MATHS

BOOKS - NAVBODH MATHS (HINGLISH)

MENSURATION

81

1. What is total surface area of a solid hemisphere whose radius is r?

A. $4\pi r^2$

B. πr^2

C. $2\pi r^2$

D. $3\pi r^2$

Answer: D

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2. The ratio of circumfgerence and area fo a circle is 2 : 7. What is its circumference ?

A. 14π

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

C. 7π

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

Answer: A

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3. If the measure of sector of a circle with radius 7 cm is 90° , what is the perimeter of the sector?

A. 44 cm

B. 25 cm

C. 36 cm

D. 56 cm

Answer: B

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4. Te radii of two cylinders are in the ratio 2 : 3 and their heights are in the ratio 3 : 5. What is the ratio of their curved surface area?

A. $3:5$

B. $2:5$

C. $5:2$

D. $5:3$

Answer: B

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5. If the surface area of the sphere is $144\pi cm^3$ then what is its valuem?

A. $144\pi cm^3$

B. $288\pi cm^3$

C. $864\pi cm^3$

D. $72\pi cm^3$

Answer: B

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6. If the slant height of the frustum of a cone is 10 cm and its perpendicular height is 8 cm

then what is the difference of radii of the circular bases?

A. 8 cm

B. 2 cm

C. 10 cm

D. 6 cm

Answer: D

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7. If the angular measure of an are is 36° and its length is 10 cm, then what is the circumference of the circle?

A. 100cm

B. 36 cm

C. 360 cm

D. 10 cm

Answer: A

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8. If the area of the circle is $314cm^2$ and area of the major segment is $214cm^2$ then what is the area of its minor segment ?

A. $314cm^2$

B. $100cm^2$

C. $114cm^2$

D. $214cm^2$

Answer: B

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9. 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 5 cm, then what is the height of the cone?

A. 15 cm

B. 10 cm

C. 18 cm

D. 5 cm

Answer: A

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10. What is the curved surface area of the cone of radius 7 cm and height 24 cm?

A. $440cm^2$

B. $550cm^2$

C. $330cm^2$

D. $110cm^2$

Answer: B

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11. If the measure of sector of a circle with radius 7 cm is 90° , what is the perimeter of the sector?

A. 44 cm

B. 25 cm

C. 36 cm

D. 56 cm

Answer: B

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8 2

1. Write the slant height of the cone whose radius of the base is 7 cm and perpendicular height is 24 cm.

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2. What is the volume of the cone whose radius and perpendicular height is equal to

that of cylinder of volume $900cm^3$.

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3. What is the radius of the sphere whose surface area is numberically equal to its volume.

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4. What is volume of the bath tub in litres if its volume is cm^3 is 1098 ?

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5. If the length of an are of a circle is 10 cm and its angular measure is 90° then what will be the circumference of the circle ?

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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 a sphere of diameter 6 cm. (π= 3.14)

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3. Find the total surface area of the cylinder, if the radius of its base is 5 cm and height is 40 cm. (π= 3.14)

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4. Find the surface area of a sphere of radius 3.5 cm.

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5. The radii of two circular ends of frustum shape bucket are 14 cm and 7 cm. Height of the bucket is 30 cm. How many litres of water can it hold ? (1 litre = $1000cm^3$)

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6. The circumferences of circular faces of a frustum are 132 cm and 88 cm and its height is 24 cm. To find the slant height of the frustum complete the following activiy. $\left(\pi = \frac{22}{7}\right)$

$$\text{circumference}_1 = 2\pi r_1 = 132$$

$$r_1 = \frac{132}{2\pi} = \square$$

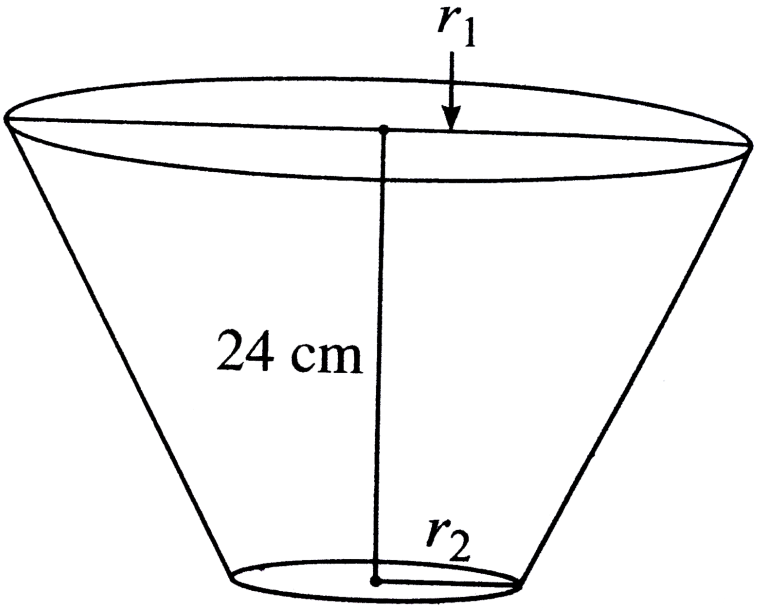
$$\text{circumference}_2 = 2\pi r_2 = 88$$

$$r_2 = \frac{88}{2\pi} = \square$$

Slant height of frustum,

$$l = \sqrt{h^2 + (r_1 - r_2)^2}$$

$$= \sqrt{24^2 + \square^2} \text{ = squarecm`}$$



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

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

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9. Radius of a sector of a circle is 3.5 cm and length of its arc is 2.2 cm. Find the area of the sector.

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

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11. How many solid cylinders of radius 6 cm and height 12 cm can be made by melting a solid shpere of radius 18 cm ?

Radius of the sphere, $r = 18cm$

For cylinder, radius R = 6 cm, height H = 12 cm.

$\therefore$ Number of cylinder can be made

$\therefore$ Number of cylinders can be made $= \dfrac{\text{Volume of Sphere}}{\square}$

$= \dfrac{\frac{4}{3}\pi r^3}{\square}$

$= \dfrac{\frac{4}{3} \times 18 \times 18 \times 18}{\square}$

$= \square$

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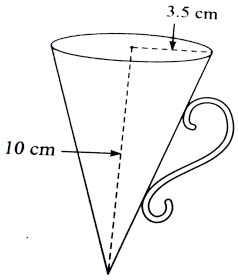
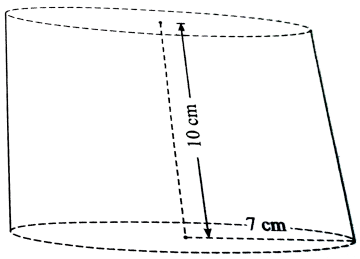
8 4

1. Observe the measures of pots in figure A and B. How many jugs of water can the cylindrical pot hold ?



A. Conical water jug



B. Cylindrical water pot

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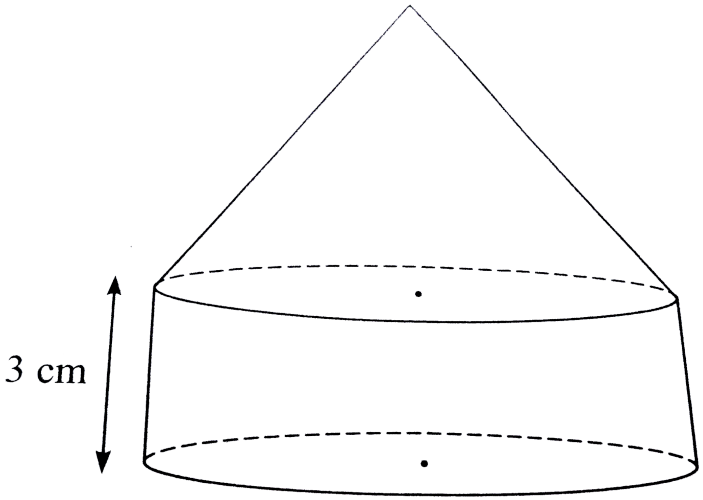
2. A cykubder abnd a cone have equal bases. The height of the cylinder is 3 cm and the area of its base is $100cm^2$. The cone is placed upon the cylinder. Volume of the solid figure so formed is $500cm^3$. Find the total height of the figure.



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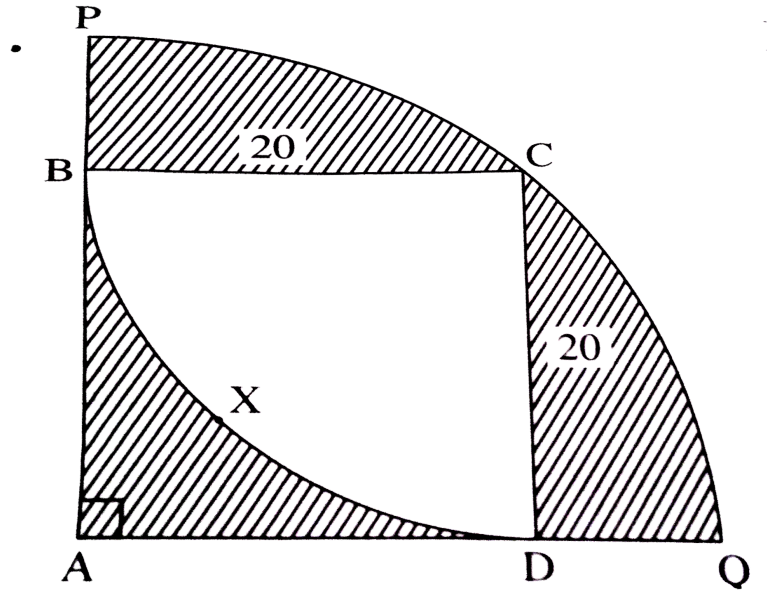
3. In the figure, square ABCD is inscribed in the sector A-PCQ. The radius of sector C-BXD is 20 cm. Complete the following activity to find the area of the shaded portion.



Side of the square ABCD = radius of sector C-

BXD = 20 cm

Area of square $= \text{side}^2 = 400cm^2$

Area of sector C-BXD $= \frac{\theta}{360} \times \pi r^2$

$= \frac{\square}{360} \times 3.14 \times 20^2 = \square\, cm^2$

Area of the shaded portion inside square

= Area of square - A (sector C- BXD)

$= 400 - \square\, cm^2$

Radius of sector A-PCQ= Length of diagonal of square ABCD

$r_1 = 20\sqrt{2}$cm

Area of the shaded region outside square

= A(sector A-PCQ)-A (square ABCD)

$= \frac{90}{360} \times 3.14 \times \left(20\sqrt{2}\right)^2 - 200$

$= \square cm^2$

$\therefore$ total area of shaded portion = area of shaded portion inside square + area of shaded portion outside square $= \square cm^2$

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4. The dimensions fo 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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5. The radii of ends of a frustum are 14 cm and 6 cm respectively and its height is 6 cm. Find its (i) curved surfaces area (ii) total surface area.

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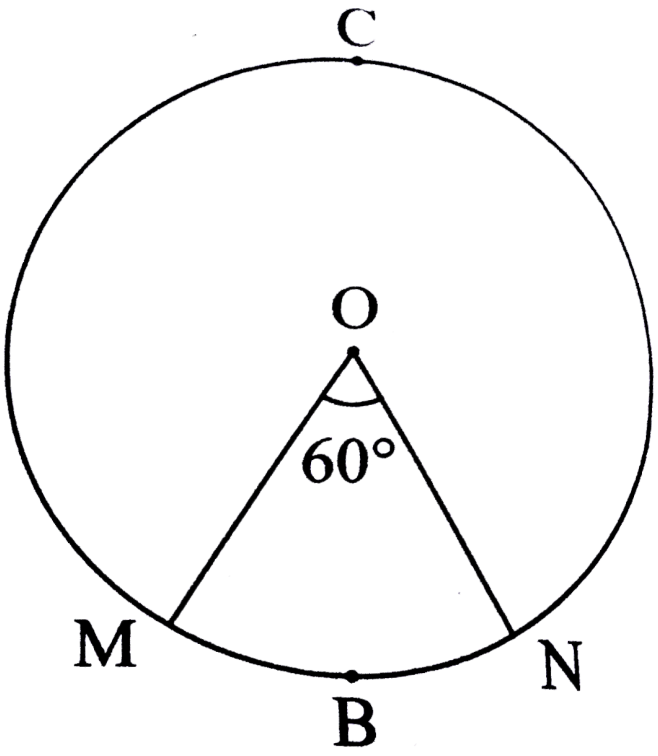
6. In the figure, radius of the circle is 7 cm and m(arc MBN) $= 60^\circ$, find

(1) Area of the circle.

