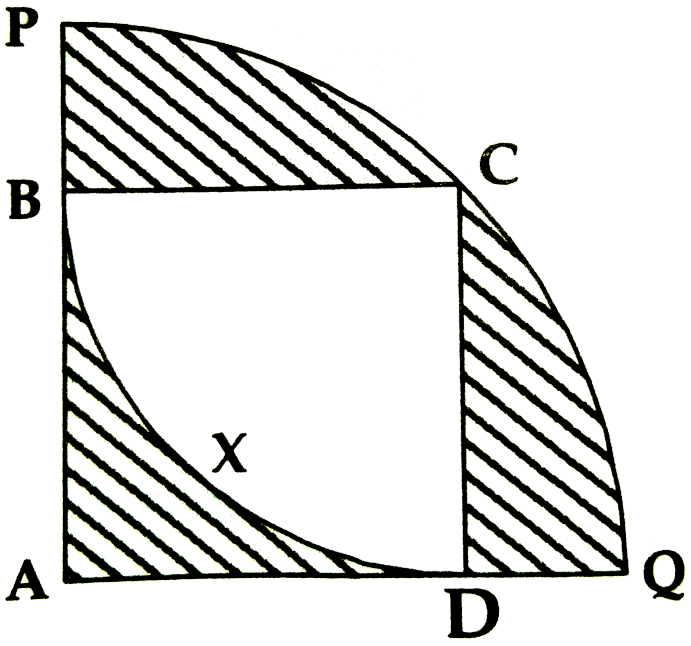
11. In the following figure, square ABCD is inscribed in the sector C-BXD IS 20 cm. Complete the following activity to find the area of shaded region



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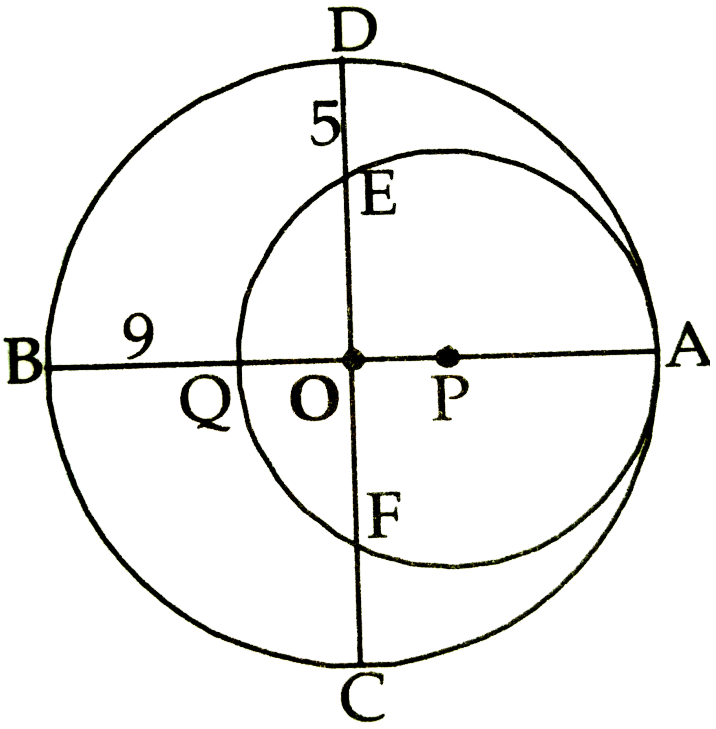
12. In the given figure, two circle with centres O and P are touching internally at point A.

If BQ= 9, DE= 5, complete the following activity to find the radii of the circle.



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Problem Set 7

1. The ratio of circumference and area of a circle is 2:7. Find the circumference.

A. 14π

B. $\frac{7}{\pi}$

C. 7π

D. $\frac{14}{\pi}$

Answer: A::D

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2. If the measure of an arc of a circle is 160° and its length is 44cm. Find the circumference of the circle.

A. 66 cm

B. 44 cm

C. 160 cm

D. 99 cm

Answer: C

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3. Find the perimeter of a sector of a circle if its measre is 90° and radius is 7cm.

A. 44 cm

B. 25 cm

C. 36 cm

D. 56 cm

Answer: B::C

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4. Find the curved surface area ofa cone of radius 7cm and height 24cm.

A. $440cm^2$

B. $550cm^2$

C. $330cm^2$

D. $110cm^2$

Answer: B::C

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5. The curved surface area of a cylinder is $440m^2$ and the radius is 5cm. Find its height.

A. $\frac{44}{\pi}cm$

B. $22\pi cm$

C. $44\pi cm$

D. $\frac{22}{\pi}cm$

Answer: C::D

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6. A cone was melted and cast into a cylinder of the same radius as that of the base of the cone. If the height of the cylinder is 5cm, find the height of the cone.

A. 15 cm

B. 10 cm

C. 18 cm

D. 5 cm

Answer: A::C

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7. Find the volume of a cube of side 0.01cm.

A. $1cm^3$

B. $0.001cm^3$

C. $0.001cm^3$

D. $0.00001cm^3$

Answer: A::C

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8. Find the side of a cube of volume.

A. 1 cm

B. 10 cm

C. 100 cm

D. 1000 cm

Answer: A::C

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