Nayak's Tutorials

Year : 2025 - 26	**Sample Paper 1**	**Marks : 40**
Std : X SSC	**Geometry**	**Duration : 2 hr**

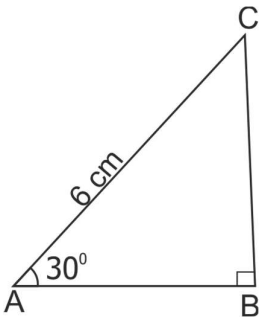
Q.1 Solve Multiple choice questions. **(4)**

1) △ABC ~ △PQR. If A (△ABC) = 25, A (△PQR) = 16, find AB : PQ.

a. 25 : 4 b. 4 : 5 c. 4 : 25 d. 5 : 4

2) Which of the following is a Pythagoras triplet? Or
Out of the following which is the Pythagorean triplet?
a. (1, 5, 10) b. (3, 4, 5) c. (2, 2, 2) d. (5,5, 2)

3)



In the given figure, the length of BC is

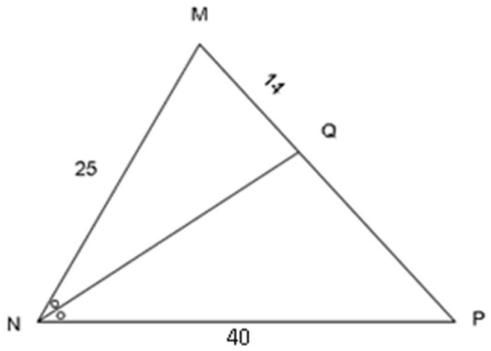
a. $2\sqrt{3}$ cm b. $3\sqrt{3}$ cm c. $4\sqrt{3}$ cm d. 3 cm

4) Slope of a line parallel to y-axis is ..... .
a. Zero b. One c. Not defined d. None of these

B) Solve the following questions. **(4)**

1) If sin θ = $\frac{20}{29}$ then find cos θ

2) Find QP using given information in the figure. MN = 25 units, MQ = 14 units and NP = 40 units.

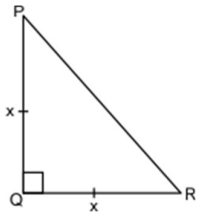


3) Find the angle subtended at the centre of a circle by an arc of length 6.05 m, if the radius of the circle is 5.5 m.

4) Angles made by the line with the positive direction of X-axis are given. Find the slope of these lines.
90°.

Q.2 Complete the following Activities. (Any two) **(4)**

1) A side of an isosceles right angled triangle is x. Find its hypotenuse.



In $\triangle PQR$, $\angle PQR = 90°$

and PQ = QR = x

$\therefore$ PR^2 = _____ ... [Pythagoras theorem]

= _____

$\therefore$ PR^2 = _____

$\therefore$ PR = _____units ... [Taking square root]

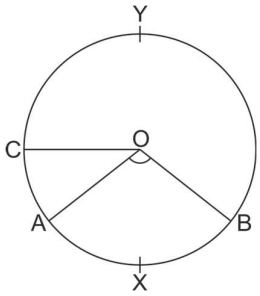
$\therefore$ The length of hypotenuse is _____units.

2) In the following figure 'O' is the centre of the circle. $\angle AOB = 110°$, m (arc AC) = 45°.

Use the information and fill in the boxes with proper numbers.

i. m (arc AXB) = _____ ii. m (arc CAB) = _____

iii. $\angle COB$ = _____ iv. m (arc AYB) = _____



3) A washing tub in the shape of a frustum of a cone has height 21cm. The radii of the circular top and bottom are 20cm and 15cm respectively. What is the capacity of the tub? ($\pi = \frac{22}{7}$)

Volume of washing tub = $\frac{1}{3} \times \pi h$ (_____)

$= \frac{1}{3} \times \frac{22}{7} \times 21\ (20^2 + 15^2 + 20 \times 15)$

= 22 (_____)

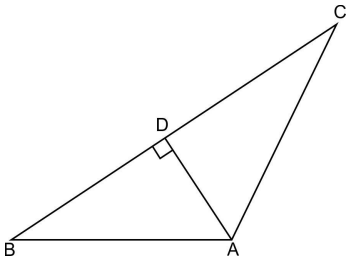
$= 22 \times$ _____

Volume of washing tub = _____ cm^3

$\therefore$ Capacity of washing tub is _____ cm^3

B) Solve the following questions. (Any four) **(8)**

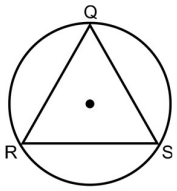
1)



In $\triangle ABC$, seg AD $\perp$ seg BC. Prove that: $AB^2 + CD^2 = BD^2 + AC^2$

2) In fig, ΔQRS is an equilateral triangle. Prove that,
i) arc RS $\cong$ arc QS $\cong$ arc QR

ii) m(arc QRS) = 240°.



3) Find k, if B(k, – 5), C(1, 2) and slope of the line is 7.