(2) A(O-MBN).

(3) A(O-MCN).



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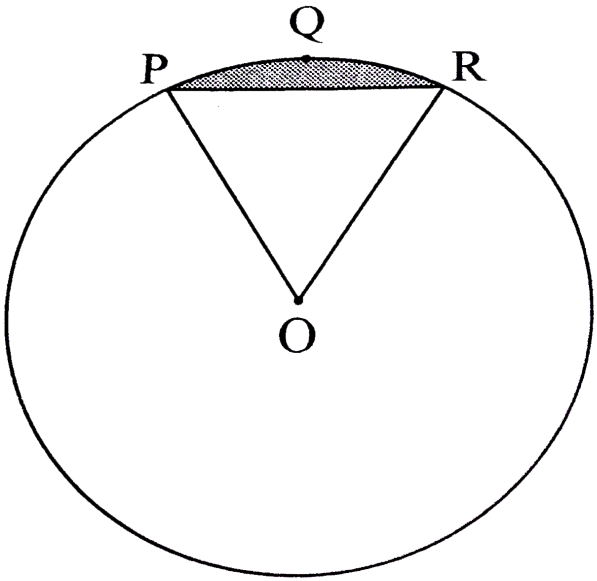
7. In the figure, O is the centre of the circle.

m(arc PQR) $= 60^\circ$

OP = 10 cm.

Find the area of the shaded region.

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



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

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9. The diameter and length of a roller is 120 cm and 84 cm respectively. To level the graound, 200 rotations of the roller are required. Find

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

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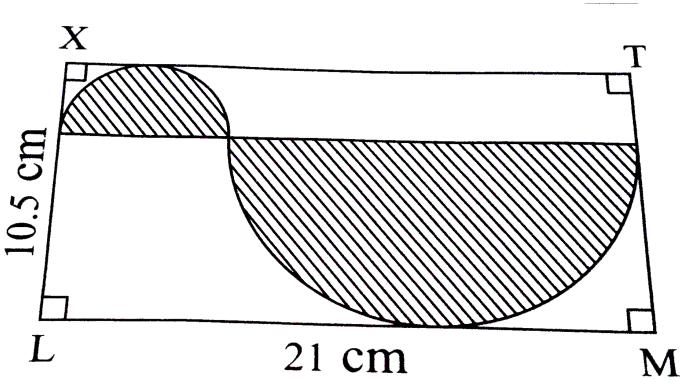
10. In the figure, $\square XLMT$ is a rectangle. $\angle M = 21cm$, XL = 10. 5 cm. Diamter of the smaller semicircle is half the diameter of larger semicircle. Find the area of non-shaded

region.



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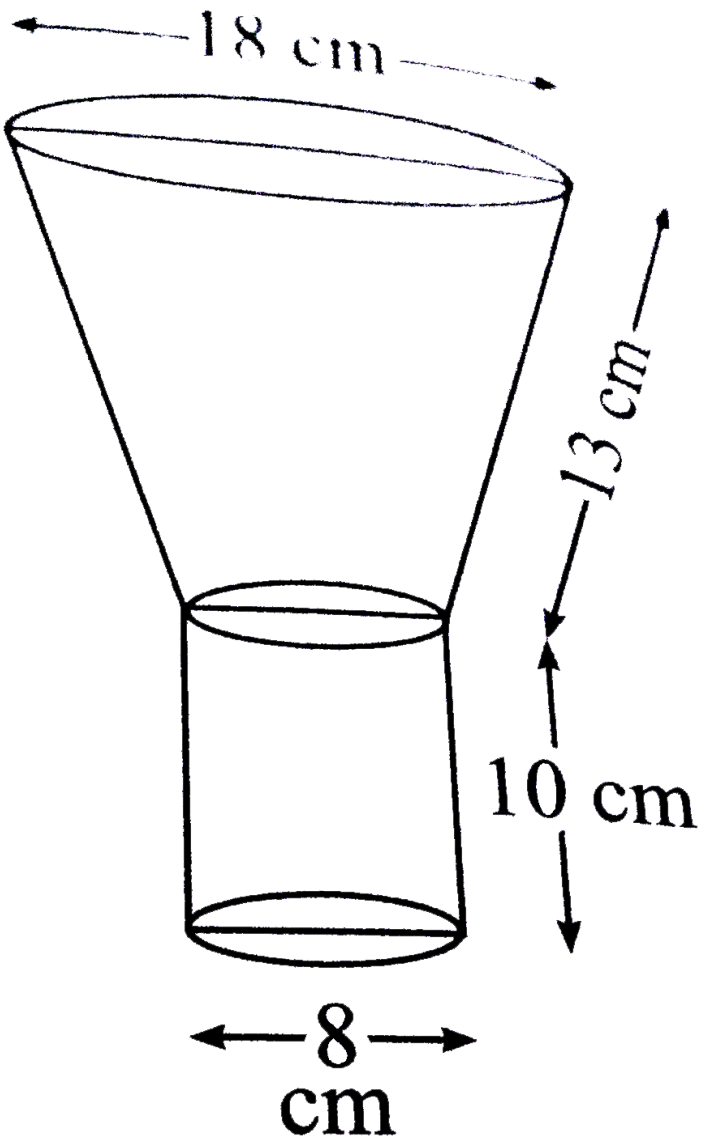
8 5

1. An oil funnel of tin sheet consists of a cylindrical portion 10 cm long attached to a

frustum of cone. The diameters of the top and bottom of the frustum are 18 cm and 8 cm respecti8vely. If the slant height of the frustum of the cone is 13 cm, find the area of the tin required to make the funnel from the given information in the figure

$(\pi = 3.14)$



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2. A cylinder having diameter 40 cm and height 70 cm contains $\frac{4}{5}th$ of water. If a cone having radius 18 cm and height equal to $\frac{3}{4}$ time the height of the cylinder is dropped in the cylinder, how much water wil overflow from the cylinder?

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3. A 10 m deep well with diameter 1.4 m is dug up in a field and the earth from digging is

spread up evenly on the adjoining rectangular field. The length and breadth of the field are 55 m and 14 m respectively. Find the thickness of the earth layer spread

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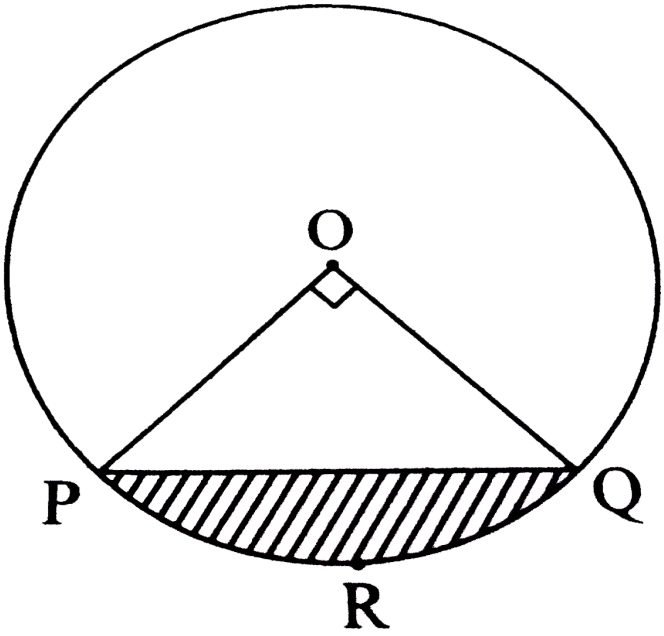
4. In the figure, O is the centre of the circle. $\angle POQ = 90^\circ$.

The area of the shaded region is $126cm^2$. Find

the radius of the circle.



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Assignment 8 1

1. The slant height of the cone is 17 cm and its radius is 8 cm. Find its height.

A. 21 cm

B. 15 cm

C. 12 cm

D. 14 cm

Answer: B

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2. A solid metal ball of radius 8 cm is melted and cast into smaller balls, each of radius 2 cm. The number of balls made are ..... .

A. 8

B. 2

C. 64

D. 4

Answer: C

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3. A cylinder with base radius of 8 cm and height of 2 cm is melted to form a cone of height 6 cm. The radius of the cone is ..... .

A. 4 cm

B. 3 cm

C. 2 cm

D. 8 cm

Answer: D

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4. If the radius of the sector is 5 and length of its corresponding arc is 14, then area of the sector is ..... .

A. 35

B. 10

C. 70

D. 14

Answer: A

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5. If the area of the circle is $100cm^2$ and the area of the sector of the same circle is $25cm^2$, then the angular measure of the arc of the sector is ..... .

A. 45°

B. 100°

C. 90°

D. 25°

Answer: C

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6. The curved surface area of a right circular cone of height 15 cm and base diameter 16 cm is ..... .

A. $160\pi cm^2$

B. $168\pi cm^2$

C. $120\pi cm^2$

D. $136\pi cm^2$

Answer: D

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7. How many bricks will be required to construct a wall 8 m long, 6 m high and 22.5 cm thick, if each brick measures $25cm \times 11.25cm \times 6cm$?

A. 6400

B. 5600

C. 4600

D. 6500

Answer: A

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8. Area of the sector is .....time the length of its corresponding are

A. $\frac{1}{2}$

B. $\frac{\text{diameter}}{2}$

C. $\frac{\text{radius}}{2}$

D. $\frac{\text{radius}}{3}$

Answer: C

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9. Find the ratio of the volumes of a cylinder and a cone having equal radius and equal height.

A. $1:2$

B. $2:1$

C. $1:3$

D. $3:1$

Answer: D

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Assignment 8 2

1. If the volume of a godown is $5000m^3$ and the volume of a box is $10m^3$ then how many boxes can be fit in the godown ?

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2. If the radius and the perpendicular height of a cone and cylinder is equal then write the ratio of their volumes.

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3. What is the radius of the sector, if its area is numerically equal to the length of its corresponding arc ?

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4. Find the side of a cube whose volume is $8cm^3$.

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5. Area of a sector is $\frac{1}{12}$th of the circle, then find the measure of central angle of that arc.

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6. If a sphere is cut into two hemispheres whose total surface area is $90cm^2$, then what is the surface area of sphere ?

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Assignment 8 3

1. How much metal sheet is required to prepare a cylindrical pipe 10 cm long and radius 7 cm?

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2. The curved surface area of a cone is $7150cm^2$ and radius of base of the cone is 35 cm. Find the slant height and the perpendicular height.

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3. The radius of a hemisphere is 2.5 cm. Find its total surface area.

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4. Find the length of the arc of circle with radius 0.7 m and area of the sector is $0.49m^2$.

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5. Find the angular measure of an arc, if its length is 6.05 m and its radius is 5.5 m.

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6. A cylindrical gas jar with inner radius 6 cm and height 25 cm is filled with a gas. Find the quantity fo gas contained. $(\pi = 3.14)$

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7. The radius and slant height of the cone are 5 cm and 10 cm respectively. Find the curved surface area. $(\pi = 3.14)$

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8. The surface area of the sphere is $50.24cm^2$. Find its radius. $(\pi = 3.14)$

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9. Find the area of the sector, if the radius of the sector is 7 cm and the angular measure of its arc is 30°.

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10. 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 capacity of the tub in litres?

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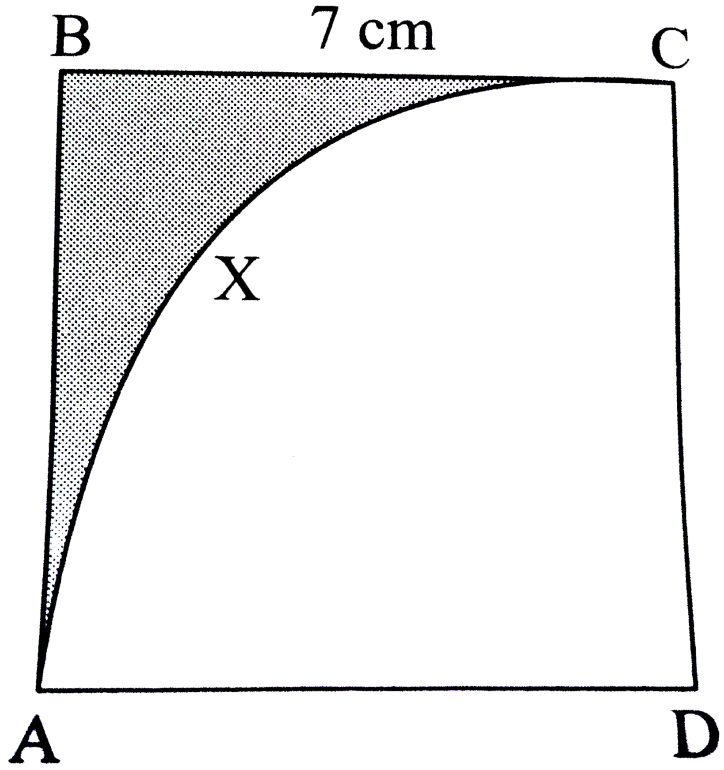
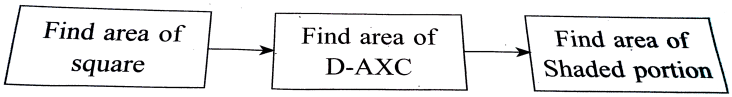
11. Side of square ABCD is 7 cm with D as the centre and DA as radius, arc XC is drawn. Find the area of the shaded region with the help of

the following flow chart.





