

**Chapter: 6 to 9**

**Q.1 (A) For every subquestion 4 alternative answers are given. Choose the correct answer and write the alphabet of it : (4)**

1)

If  $\sin A = \frac{3}{5}$  find  $\cos A$

a.  $\frac{3}{5}$

b.  $\frac{5}{3}$

c.  $\frac{4}{5}$

d.  $\frac{3}{4}$

2) Points (- 4, 0) and (7, 0) lie

a. On x axis

b. On y axis

c. In the first quadrant

d. In second quadrant

3) The radius of a cone is 3 cm and Vertical height is 4 cm. Find Curved surface area.

a.  $74.14 \text{ cm}^2$

b.  $47.14 \text{ cm}^2$

c.  $74.41 \text{ cm}^2$

d.  $47.41 \text{ cm}^2$

4) If the length of a chord of a circle is 16 cm and is at a distance of 15 cm from the center of the circle then radius of the circle is

a. 15 cm

b. 16 cm

c. 17 cm

d. 34 cm

**(B) Solve the following questions.**

**(4)**

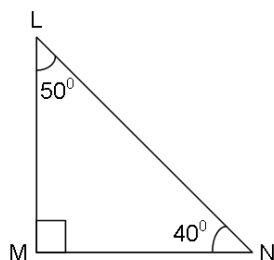
1) State in which quadrant or on which axis do the following points lie.

i. D(2, 10)

ii. K(3.5, 1.5)

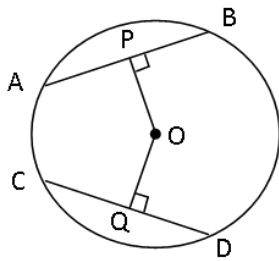
2) Find the total surface area of a solid cylinder of radius 5 cm and height 10 cm. Leave your answer in terms of  $\pi$ .

3)



In right angled  $\triangle LMN$ ,  $\angle LMN = 90^\circ$ ,  $\angle L = 50^\circ$  and  $\angle N = 40^\circ$ , Write the following ratio.  
 $\sin 50^\circ$

- 4) In the figure, O is the centre of the circle and  $AB = CD$ . If  $OP = 4$  cm, find the length of OQ.



**Q.2 (A) Complete and write the following Activities. (any two)**

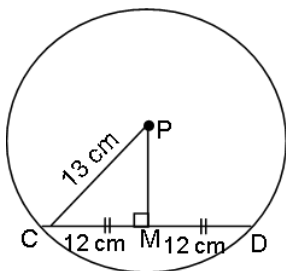
**(4)**

- 1) Diameter of a circle is 26 cm and length of a chord of the circle is 24 cm. Find the distance of the chord from the centre.

Given:- (1) A circle with centre and diameter 26 cm

(2) Length of chord  $CD = 24$  cm

(3)  $\text{seg } PM \perp \text{ chord } CD, C - M - D$



To Find:- PM

Diameter of circle = 26cm ... [Given]

$\therefore$  Radius of the circle = \_\_\_\_\_

$\therefore PC = 13$  cm

$CM =$  \_\_\_\_\_

bisects the chord]

... [Perpendicular drawn from the centre to the chord

$$\therefore CM = \frac{1}{2} \times 24$$

$CM =$  \_\_\_\_\_

In  $\triangle PMC, \angle PMC = 90^\circ$

... [Given]

$$\therefore PC^2 =$$

... [Pythagoras theorem]

$$\therefore 13^2 = PM^2 + 12^2$$

$$\therefore = PM^2$$

$$\therefore PM^2 = 25$$

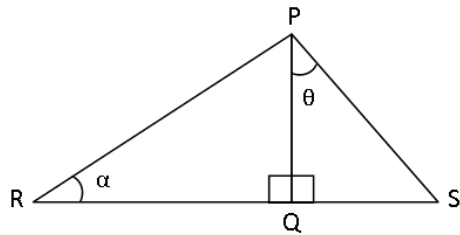
$$\therefore PM =$$

... [Taking square roots]

**2)**

In the figure,  $\angle PQR = 90^\circ, \angle PQS = 90^\circ, \angle PRQ = \alpha$  and  $\angle QPS = \theta$  Write the following trigonometric ratios.

