

# Nayak's Tutorials

Year : 2025 - 26  
Std : X SSC

Sample Paper 2  
Geometry

Marks : 40  
Duration : 2 hr

Q.1 Solve Multiple choice questions.

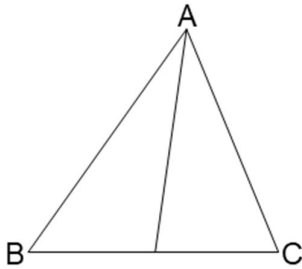
(4)

- 1) Find the length of the hypotenuse in a right angled triangle where the sum of the squares of the sides making right angle is 169.

a. 15      b. 13      c. 5      d. 12

2)

In fig  $BD = 8$ ,  $BC = 12$ ,  $B-D-C$  then  $\frac{A(\triangle ABC)}{A(\triangle ABD)} = ?$



(a) 2:3      (b) 3:2      (c) 5:3      (d) 3:4

- 3) Slope of line passing through points (7, R) and (3, 4) is 1. Find R.

a. 9      b. 7      c. 8      d. 6

- 4) If a well of diameter 8 m has been dug to the depth of 14 m, then the volume of the earth dug out is

a.  $352 \text{ m}^3$       b.  $704 \text{ m}^3$       c.  $1408 \text{ m}^3$       d.  $2816 \text{ m}^3$

B) Solve the following questions.

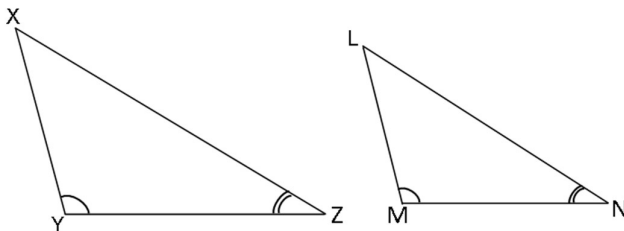
(4)

1)

In  $\triangle XYZ$ ,  $\angle Y = 100^\circ$ ,  $\angle Z = 30^\circ$ ,

In  $\triangle LMN$ ,  $\angle M = 100^\circ$ ,  $\angle N = 30^\circ$ ,

Are  $\triangle XYZ$  and  $\triangle LMN$  similar? If yes, by which test?



- 2) Draw a tangent at any point R on the circle of radius 3.4 cm. and centre 'P'.

- 3) Radius of a circle is 10 cm. Measure of an arc of the circles  $54^\circ$ . Find the area of the sector associated with the arc. ( $\pi = 3.14$ )

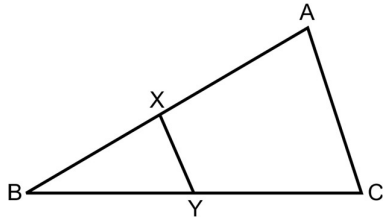
- 4) Find the distances between the following points.

P (-6, -3), Q (-1, 9)

**Q.2 Complete the following Activities. (Any two)**

**(4)**

1)



In figure  $XY \parallel \text{seg } AC$ . If  $2AX = 3BX$  and  $XY = 9$ . Complete the activity to find the value of  $AC$ .

$$2AX = 3BX \therefore \frac{AX}{BX} = \underline{\hspace{2cm}}$$

$$\frac{AX + BX}{BX} = \underline{\hspace{2cm}}$$

... by componendo

$$\frac{AB}{BX} = \underline{\hspace{2cm}}$$

... (I)

$$\triangle BCA \sim \triangle BYX$$

... \_\_\_\_\_ test of similarity.

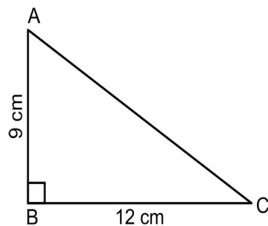
$$\therefore \frac{BA}{BX} = \frac{AC}{XY}$$

... corresponding sides of similar triangles.

$$\therefore \frac{5}{2} = \frac{AC}{9} \therefore AC = \underline{\hspace{2cm}}$$

... from (I)

- 2) Find the length of the hypotenuse of a right angled triangle if remaining sides are 9 cm and 12 cm.



$$\triangle ABC, \angle ABC = 90^\circ$$

$$AB = 9 \text{ cm}, BC = 12 \text{ cm}$$

By Pythagoras Theorem,

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

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

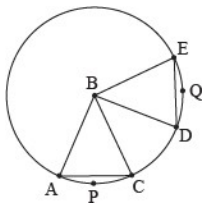
$$81 + \underline{\hspace{2cm}} = AC^2$$

$$AC^2 = 225$$

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

The hypotenuse is \_\_\_\_\_

- 3) The chords corresponding to congruent arcs of a circle are congruent.  
Prove the theorem by completing following activity.



**Given:** In a circle with centre B, arc  $APC \cong \text{arc } DQE$

**To Prove:** chord  $AC \cong \text{chord } DE$ .

**Proof:**

In  $\triangle ABC$  and  $\triangle DBE$ ,

side  $AB \cong \text{side } DB$  \_\_\_\_\_

side  $BC \cong \text{side } \underline{\hspace{2cm}}$  \_\_\_\_\_

$\angle ABC \cong \angle DBE$  (Measure of congruent arcs)

$\therefore \triangle ABC \cong \triangle DBE$  \_\_\_\_\_

chord  $AC \cong \text{chord } DE$ .....[Corresponding sides of congruent triangles]

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

**(8)**

1)

In  $\triangle ABC$ ,  $AB = 9$  cm,  $BC = 40$  cm,  $AC = 41$  cm. State whether  $\triangle ABC$  is a right-angled triangle or not. Write reason.