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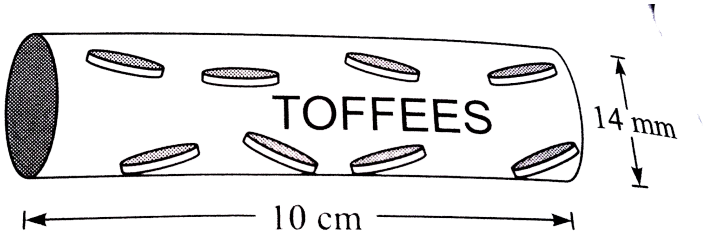
Assignment 8 4

1. In the figure a cylindrical wrapper of flat tablets is shown The radius of tablet is 7 mm and its thinkness is 5 mm. How many such tablets are wrapped in the wrapper?



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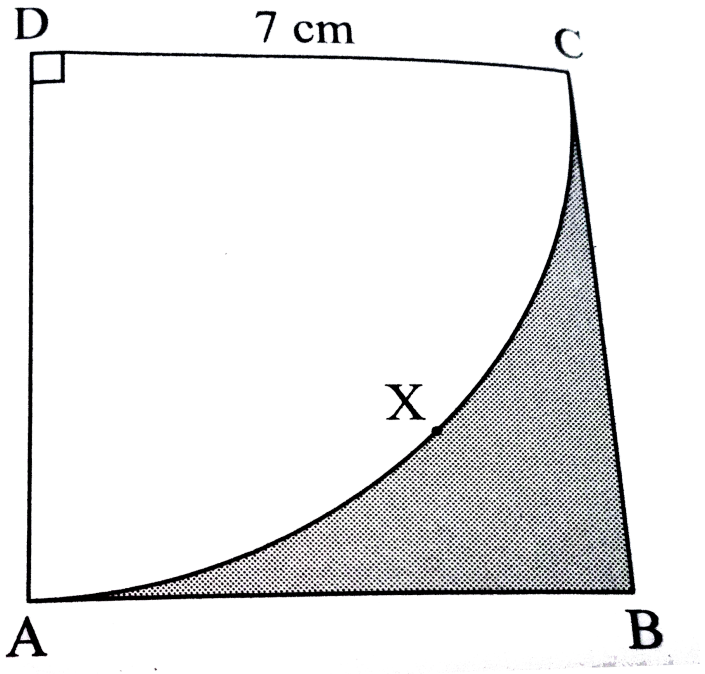
2. In the figure, side of square ABCD is 7 cm. With centre D and radius DA, sector D-AXC is drawn. Find the area of the shaded region.



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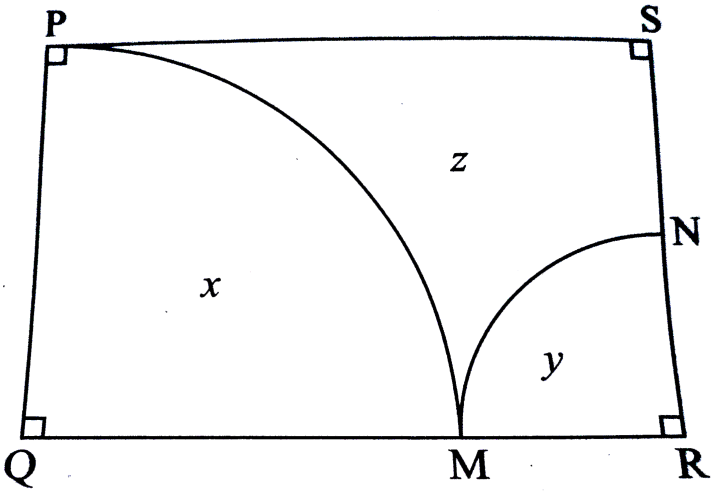
3. In the figure $\square PQRS$ is a rectangle.

If Pq = 14 cm, QR = 21 cm , find the areas of the parts x,y and z.



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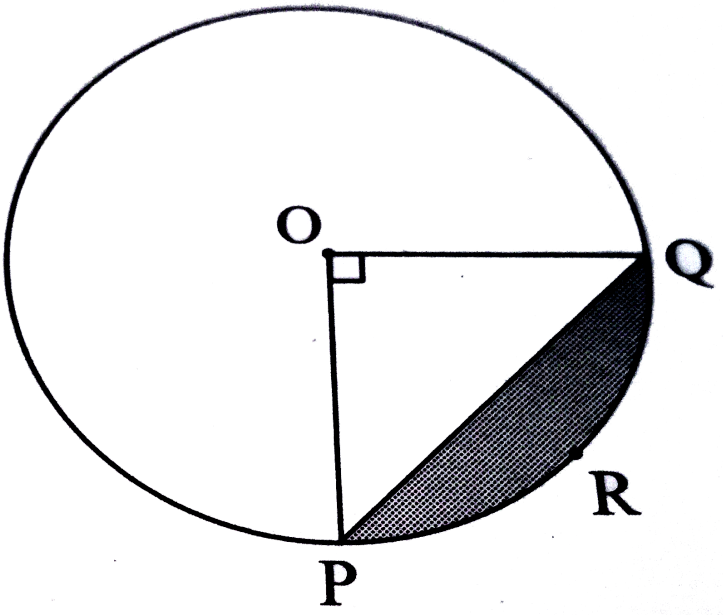
4. In the figure, if O is the centre of the circle, PQ is chord. $\angle POQ = 90^\circ$ area of shaded region is $114cm^2$ find the radius of the circle $(\pi = 3.14)$



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5. Some plastic balls of radius 1 cm were melted and cast into a tube. The thickness, length and outer radius of the tube were 2 cm, 90 cm and 30 cm respectively. How many balls were melted to make the tube ?

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6. The radii of the circular ends of a frustum of a cone are 14 cm and 8 cm. If the height of the frustum is 8 cm, find

(i) slant height of frustum

(ii) total surface area of frustum

(iii) Volume of frustum, $(\pi = 3.14)$

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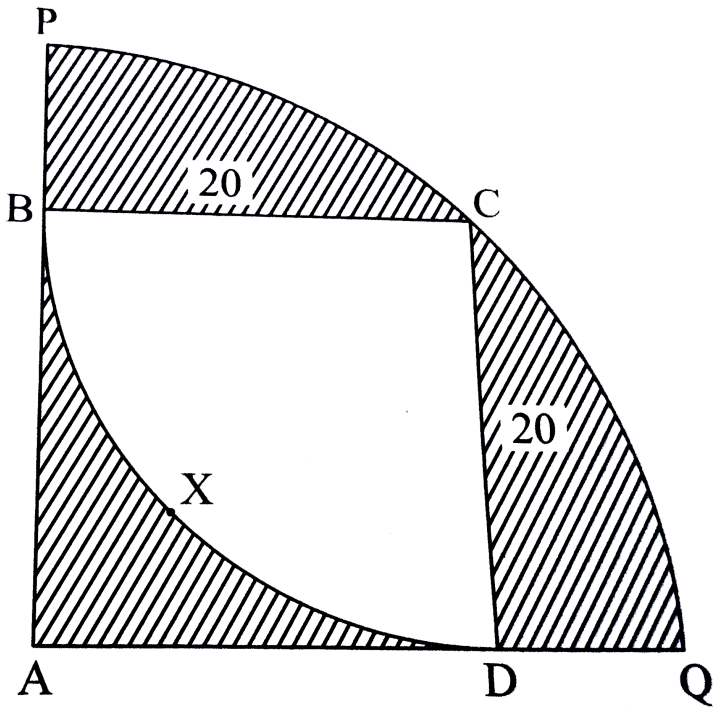
7. In the figure, square ABCD is inscribed in the sector A-PCQ. The radiuys of sector C-BXD is 20

cm. Find the area of shaded region.



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8. A horse is tethered to one corner of a square plot of side 42 m by a 30 m long rope, then

(i) Find the area it can graze

(ii) Find the area that will be left ungrazed.

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9. A road roller is of diameter 1.75 m and length 1 m. How much ground can be pressed with it in 200 revolutions?

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10. The base radius of a right circular cone is 6 cm and its perpendicular height is 8 cm. Find its

(i) curved surface area

(ii) total surface area

(iii) volume $(\pi = 3.14)$

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Assignment 8 5

1. The lower part of a circus tent is a right circualr cylinder and its upper part is right circular cone. The diameter of the base of the tent is 56 m and height of the cylindrical part is 15 m. The total height of the tent is 60 m. How many square metres of canvas is required for the tent? Find the volume of the air space in tent $\left(\pi = \frac{22}{7}\right)$

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2. The diameter of a right circular cylinder type bucket is 21 cm and its height is 40 cm. The bucket is full of sand. If the sand is poured on the ground it forms a circualr cone of height 15 cm. Find the area of the ground on which the sand cone stands. $\left(\pi = \frac{22}{7}\right)$

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3. The lower part of a toy is right circular cylinderical and its upper part is conical. The

diameter of its base is 8 cm and height of the cylindrical part is 5 cm. If the total height of the boy is 8 cm, find the area of the curved surface and its volume $(\pi = 3.14)$

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4. Find the length of the wire of diameter $\frac{2}{5}$ cm that can be drawn from a solid sphere of radius 9 cm

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5. The radius and height of a solid right circular cylinder are 10 cm and 30 cm respectively. It is melted and solid cones are prepared. If the diameter of base of the cone is 2 cm and its height is 10 cm. Find how many such cones prepard from the whole metal of cylinder.

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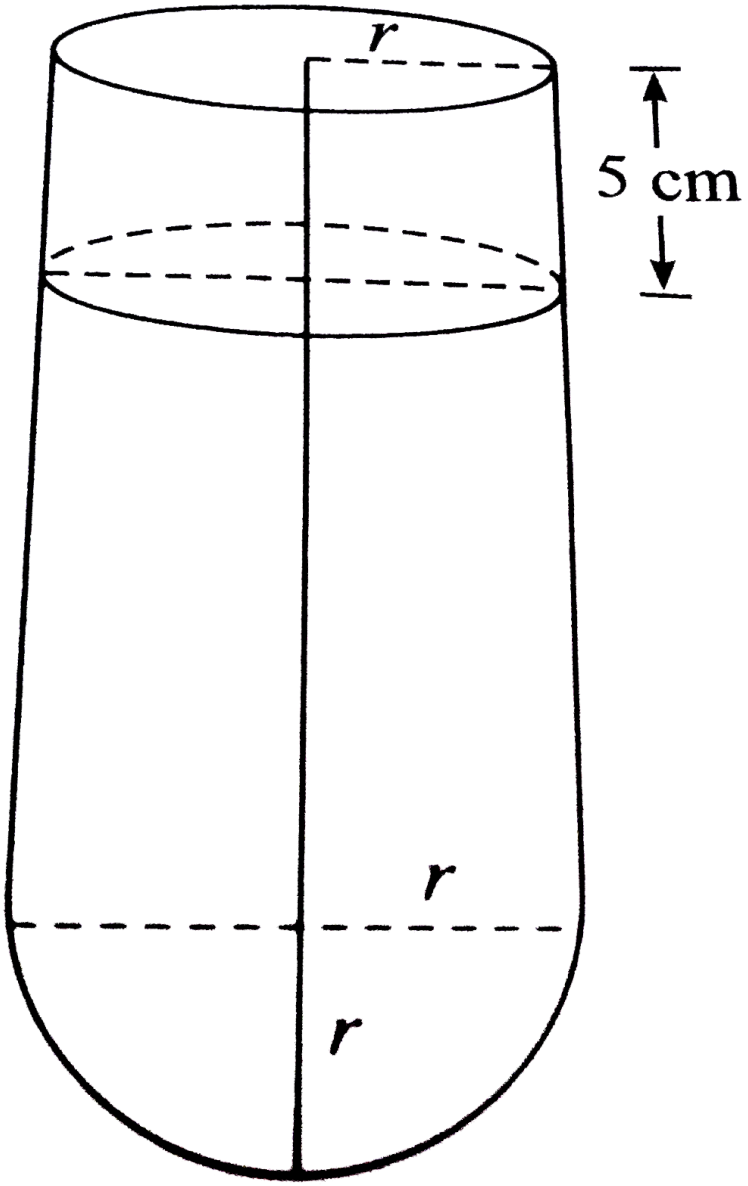
6. A test tube has lower part hemispherical and upper part cylindrical with the same

radius. If $\frac{5159}{6} cm^3$ of water is poured, the test tube will be completely filled . But if $\frac{2002}{3} cm^3$ of water is poured , 5 cm of height will remain empty .Calculate the radius of the

tube and the height of the cylindrical part.



