2025_26_PB_II

EDUTECH ACADEMY
NURTURING THE FUTURE....

SET : EAS_A

— SCHOOL SECTION —

STD : X SSC

PRELIM EXAM - 2

TIME : 2:00 Hrs

SUB : MATHS II (GEOM)

DATE : 20th January, 2026

MM : 40

(i) All questions are compulsory.
(ii) Use of calculator is not allowed.
(iii) Total marks are shown on the right side of the question.

Q.1 (A) Choose the correct alternative: **4**

(1) Three sides of ΔABC are given to construct similar ΔPQR at least _____ of ΔPQR must be given.

(a) one angle (b) any two angle (c) any one side (d) all sides

(2) Slope of x- axis is _____.

(a) 0 (b) 1 (c) -1 (d) Not defined

(3) If ΔABC ~ ΔRQP, ∠A = 50°, ∠B = 60°, the value of ∠P is

(a) 60° (b) 50° (c) 40° (d) 30°

(4) Kumar is swimming in a pool. His friend Atul is standing outside the pool at a horizontal distance of 1.6 m from him. If Atul's height is 160 cm, then what is the angle of elevation of Atul's head from Kumar's eyes?

(a) 30° (b) 45° (c) 60° (d) 90°

(B) Solve the following: **4**

(1) Find the surface area of a sphere of radius 7 cm.

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

(3) If $\Delta ABC \sim \Delta PQR$ and $AB : PQ = 2 : 3$, then find the value of $\frac{A(\Delta ABC)}{A(\Delta PQR)}$

(4) Find the slope of the line passing through the points A(2, 3) andB(4, 7).

Q.2 (A) Complete the following activities:(Any TWO) **4**

(1) If $\tan\theta = \frac{3}{4}$, find the values of $\sec\theta$ and $\cos\theta$.

$\tan\theta = \frac{3}{4}$ [Given]

$1 + \tan^2\theta = \sec^2\theta$ [Identity]

$\therefore 1 + \left(\frac{3}{4}\right)^2 = \sec^2\theta$

$\therefore 1 + \square = \sec^2\theta$

$\therefore \frac{16+9}{16} = \sec^2\theta$

$\therefore \sec^2\theta = \square$

$\therefore \sec\theta = \frac{5}{4}$ [Taking square roots]

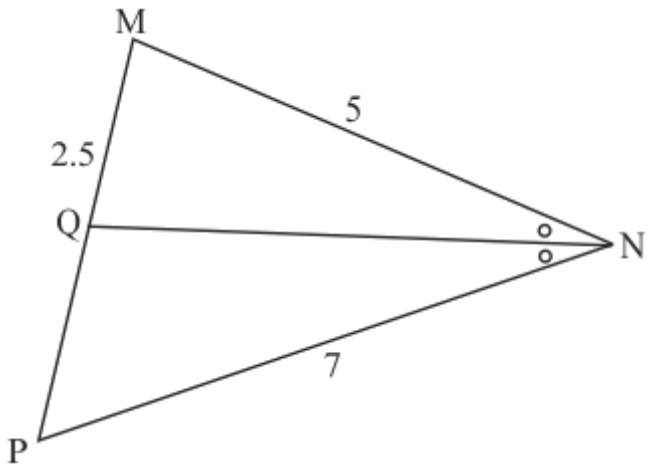
$\cos\theta = \frac{1}{\sec\theta}$

$\therefore \cos\theta = 1 \div \frac{5}{4}$

$\therefore \cos\theta = 1 \times \square$

$\therefore \cos\theta = \square$

(2) In ΔMNP, NQ is a bisector of ∠N. If MN = 5, PN = 7 MQ = 2.5 then find QP.



In ΔMNP, NQ bisects $\angle MNP$ [Given]

$\therefore \frac{MN}{PN} = \square$

[Angle bisector property of a triangle]

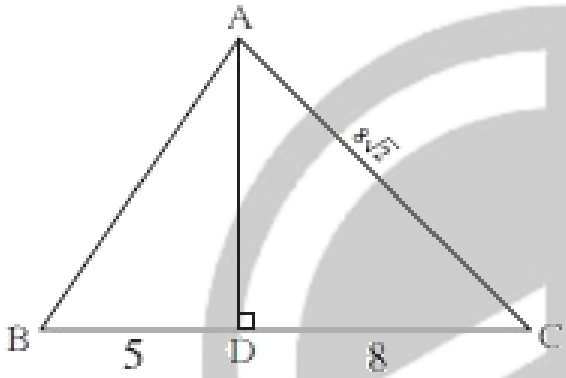
$\therefore \frac{5}{7} = \square$

$\therefore 5 \times PQ = \square \times 7$

$\therefore PQ = \frac{2.5 \times 7}{5}$

$\therefore PQ = \square$

(3) In the figure below, In Δ ABC, seg AD ⊥ seg BC, ∠C = 45°, BD = 5 and AC = 8√2then find AD and BC.