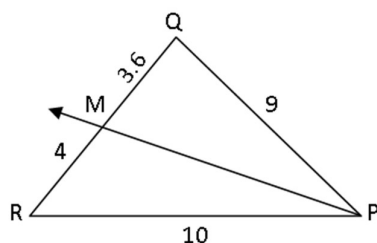
2) What is the distance between two parallel tangents of a circle having radius 4.5 cm? Justify your answer.

3) In which ratio does the point  $(-4, 6)$  divide the line segment joining the points  $A(-6, 10)$  and  $B(3, -8)$ ?

4)

If  $\sin \theta = \cos \theta$ , then what will be the measure of angle  $\theta$ ?

5)



Given below is a triangle and lengths of its line segments. Identify in the figure if, ray  $PM$  is the bisector of  $\angle QPR$ .

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

**(3)**

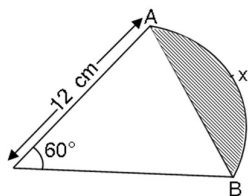
**1)**

Find the area of the shaded region. ( $\pi = 3.14$ ,  $\sqrt{3} = 1.73$ )

**Given:** radius ( $r$ ) = 12 cm

Central angle ( $\theta$ ) =  $60^\circ$

**To find:** Area of shaded region



Area of shaded region = Area of segment AXB

A(segment A  $\times$  B) = \_\_\_\_\_

$$= (12^2) \left[ \frac{3.14 \times 60}{360} - \frac{\sin 60}{2} \right]$$

= \_\_\_\_\_

$$\left[ \because \sin 60^\circ = \frac{\sqrt{3}}{2} \right]$$

$$= 144 \left( \frac{3.14 \times 2 - 1.73 \times 3}{12} \right)$$

$$= \frac{144}{12} \text{ _____}$$

= \_\_\_\_\_

= \_\_\_\_\_

$\therefore$  Area of the shaded region \_\_\_\_\_

**2)**

Given A(4, -3), B(8, 5). Find the coordinates of the point that divides segment AB in the ratio

3 : 1.

Let P(x, y) divide segment AB in the ratio 3 : 1.

$$\therefore m : n = 3 : 1$$

Let A( $x_1$ ,  $y_1$ ) and B( $x_2$ ,  $y_2$ )

Here,  $x_1 = 4$ ,  $y_1 = -3$ ,  $x_2 = 8$  and  $y_2 = 5$

By section formula,

x = \_\_\_\_\_

$$\therefore x = \frac{3(8) + 1(4)}{3 + 1}$$

$$\therefore x = \text{_____}$$

$$\therefore x = \frac{28}{4}$$

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

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

$$\therefore y = \frac{3(5) + 1(-3)}{3 + 1}$$

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

$$\therefore y = \frac{12}{4}$$

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

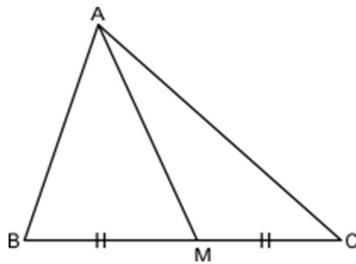
Ans. Point        divides segment AB in the ratio **3 : 1**.

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

**(6)**

**1)**

In  $\triangle ABC$ , point M is the midpoint of side BC. If,  $AB^2 + AC^2 = 290 \text{ cm}^2$ ,  $AM = 8$ , find BC.



**2) Prove the following:**

$$\frac{\sin \theta}{1 + \cos \theta} = \frac{1 - \sin \theta - \cos \theta}{\sin \theta - 1 - \cos \theta}$$

**3) Draw a circle of radius 3.3 cm Draw a chord PQ of length 6.6 cm. Draw tangents to the circle at points P and Q. Write your observation about the tangents.**

**4)**

$\square MRPN$  is cyclic,  $\angle R = (5x - 13)^\circ$ ,  $\angle N = (4x + 4)^\circ$ . Find measures of  $\angle R$  and  $\angle N$ .

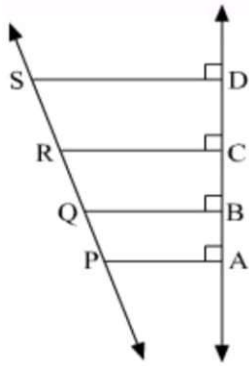
**Q.4 Solve the following questions. (Any two)**

**(8)**

**1) A cylindrical jar of radius 10 cm is filled with water upto a height of 15 cm. 14 spherical balls of radius 3 cm each are immersed in the jar. Find the new level to which water is filled in the jar.**

**2) The line segment AB is divided into five congruent parts at P, Q, R and S such that A–P–Q–R–S–B. If point Q(12, 14) and S(4, 18) are given find the coordinates of A, P, R, B.**

- 3) In the figure, seg PA, seg QB, seg RC and seg SD are perpendicular to line AD.  $AB = 60$ ,  $BC = 70$ ,  $CD = 80$ ,  $PS = 280$  then find PQ, QR and RS.



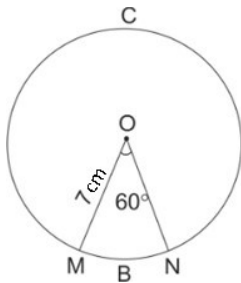
**Q.5 Solve the following questions. (Any one)**

**(3)**

1)

Eliminate  $\theta$ , if  $x = a \operatorname{cosec} \theta + b \cot \theta$ ,  $y = a \operatorname{cosec} \theta - b \cot \theta$

2)



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

(1) Area of the circle .

(2)  $A(O - MBN)$  .

(3)  $A(O - MCN)$  .