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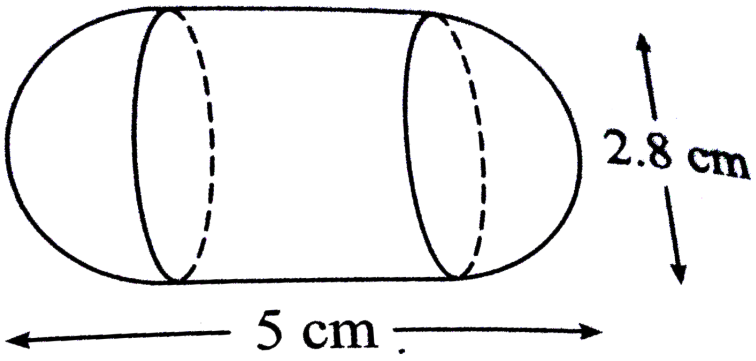
7. A gulab jamun contains sugar syrup upto about 30% of its volume.

(1) Find approximately how much syrup would be found in 45 gulab jamuns, each shaped like a cylinder with two hemispherical ends with length 5 cm and diameter 2.8 cm



(2) What mathematical concept is used in the

above problem?

(Approximation type)

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8. A cylindrical ice-cream pot of radius 6 cm and height 21 cm full of ice cream. The ice cream is to be filled in cones of height 12 cm and radius 3 cm. Ice cream on the top of the cone has hemispherical shape. How many such cones can be filled with ice cream?

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Examples For Practice Multiple Choice Questions

1. The curved surface area of a right circular cone of height 15 cm and base diameter 16 cm is ..... .

A. $160\pi \quad \text{cm}^2$

B. $168\pi \quad \text{cm}^2$

C. $120\pi \quad \text{cm}^2$

D. $136\pi \quad \text{cm}^2$

Answer: D

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2. The curved surface area of the cylinder is 900 cm^2 If the circumference of the base and its height are equal then height of the cylinder is . . . . .

A. 30 cm

B. 20 cm

C. 90 cm

D. cannot be determined

Answer: A

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3. If the curved surface area of a cylinder is $1760cm^2$ and its base radius is 14 cm then its height is

A. 10 cm

B. 15 cm

C. 20 cm

D. 18 cm

Answer: C

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4. Te radii of two cylinders are in the ratio 2 : 3 and their heights are in the ratio 3 : 5. What is the ratio of their curved surface area?

A. $3:5$

B. $2:5$

C. $5:2$

D. $5:3$

Answer: B

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5. The volume of a right circular cone of height 12 cm and base radius 6 cm, is

A. $12\pi \quad \text{cm}^3$

B. $36\pi \quad \mathrm{cm}^3$

C. $144\pi \quad \mathrm{cm}^3$

D. $144\pi \quad \mathrm{cm}^3$

Answer: D

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6. A conical tents is to accommodate 11 person such that each person occupies $4m^2$ of space on the ground. They have $220m^3$ of air to breathe. The height of the cone is

A. 15 m

B. 4 m

C. 20 m

D. 22 m

Answer: A

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7. If the surface area of a sphere is $144\pi cm^2$, then its volume is . . . . .

A. $144\pi \quad \mathrm{cm}^3$

B. $288\pi \quad \mathrm{cm}^3$

C. $864\pi \quad \mathrm{cm}^3$

D. $72\pi \quad \mathrm{cm}^3$

Answer: B

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8. How many bricks will be required to construct a wall 8 m long, 6 m high and 22.5

cm thick, if each brick measures

$25cm \times 11.25cm \times 6cm$?

A. 6400

B. 5600

C. 4600

D. 6500

Answer: A

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9. A solid metal ball of radius 8 cm is melted and cast into smaller balls, each of radius 2 cm. The number of balls made are ..... .

A. 8

B. 2

C. 64

D. 4

Answer: C

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10. A cylinder with base radius of 8 cm and height of 2 cm is melted to form a cone of height 6 cm. The radius of the cone is ..... .

A. 4 cm

B. 3 cm

C. 2 cm

D. 8 cm

Answer: D

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11. A solid is hemispherical at the bottom and conical above. If the surface areas of the two parts are equal, then the ratio of its radius and the height of its conical part is $1:3$ (b) $1:\sqrt{3}$ (c) $1:1$ (d) $\sqrt{3}:1$

A. $1:3$

B. $3:1$

C. $1:\sqrt{3}$

D. $\sqrt{3}:1$

Answer: C

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12. What is the radius of the sector, if its area is numerically eqaul to the length of its corresponding are ?

A. 2π

B. 2

C. 4

D. 4π

Answer: B

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13. If the radius of the sector is 5 and length of its corresponding are is 14, then area of the sector is ..... .

A. 35

B. 10

C. 70

D. 14

Answer: A

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14. If the area of the circle is $100cm^2$ and the area of the sector of the same circle is $25cm^2$, then the angular measure of the are of the sector is ..... .

A. 45°

B. 100°

C. 90°

D. 25°

Answer: C

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15. If the angular measure of an are is 36° and its length is 10 cm, then what is the circumference of the circle?

A. 100 cm

B. 36 cm

C. 360 cm

D. 10 cm

Answer: A

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Examples For Practice

1. How much metal sheet is required to prepare a cylindrical pipe 10 cm long and radius 7 cm?

Watch Video Solution

2. The curved surface area of a cone is $7150cm^2$ and radius of base of the cone is 35 cm. Find the slant height and the perpendicular height.

Watch Video Solution

3. The radius of a hemisphere is 2.5 cm. Find its total surface area.

Watch Video Solution

4. Find the length of the arc of circle with radius 0.7 m and area of the sector is $0.49m^2$.

Watch Video Solution

5. Find the angular measure of an arc, if its length is 6.05 m and its radius is 5.5 m.

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6. A cylindrical gas jar with inner radius 6 cm and height 25 cm is filled with a gas. Find the quantity fo gas contained. $(\pi = 3.14)$

Watch Video Solution

7. The radius and slant height of the cone are 5 cm and 10 cm respectively. Find the curved surface area. $(\pi = 3.14)$

Watch Video Solution

8. The surface area of the sphere is $50.24cm^2$.

Find its radius. $(\pi = 3.14)$

Watch Video Solution

9. Find the surface area of a sphere of radius 3.5 cm.

Watch Video Solution

10. How many solid cylinders of radius 6 cm and height 12 cm can be made by melting a solid sphere of radius 18 cm?

Activity: Radius of the sphere, r = 18 cm

For cylinder, radius R = 6 cm, height H = 12 cm

$\therefore$ Number of cylinders can be made

$$= \frac{\text{Volume of the sphere}}{\square}$$

$$= \frac{\frac{4}{3}\pi r^3}{\square}$$

$$= \frac{\frac{4}{3} \times 18 \times 18 \times 18}{\square}$$

$$= \square$$

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11. If the diameter of a sphere is d and curved surface area S, then show that $S = \pi d^2$. Hence find the surface area of a sphere whose diameter is 4.2 cm.

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12. The diameter of a roller is 120 cm and its length is 84 cm. The roller makes 500 complete revolutions in pressing a ground at the rate of 75 paise per square metre.

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13. If the area of minor sector of a circle with radius 11.2 cm $49.28 \quad \mathrm{cm}^2$, find measure of the angle.

Watch Video Solution

14. If the radii of the circular ends of a frustum shaped object which is 30 cm high are 14 cm

and 7 cm. Find the total surface area and capacity of the object.

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15. The radii of the circular ends of a frustum of a cone are 14 cm and 8 cm. If the height of the frustum is 8 cm, find

(i) slant height of frustum

(ii) total surface area of frustum

(iii) Volume of frustum, $(\pi = 3.14)$

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16. Find the length of the arc of the circle of diameter 8.4 cm with area of the sector $18.48cm^2$. Also find measure of the angle.

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17. Find the area of minor segment of a circle of radius 6 cm when its chord subtends an angle 60° at its centre. $(\sqrt{3} = 1.73)$

Watch Video Solution

18. A cylindrical hole of diameter $30cm$ is bored through a cuboidal wooden block with side $1meter$ Find the volume of the object so formed ($\pi = 3.14$)

Watch Video Solution

19. A cylindrical tub of radius 12 cm contains water to a depth of 20 cm. A spherical ball is dropped into the tub and the level of the

water is raised by 6.75 cm. Find the radius of the ball.

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20. A test tube has diameter 20 mm and height is 15 cm. The lower part is a hemisphere. Find the capacity of the test tube.

$$(\pi = 3.14)$$

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21. The dimensions of metallic cuboid are $44cm \times 42cm \times 21cm$. It is molten and recast into a sphere. Find the surface area of thhe sphere.

Watch Video Solution

22. A circus tent is cylindrical upto a height of 3.3 m and conical above it. If the diameter of the base is 100 m and slant height of the conical part is 56.4 m, find total canvas used in

making the tent. If the cost of canvas is Rs. 8 per m^2, find the cost of making the tent.

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23. Conversion of Sphere into cylinder : The diameter of metallic sphere is 6 cm. It is melted and drawn into a wire having diameter of the cross section as 0.2 cm. Find the length of the wire.

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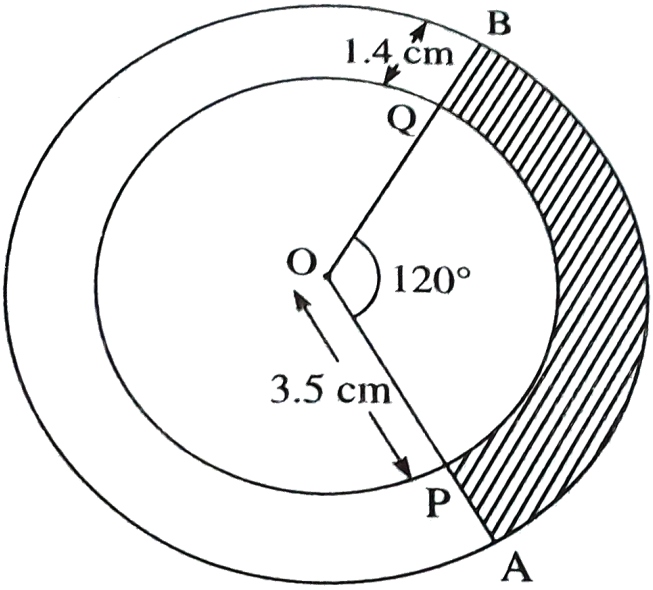
24. In the figure OP=3.5 cm, QB=1.4 cm and $\angle AOB = 120^\circ$. Find the area of the shaded portion.