$\sin \theta, \cos \theta, \tan \theta$



$$\sin \theta = \sin \angle QPS = \frac{\text{Opposite side of } \angle QPS}{\text{Hypotenuse}}$$

$$\therefore \sin \theta = \underline{\hspace{2cm}};$$

$$\cos \theta = \cos \angle QPS = \frac{\text{Adjacent side of } \angle QPS}{\text{Hypotenuse}}$$

$$\therefore \cos \theta = \underline{\hspace{2cm}};$$

$$\tan \theta = \tan \angle QPS = \underline{\hspace{2cm}}$$

$$\therefore \tan \theta = \underline{\hspace{2cm}}$$

3)

Find the surface area and volume of sphere of radius : 4 cm ( $\pi = 3.14$ )

$$r = 4 \text{ cm}$$

The surface area of a sphere =  $\underline{\hspace{2cm}}$  .....(Formula)

$$\begin{aligned} &= 4 \times 3.14 \times (4)^2 \\ &= 4 \times 3.14 \times 4 \times 4 \\ &= \underline{\hspace{2cm}} \end{aligned}$$

The volume of a sphere =  $\underline{\hspace{2cm}}$  .....(Formula)

$$\begin{aligned} &= \frac{4}{3} \times 3.14 \times (4)^3 \\ &= \frac{4}{3} \times 3.14 \times 4 \times 4 \times 4 \\ &= \underline{\hspace{2cm}} \end{aligned}$$

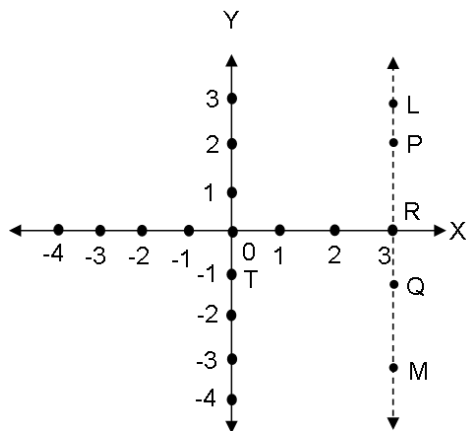
The surface area of a sphere =  $\underline{\hspace{2cm}}$  ; Volume =  $\underline{\hspace{2cm}}$

**(B) Solve the following sub-questions. (any four)**

**(8)**

- 1) Calculate the length of a chord which is at a distance of 12 cm from the centre of a circle of radius 13 cm.
- 2) In the graph alongside, line LM is parallel to the Y-axis.
  - i) What is the distance of line LM from the Y-axis.
  - ii) Write the co-ordinates of the points P, Q and R.

iii) What is the difference between the x co-ordinates of the points L and M?



3) A chord of length 8 cm is at a distance of 3 cm from the centre of the circle. Calculate the radius of the circle.

4)  $\cos 90^\circ + \cos^2 45^\circ \sin 30^\circ \tan 45^\circ$ .

5) Find the surface area and volume of a sphere of diameter : 21 cm.

**Q.3 A) Complete the following activity. (Any one)**

**(3)**

1) Find the volume of a sphere, if its surface area is 154 sq. cm.

Here, the surface area =  $154 \text{ cm}^2$ ,  $V = ?$

The surface area of a sphere = \_\_\_\_\_

$\therefore$  \_\_\_\_\_

$$\therefore 22 \times 7 = 4 \times \frac{22}{7} \times r^2$$

$$\therefore r^2 = \frac{7 \times 7}{4}$$

$$\therefore r^2 = \left(\frac{7}{2}\right)^2$$

$\therefore$  \_\_\_\_\_

The volume of a sphere = \_\_\_\_\_

$$= \frac{4}{3} \times \frac{22}{7} \times \frac{7}{2} \times \frac{7}{2} \times \frac{7}{2}$$

$$= \text{_____}$$

$$= \text{_____}$$

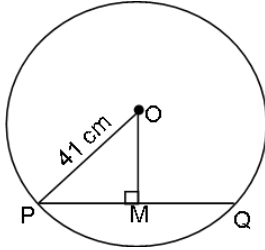
The volume of the sphere is \_\_\_\_\_

- 2) Radius of a circle with centre O is 41 cm. Length of chord PQ is 80 cm, Find the distance of the chord from the centre of the circle.

Given:- (1) A circle with center 'O' and radius 41 cm.

(2) seg OM  $\perp$  chord PQ, P – M – Q.