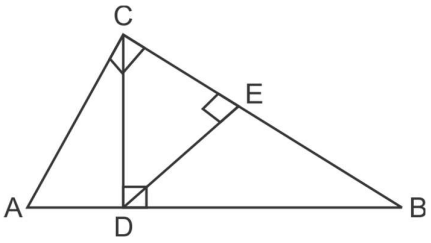
4) Prove that $\sec\theta + \tan\theta = \frac{Cos\theta}{1-Sin\,\theta}$

5) In $\triangle ABC$ and $\triangle PQR$, $\angle ABC \cong \angle PQR$, seg BD and seg QS are angle bisector If $\frac{l(AD)}{l(PS)} = \frac{l(DC)}{l(SR)}$. Prove that : $\triangle ABC \sim \triangle PQR$.

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

1) In $\triangle ABC$, $\angle ACB = 90°$, seg CD $\perp$ seg AB. seg DE $\perp$ seg CB.

Show that : $CD^2 \times AC = AD \times AB \times DE$



In $\triangle ABC$,

$\angle ACB = 90°$

seg CD $\perp$ seg AB ... (Given)

$\therefore$ CD^2 = _____ ... (1) (Geometric mean property)

In $\triangle DEB$ and $\triangle ACB$

$\angle DEB \cong \angle ACB$ ... (Each angle is 90°)

$\angle B \cong \angle B$ ... _____

$\therefore$ $\triangle DEB \sim \triangle ACB$ ... (A-A test of similarity)

$\therefore$ $\frac{DE}{AC}$ = _____ ... (c.s.s.t)

$\therefore$ DE $\times$ AB = _____

$\therefore$ AD $\times$ DE $\times$ AB = _____ ... (Multiplying both sides by AD)

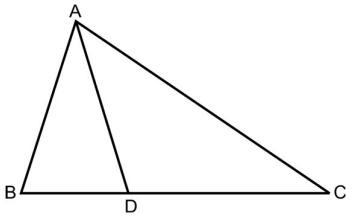
_____ = $CD^2 \times AC$ ... [from (1)]

i.e. $CD^2 \times AC = AD \times AB \times DE$

2) Draw a circle with center O. Draw an arc AB of 100° measure. Perform the following steps to draw tangents to the circle from point A and B.
(a) Draw a circle with any radius and center P.
(b) Take anypoint A on the circle.
(c) Draw ray PB such $\angle APB = 100°$.
(d) Draw perpendicular to ray PA from point A.
(e) Draw perpendicular to ray PB from point B.

B) Solve the following Questions. (Any two) **(6)**

1)



In △ ABC, B – D – C and BD = 7, BC = 20 then find following ratios.

(1) $\frac{A(\triangle ABD)}{A(\triangle ADC)}$

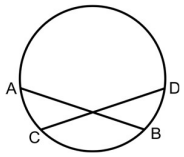
(2) $\frac{A(\triangle ABD)}{A(\triangle ABC)}$

(3) $\frac{A(\triangle ADC)}{A(\triangle ABC)}$

2) Determine whether the given points are collinear.
A (0,2), B (1,-0.5), C (2,-3)

3) Prove the following.
$\sec\theta\,(1 - \sin\theta)\,(\sec\theta + \tan\theta) = 1$

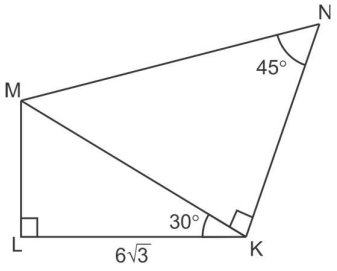
4) In fig, chord AB ≅chord CD, Prove that, arc AC ≅arc BD.



Q.4 Solve the following questions. (Any two) **(8)**

1) Find the lengths of the medians of a triangle whose vertices are A(-1, 1), B(5, -3) and C(3, 5).

2) In the figure, If LK = $6\sqrt{3}$, find MK, ML, KN, MN, and the perimeter of (□MNKL)

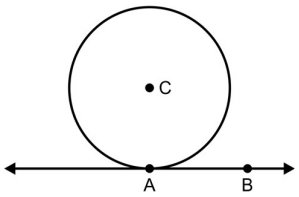


3) In the adjoining figure the radius of a circle with centre C is 6 cm, line AB is a tangent at A. Answer the following questions.

(1) What is the measure of ∠CAB ? Why ?
(2) What is the distance of point C from line AB? Why ?

(3) d(A,B)= 6 cm, find d(B,C).

(4) What is the measure of ∠ABC ? Why ?



Q.5 Solve the following questions. (Any one) **(3)**

1) Determine whether the following points are collinear.
R(1, -4), S(-2, 2), T(-3, 4)

2) Show that $\frac{Cos^2\theta}{1-\tan\theta} + \frac{Sin^3\theta}{Sin\,\theta - Cos\,\theta} = 1 + \text{Sin}\,\theta.\text{Cos}\,\theta$