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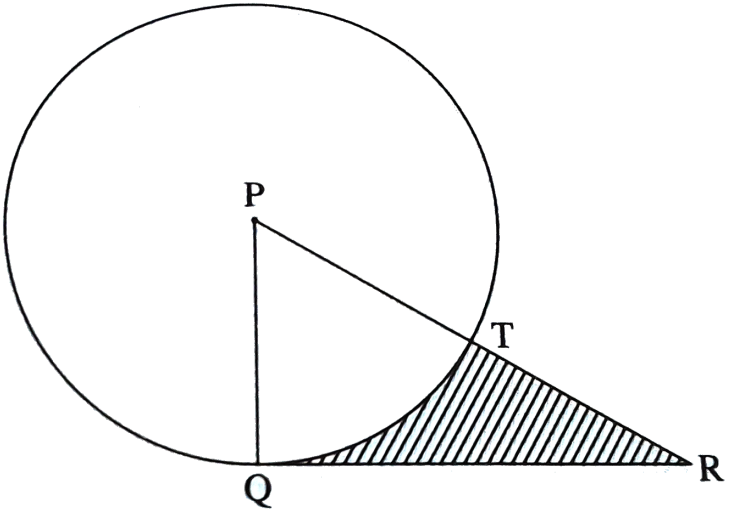
25. In the figure, segment QR is a tangent to the circle with centre P.PR = 12 cm and PQ = 6 cm. Find the area of shaded region. $\left(\sqrt{3} = 1.73, \pi = 3.14\right)$



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26. An ink container of cylindrical shape is filled with ink upto 91% Ballpen refills of length 12 cm and inner diameter 2 mm are filled upto 84%. IF the height and radius of the ink container are 14 cm and 6 cm respectively, find the number of refills that can be filled with this ink.

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27. Water flows at a rate of 10 m per minute through a cylindrical pipe having its diameter

as 20 mm. How much time will it take to fill a conical vessel of base diameter 40 cm and depth 24 cm.

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28. A semi-circular sheet of metal of diameter 28cm is bent into an open conical cup. Find the depth and capacity of cup.

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29. Mearbles of diameter 1.4 cm are dropped into a cylindrical beaker of diameter 7 cm, containing some water. Find the number of marbles that should be dropped into the beaker so that the water level rises by 5.6 cm.

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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 a sphere of diameter 6 cm. (π= 3.14)

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3. Find the total surface area of the cylinder, if the radius of its base is 5 cm and height is 40 cm. (π= 3.14)

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4. 7 cm त्रिज्या वाले एक गोले का पृष्ठीय क्षेत्रफल ज्ञात कीजिए |

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5. The dimensions fo 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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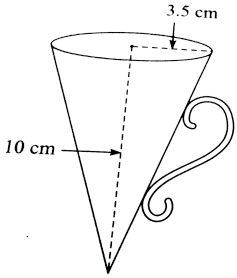
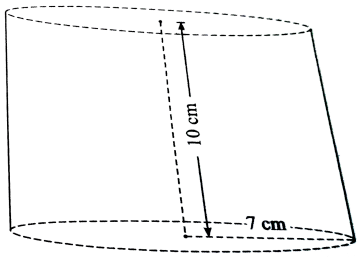
6. Observe the measures of pots in figure A and B. How many jugs of water can the

cylindrical pot hold ?



A. Conical water jug



B. Cylindrical water pot

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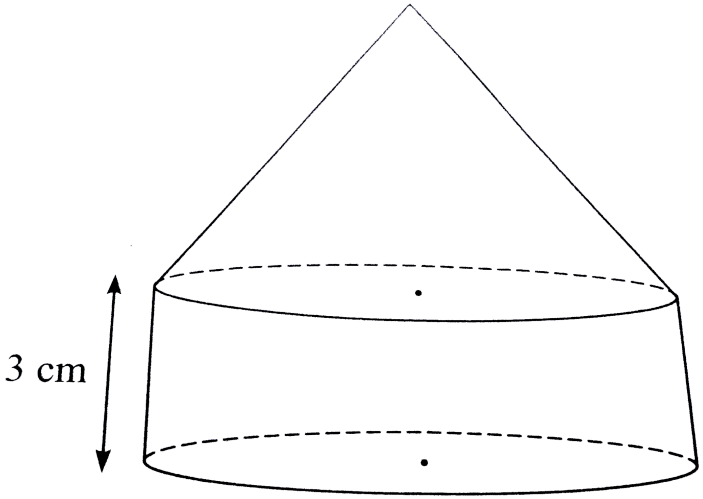
7. A cykubder abnd a cone have equal bases. The height of the cylinder is 3 cm and the area of its base is $100cm^2$. The cone is placed upon the cylinder. Volume of the solid figure so formed is $500cm^3$. Find the total height of the

figure.



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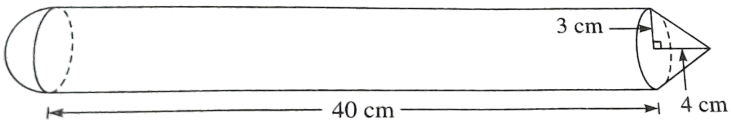
8. In the figure, a toy made from a hemisphere, a cylinder and cone is shown. Find the total

area of the toy.



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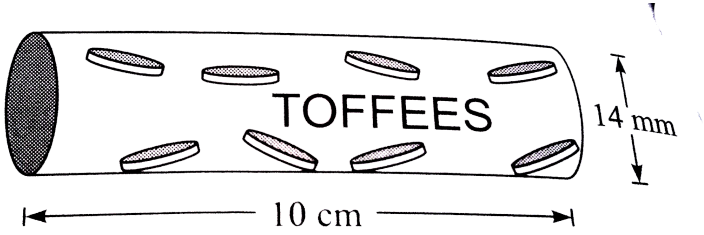
9. In the figure a cylindrical wrapper of flat tablets is shown The radius of tablet is 7 mm and its thinkness is 5 mm. How many such tablets are wrapped in the wrapper?



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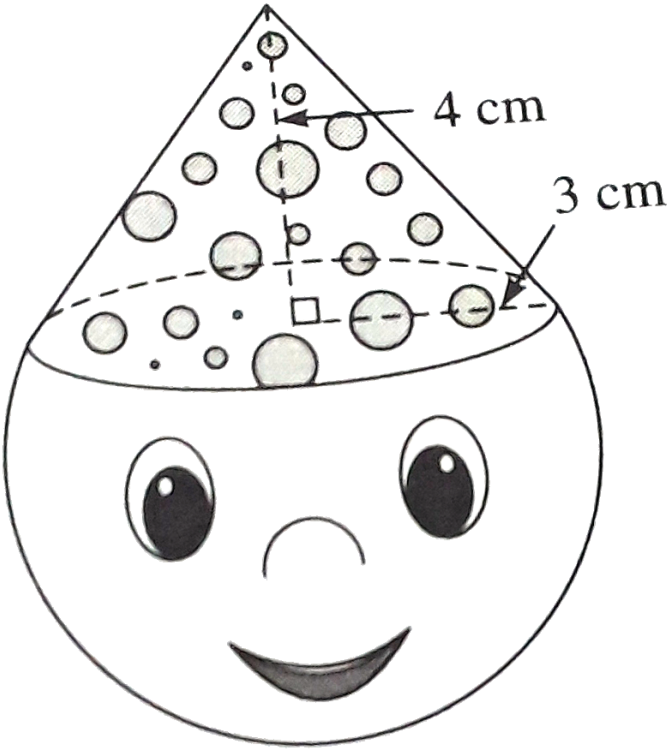
10. The figure shows a toy Its lower part is a hemisphere and the upper part is a cone. Find the volume and the surface area of the toy from the measures shown in the figure.

$(\pi = 3.14)$



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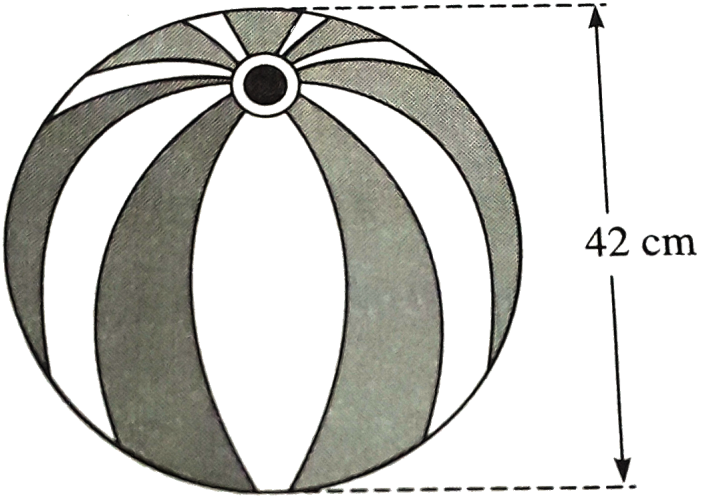
11. Find the surface area and volume of a beach ball shown in the figure



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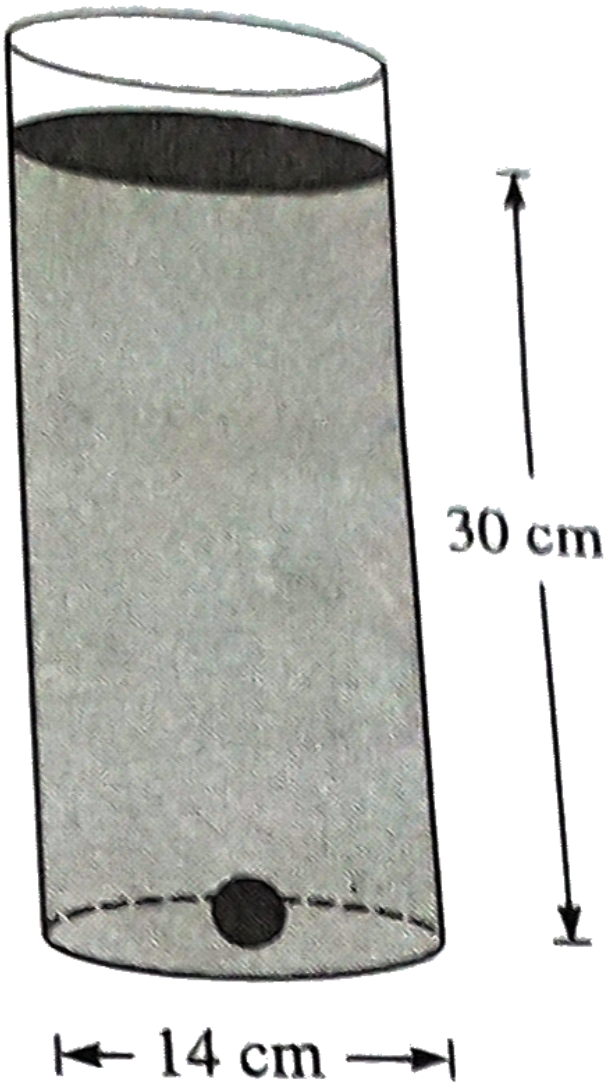
12. As shown in the figure, a cylindrical glass contains water with a metallic sphere of

diameter 2 cm immersed in it. Find the volume of the water.



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Practice Set 7 2

1. The radii of two circular ends of frustum shape bucket are 14 cm and 7 cm. Height of the bucket is 30 cm. How many litres of water can it hold ? (1 litre = $1000cm^3$)

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

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3. The circumferences of circular faces of a frustum are 132 cm and 88 cm and its height is 24 cm. To find the slant height of the frustum complete the following activiy. $\left(\pi = \frac{22}{7}\right)$