(3)  $l(PQ) = 80$  cm



To find :-  $l(OM)$

Solution:-

$$OP = 41 \text{ cm}$$

...[Radius of the circle]

$$PM = \frac{1}{2} PQ$$

...[\_\_\_\_\_]

$$PM = \frac{1}{2} \times 80 \text{ cm}$$

$$= \underline{\hspace{2cm}}$$

$$\text{In } \triangle OMP, \angle OMP = \underline{\hspace{2cm}}$$

...[seg OM  $\perp$  chord PQ, P - M - Q]

$$\therefore OP^2 = OM^2 + PM^2$$

...[\_\_\_\_\_]

$$\therefore 41^2 = OM^2 + 40^2$$

$$\therefore \underline{\hspace{2cm}}$$

$$\therefore 1681 - 1600 = OM^2$$

$$\therefore 81 = OM^2$$

$$\therefore OM = \underline{\hspace{2cm}}$$

...[Taking square roots]

**B) Solve the following sub-questions. (Any two)**

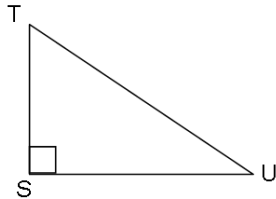
**(6)**

- 4) Calculate the length of the chord which is at a distance of 6 cm from the centre of a circle of diameter 20 cm.

- 2) Find (i) the slant height, (ii) the curved surface area and (iii) total surface area of a cone, if its base radius is 12 cm and height is 16 cm. ( $\pi = 3.14$ )

- 3) Draw the co-ordinate system on a plane and plot the following points.  
L(-2, 4), M(5, 6), N(-3, -4), P(2, -3), Q(6, -5), S(7, 0), T(0, -5)

- 4) In right angled  $\triangle TSU$ ,  $TS = 5$ ,  $\angle S = 90^\circ$ ,  $SU = 12$  then find  $\sin T$ ,  $\cos T$ ,  $\tan T$ . Similarly find  $\sin U$ ,  $\cos U$ ,  $\tan U$ .



**Q.4 Solve the following sub-questions. (Any two)**

**(8)**

- 1) Curved surface area of a cone is  $251.2 \text{ cm}^2$  and radius of its base is 8 cm. Find its slant height and perpendicular height. ( $\pi = 3.14$ )
- 2) Construct a  $\triangle ABC$  with  $BC = 6.5 \text{ cm}$ ,  $AB = 5.5 \text{ cm}$ ,  $AC = 5$ . Construct the incircle of the triangle.
- 3) Draw a graph of the following linear equations.  
 $2x + y + 3 = 0$

**Q.5 Solve the following sub-questions. (Any one)**

**(3)**

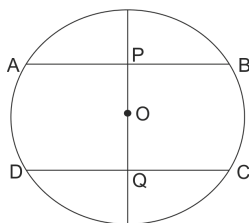
- 1) Find the value of :  $\frac{4}{3} \tan^2 30^\circ + \sin^2 60^\circ - 3 \cos^2 60^\circ + \frac{3}{4} \tan^2 60^\circ - 2 \tan^2 45^\circ$
- 2) Prove that, if a diameter of a circle bisects two chords of the circle then those two chords are parallel of each other.

Given: (1) A circle with centre 'O'

(2) Diameter AB intersects chord CD at points P and Q respectively.

(3)  $AP = BP$  and  $CQ = DQ$ .

To Prove: Chord AB  $\parallel$  chord CD



Proof:

- 1)  $AP = BP$  ----- [Given]  
 2) i.e. seg OP bisect chord AB ----- [from (1)]
- 3)  $\therefore$  seg OP  $\perp$  chord AB ----- \_\_\_\_\_
- 4) i.e.  $\angle OPB = 90^\circ$  ----- [From (3)]  
 5)  $CQ =$  \_\_\_\_\_ ----- [Given]  
 6) i.e. seg OQ bisects chord CD. ----- [From (5)]  
 7)  $\therefore$  \_\_\_\_\_ ----- [segment joining center of the circle and  
 midpoint of the chord is perpendicular to the chord.]
- 8) i.e.  $\angle OQC =$  \_\_\_\_\_ ----- [From (7)]  
 9)  $\angle OPB +$  \_\_\_\_\_  $= 90^\circ + 90^\circ = 180^\circ$  ----- [Adding (4) and (8) from (9) and O-Q-P]  
 10) i.e.  $\angle QPB + \angle PQC =$  \_\_\_\_\_ ----- [Interior angle test ]  
 11) chord AB  $\parallel$  \_\_\_\_\_