$\text{circumference}_1 = 2\pi r_1 = 132$

$$r_1 = \frac{132}{2\pi} = \square$$

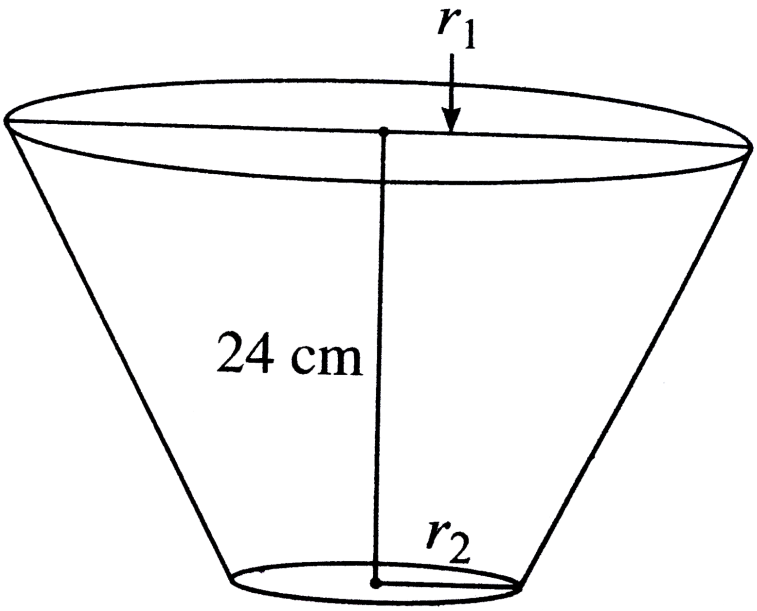
$$\text{circumference}_2 = 2\pi r_2 = 88$$

$$r_2 = \frac{88}{2\pi} = \square$$

Slant height of frustum,

$$l = \sqrt{h^2 + (r_1 - r_2)^2}$$

$$= \sqrt{24^2 + \square^2}$$ = squarecm`



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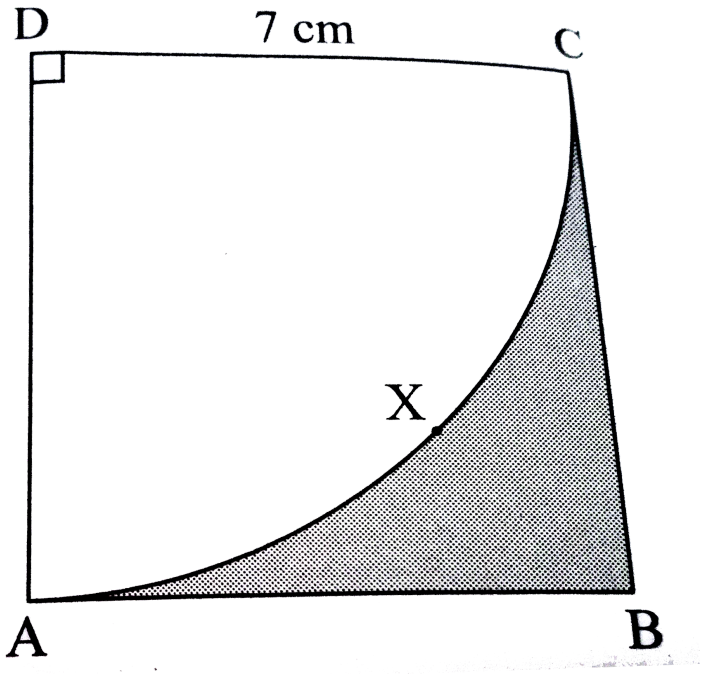
4. In the figure, side of square ABCD is 7 cm. With centre D and radius DA, sector D-AXC is drawn. Find the area of the shaded region.



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Practice Set 7 3

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

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2. Measure of an arc of a circle is 80° and its radius is 18 cm. Find the length of the arc.

$(\pi = 3.14)$

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3. Radius of a sector of a circle is 3.5 cm and length of its arc is 2.2 cm. Find the area of the sector.

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4. Radius of a circle is 10 cm. Area of a sector of the circle is $100cm^2$. Find the area of its

corresponding major sectof. $(\pi = 3.14)$

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

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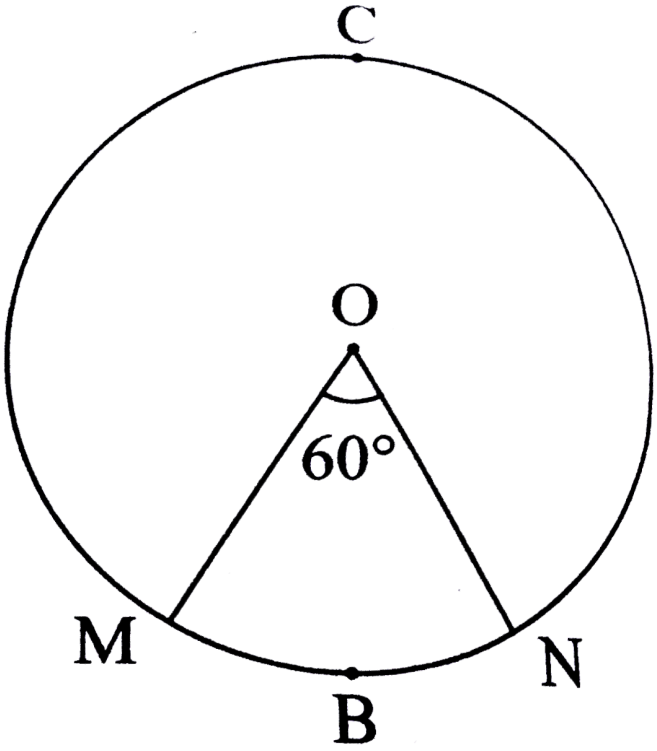
6. In the figure, radius of the circle is 7 cm and m(arc MBN) $= 60^\circ$, find

(1) Area of the circle.

(2) A(O-MBN).

(3) A(O-MCN).



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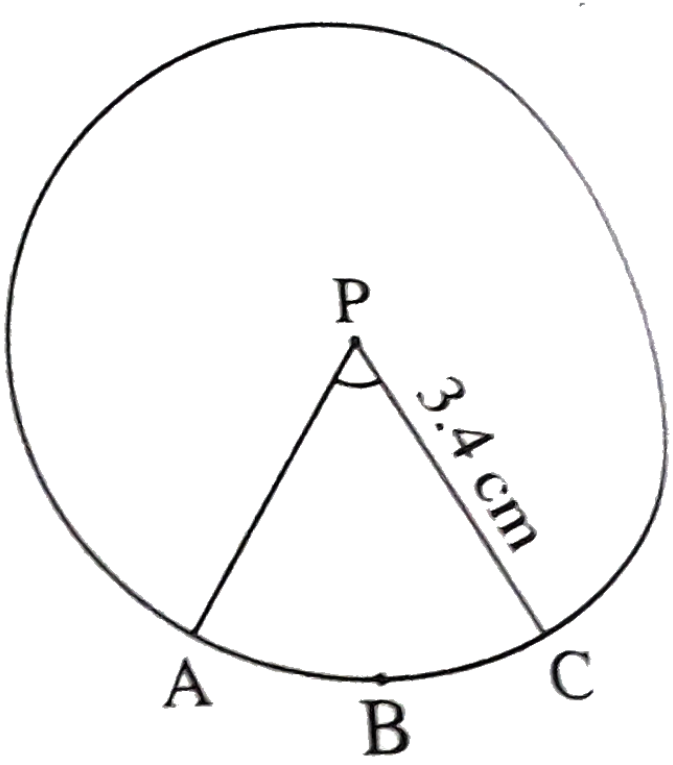
7. In figure, radius of circle is 3.4 cm and perimeter of sector P-ABC is 12.8 cm. Find A(P-ABC).



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8. In figure, O is the centre of the sector.

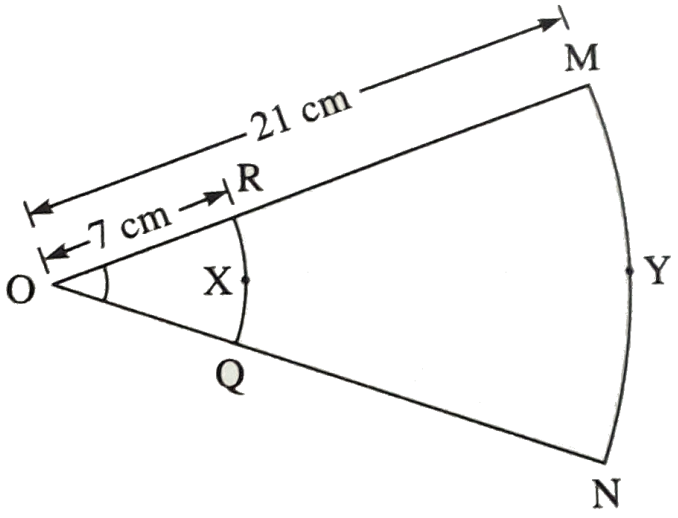
$\angle ROQ = \angle MON = 60^\circ$

OR = 7 cm and

OM = 21 cm.

Find the lengths of arc RXQ and arc MYN.

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



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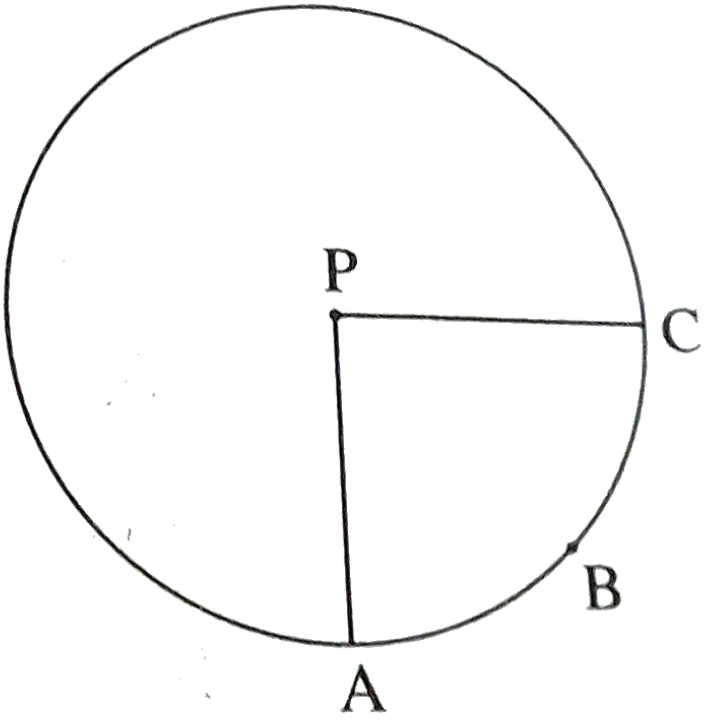
9. In figure, if $A(P - ABC) = 154cm^2$, radius of the circle is 14 cm, find (1) $\angle APC$ (2) l(arc ABC).



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10. Radius of a sector of a circle is 7 cm. If measure of arc of the sector is

(1) 30° (2) 210° (3) three right angles.

Find the area of the sector in each case.

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

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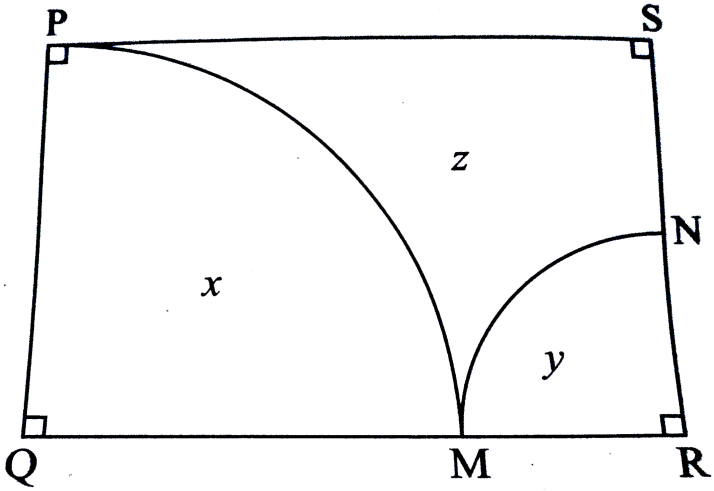
12. In the figure $\square PQRS$ is a rectangle.

If Pq = 14 cm, QR = 21 cm , find the areas of the parts x,y and z.



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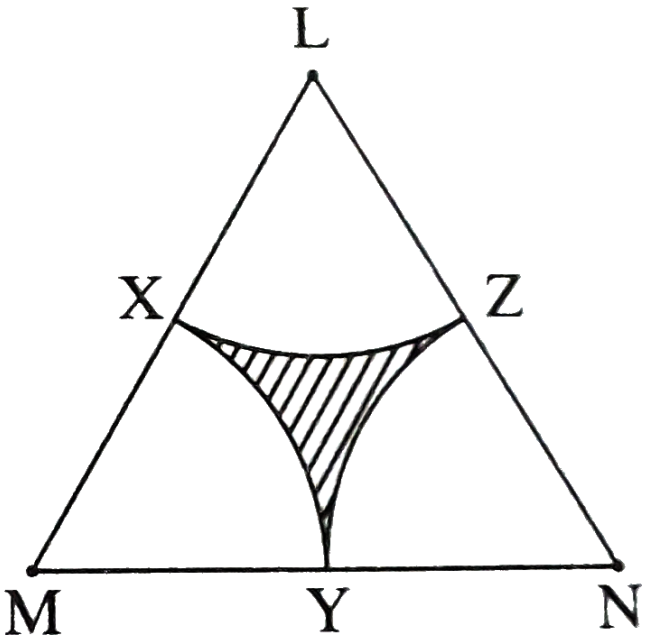
13. $\triangle LMN$ is an equilateral triangle. LM=14 cm. As shown in the figure, three sectors are drawn with vertices as centres and radius 7 cm. Find

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

(2) Area of any one of the sectors.

(3) Total area of all the three sectors.

(4) Area of the shaded portion.



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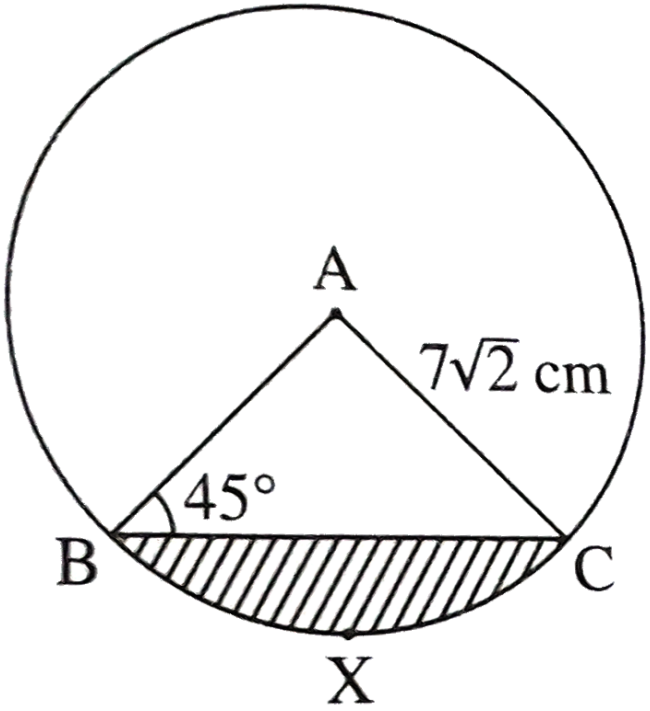
Practice Set 7 4

1. In figure, A is the centre of the circle. $\angle ABC = 45^\circ$ and $AC = 7\sqrt{2}$ cm. Find the area of segment BXC.



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2. In the question, if $\angle ABC = 45^\circ$, then the area of segment BXC is $27.93cm^2$ and not $3.72cm^2$ as given in the textbook nut if we consider $\angle BAC = 45^\circ$ instead of $\angle ABC = 45^\circ$ then area of segment BXC will be $3.92cm^2$ which is near to $3.72cm^2$ as given in th textbook, if $\angle BAC = 45^\circ$ then solution be as follows.

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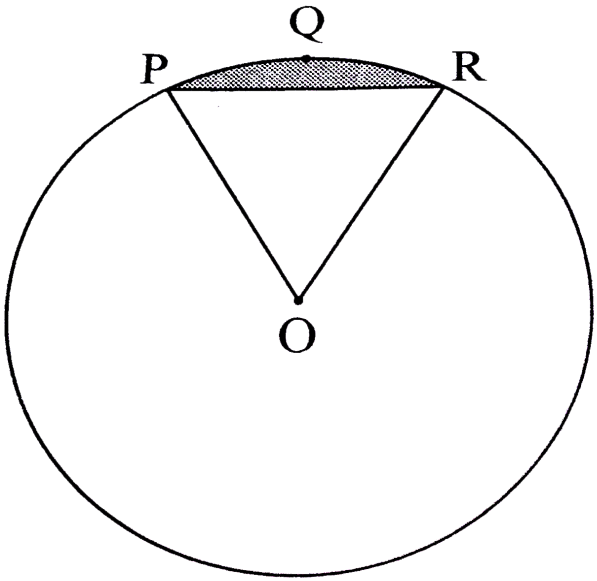
3. In the figure, O is the centre of the circle.

m(arc PQR) $= 60^\circ$

OP = 10 cm.

Find the area of the shaded region.

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



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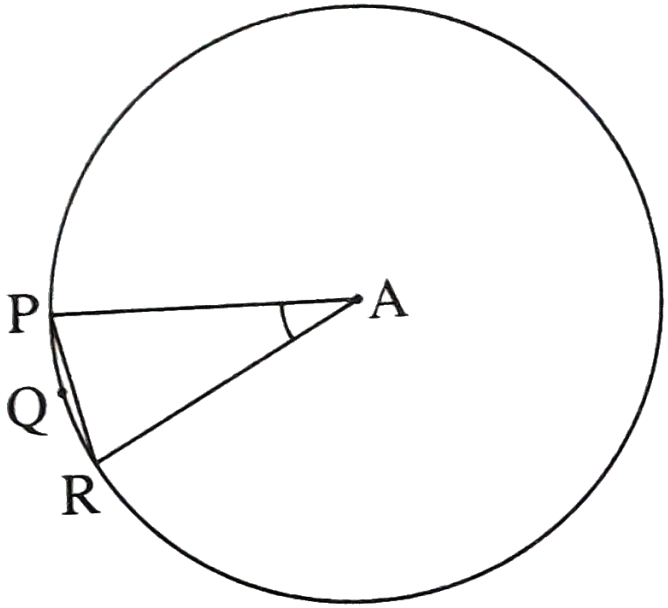
4. In the figure, if A is the centre of the circle.

$\angle PAR = 30^\circ$, AP=7.5,

find the area of the segment PQR. $(\pi = 3.14)$



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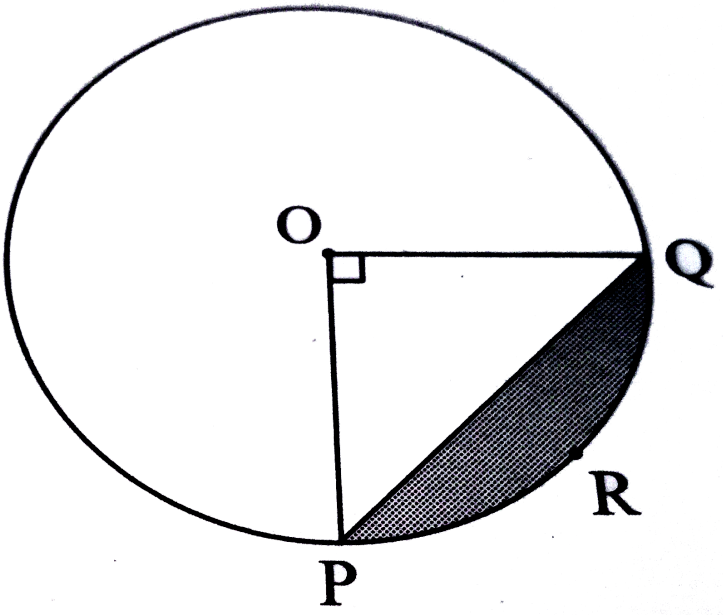
5. In the figure, if O is the centre of the circle, PQ is chord. $\angle POQ = 90^\circ$ area of shaded region is $114cm^2$ find the radius of the circle $(\pi = 3.14)$



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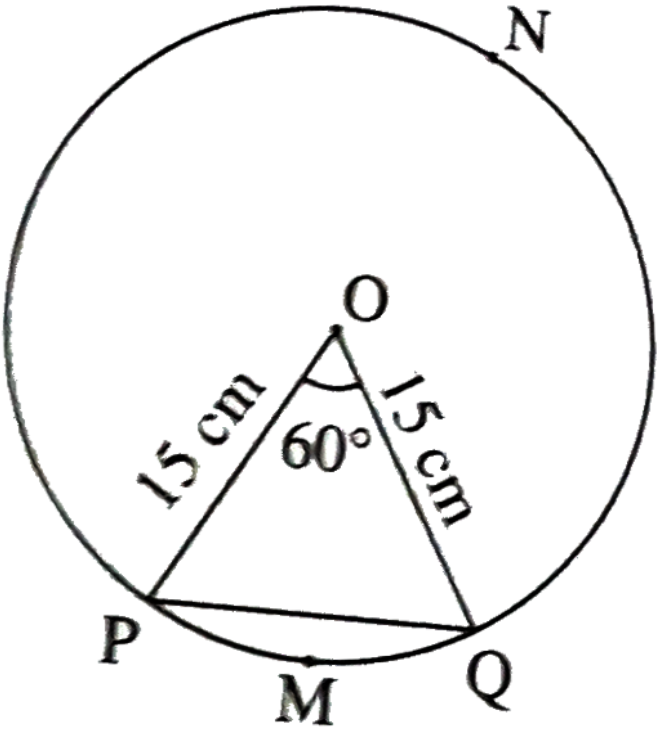
6. A chord PQ of a circle with radius 15 cm subtends an angle of 60° with the centre of the circle. Find the area of the minor as well as the major segment.

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



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Problem Set 7 Choose The Correct Alternative Answer For Each Of The Following Questions

1. The ratio of circumfgerence and area fo a circle is 2 : 7. What is its circumference ?

A. 14π

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

C. 7π

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

Answer: A

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

A. 66 cm

B. 44 cm

C. 160 cm

D. 99 cm

Answer: D

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3. If the measure of sector of a circle with radius 7 cm is 90° , what is the perimeter of the sector?

A. 44 cm

B. 25 cm

C. 36 cm

D. 56 cm

Answer: B

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4. What is the curved surface area of the cone of radius 7 cm and height 24 cm?

A. $440cm^2$

B. $550cm^2$

C. $330cm^2$

D. $110cm^2$

Answer: B

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

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

B. 22π cm

C. 44π cm

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

Answer: A

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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 5 cm, then what is the height of the cone?

A. 15 cm

B. 10 cm

C. 18 cm

D. 5 cm

Answer: A

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

A. $1cm^3$

B. $0.001cm^3$

C. $0.0001cm^3$

D. $0.000001cm^3$

Answer: D

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8. Find the side of a cube of volume 1 m^3.

A. 1 cm

B. 10 cm

C. 100 cm

D. 1000 cm

Answer: C

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Problem Set 7

1. 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 capacity of the tub in litres?

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2. Some plastic balls of radius 1 cm were melted and cast into a tube. The thickness, length and outer radius of the tube were 2 cm,

0 cm and 30 cm respectively. How many balls were melted to make the tube ?

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3. A metal parallelopiped of measures $16cm \times 11cm \times 10cm$ was melted to make coins. How many coins ware made is the thickness and diameter of each coin was 2 mm and 2 cm respectibely ?

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4. The diameter and length of a roller is 120 cm and 84 cm respectively. To level the graound, 200 rotations of the roller are required. Find the expenditure to level the ground at the rate of ₹ 10 per sq m.

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5. The diameter and thickness of a hollow metal sphere are 12 cm and 0.01 m respectively. The density of the metal is 8.88

gm per cm^2. Find the outer surface area and mass of the sphere. $[\pi = 3.14]$

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6. A cylinder bucket of diameter 28 cm and height 20 cm was full of sand. When the sand in the bucket was poured on the ground, the sand got converted into a shape of a cone. If the height of the cone was 14 cm , what was the base area of the cone?

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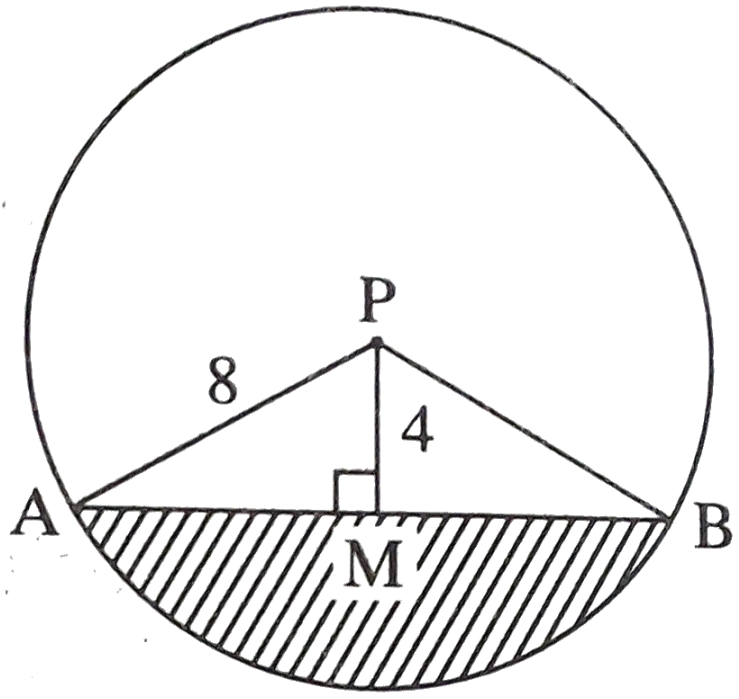
7. The radius of ametallic sphere is 9 cm. It was melted to make a wire of diameter 4 mm. Find the length of the wire.

8. The area of a sector of a circle of 6 cm radius is 15π sq. cm. Find the measure of the arc and length of the arc corresponding to the sector.

9. In the figure, seg AB is a chord of a circle with centre P. If PA = 8 cm and distance of chord AB from the centre P is 4 cm, find the area of the shaded portion.



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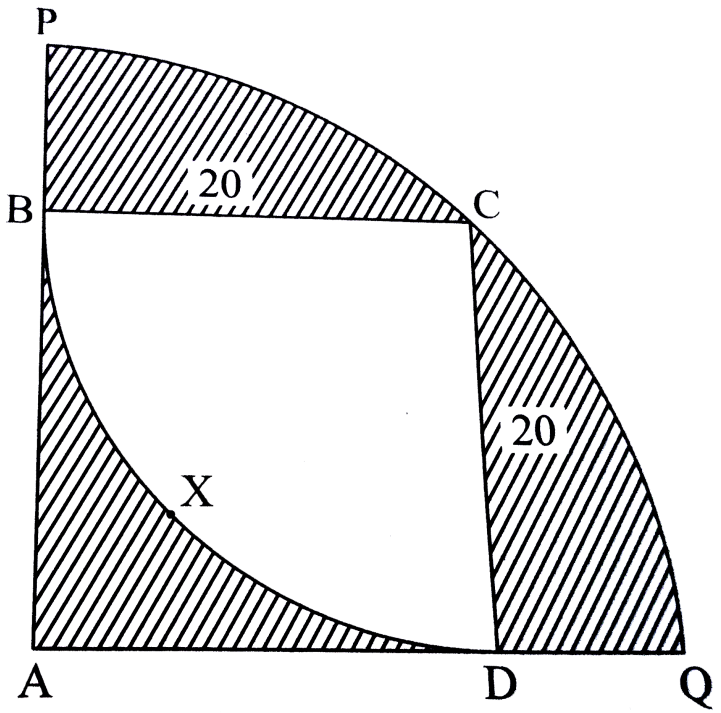
10. In the figure, square ABCD is inscribed in the sector A-PCQ. The radiuys of sector C-BXD is 20 cm. Find the area of shaded region.



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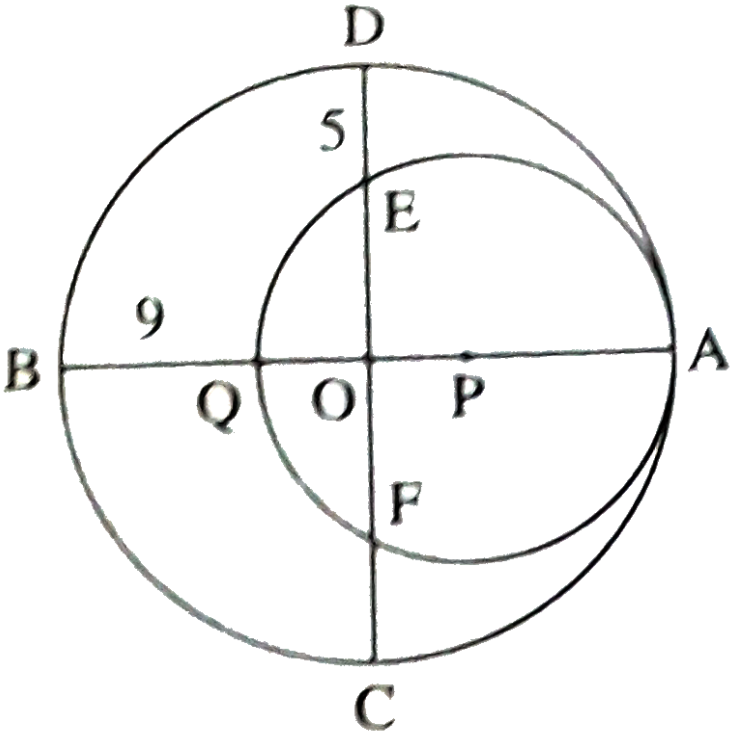
11. In the figure, two circles with centres O and P are touching internally at point A. If BQ = 9, DE = 5, complete the following activity to find the radii of the circles :



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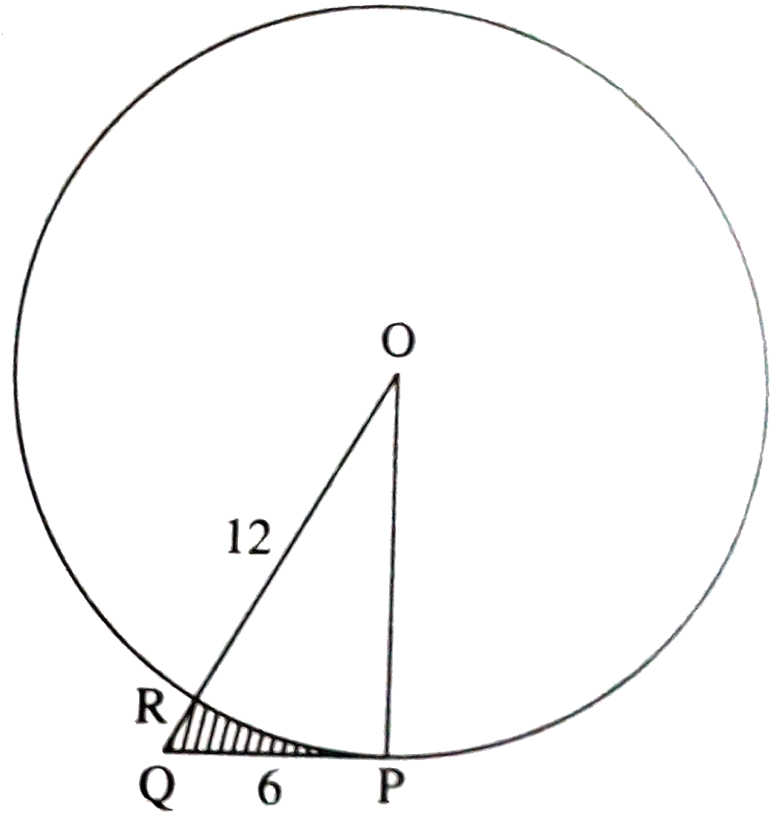
Challenging Questions

1. In the figure, PQ is tangent to a circle with centre O. OQ=12, PQ=6. Find the area of the

shaded portion



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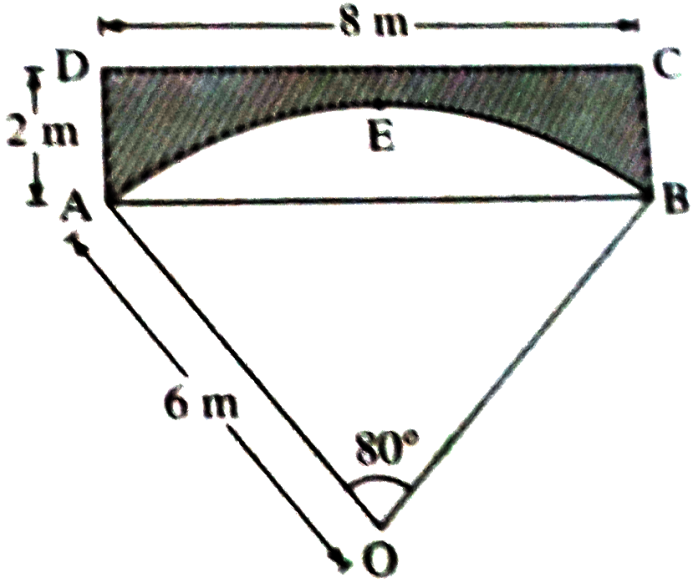
2. O-AEB is a sector of radius 6 m and measure of arc $AEB = 80^\circ$. AB=8 m and AD = 2 m. $\square ABCD$ is a rectangle. Find the area of the shaded portion.



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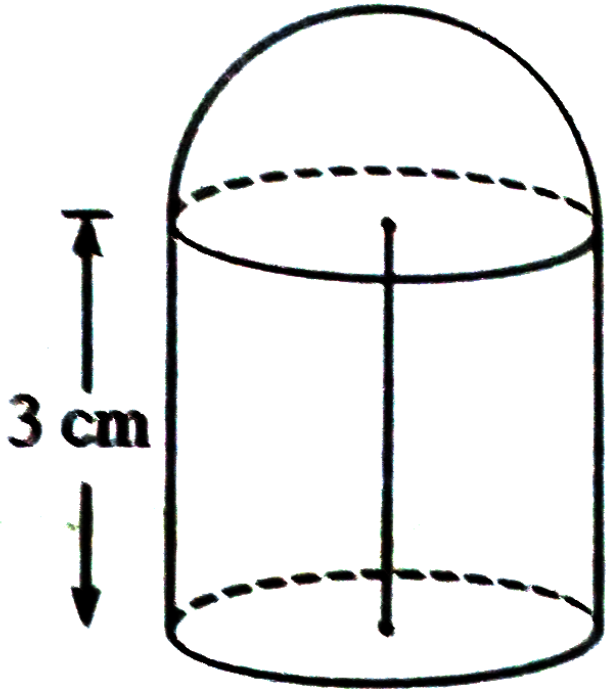
3. The lower part of the metallic container is right circular cylinder and its lid is hemispherical. The volume of the cylinder is $942cm^3$ and height is 3 cm. The diameter of the cylinder and the hemisphere is same. Find the area of the sheet for preparing the

container. $(\pi = 3.14)$



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4. A conical tent can accommodate maximum 176 persons, if $1.26m^2$ floor area is given to each person. The height of the middle pole of the tent is 6m. If the tent is occupied by the persons to its full capacity, find how many m^3 of air is available to each person.

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5. The base and height of a right angled triangle are a cm and b cm respectively. By

rotating it once on base and once on height two different cones are geerated. The ration of the volumes of the cones is $3:4$ If a+b=14 find the values of a and b and also volumes of the cones.

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6. Water is filled in a right cylindrical tank with base radius 14 cm such that water level is 3 cm below the top. When an iron ball is dropped in

the tank, $3003cm^3$ of water flows out. Find the radius of the ball.

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7. Water drips from a tap at the rate of 4 drops in every 3 seconds. Volume of one is $0.4cm^3$. If the dripped water is collected in a cylindrical vessel of height 7 cm and diameter 8 cm, in what time will the vessel be completely filled ? What is the volume of water

collected ? How many times will the vessel be completelt filled in 3 hours and 40 minutes ?

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8. A piece of paper whose length and breadth are 44 cm and 10 cm can completely cover the curved surface area of a right circular cylinder, the diameter of whose base is 10 cm. Find the volume of the cylinder.

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9. A well with 10 m inside diameter is dug 14 m deep. Earth taken out of it is spread all a round to a width of 5 m to form an embankment. Find the height of embankment.

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10. A tinmaker converts a cubical metallic box into 10 cylindrical tins. Side of the cube is 50 cm and radius of the cylinder is 7 cm.Find the height of each cylinder so made if wastage of 12% is incurred in the process. (given $\pi = \frac{22}{7}$)

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11. Radius of circular base of an ear of corn is 6.6 cm and its length is 11.2 cm . If on an average 1 sq cm area contains 2 corn kernels , fnd the total number of kernals on a corn

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12. Height of a cylinfrical barrel is 50 cm and radius of its base is 20 cm . Anurag started to

fill the barrel with water, when it was empty by cylindrical mug . The diameter and height of the mug of mugs will be required for the barrel to overflow ?

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13. There is a hemispherical bowl. A cone is to be made such that, if it is filled with water twice and the water poured in the bowl, it will be filled just completely. State how will you

decide the radius and perpendicular height of the cone.

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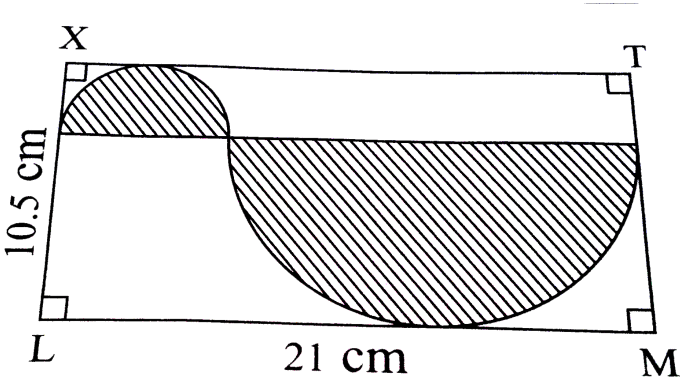
14. In the figure, $\square XLMT$ is a rectangle. $\angle M = 21cm$, XL = 10. 5 cm. Diamter of the smaller semicircle is half the diameter of larger semicircle. Find the area of non-shaded

region.



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