In Δ ADC

$\angle ADC = 90°$, $\angle C = 45°$, $\therefore \angle DAC = 45°$

$AD = DC = \frac{1}{\sqrt{2}} \times \square$ ... by $45°-45°-90°$ theorem

$DC = 8 \quad \therefore AD = 8$

$BC = BD + \square$

$= 5 + \square$

$BC = \square$

(B) Solve the following: (Any FOUR) **8**

(1) Find the ratio in which point T(-1, 6) divides the line segment joining the points P(-3, 10) and Q(6, -8).

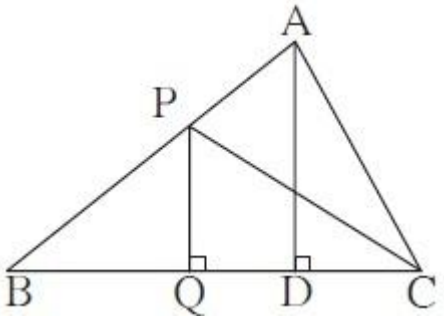
(2) ΔABC ~ ΔDEF and A(ΔABC) : A Δ(DEF) = 1 : 2 If AB = 4 find DE

(3) □MRPN is cyclic, ∠R = (5x-13)°, ∠N = (4x + 4)°. Find measures of ∠R and ∠N.

(4) Draw a circle of radius 2.7 cm. Draw a tangent to the circle at any point on it.

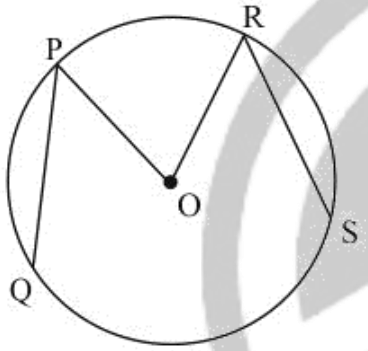
(5) In the below figure, PQ ⊥ BC, AD ⊥ BC, PQ = 4, AD = 6 Write down the following ratios.

$$\frac{A(\Delta PBQ)}{A(\Delta ADB)} \qquad \frac{A(\Delta PBC)}{A(\Delta ABC)}$$



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

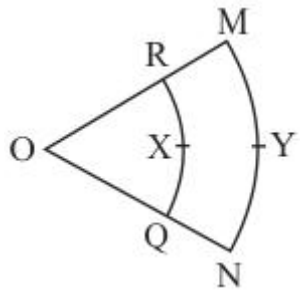
(1) In figure below, O is the centre of a circle, chord PQ ≅ chord RS If ∠POR = 70° and (arc RS) = 80°, find



(1) m(arc PR)
(2) m(arc QS)
(3) m(arc QSR)

M (arc PR) = m ∠POR
[Definition of measure of minor arc]
∴ m (arc PR) = ☐ 1
Chord PQ ≅ chord ☐ [Given]
∴ (☐) ≅ (arc RS)
[In a circle, congruent chords have corresponding minor are congruent]
∴ m (arc PQ) = ☐ 2
M (arc PR) + m (arc RS) + m (arc PQ) + m (arc QS) = 360° [Measure of a circle]
∴ 70° + 80° + 80° + m (☐) = 360°
∴ m (arc QS) = 360° - 230°
∴ m (arc QS) = 130° 3
M (arc QSR) = m (QS) + m (arc SR)
[Arc addition property]
∴ m (arc QSR) = 130° + 80°
∴ m (arc QSR) = ☐

(2) In the figure below, O is the centre of the sector. ∠ROQ = ∠MON = 60°. QR = 7 cm, and OM = 21 cm. Find the length of arc RXQ and arc MYN. (π = 22/7)



(i) For arc RXQ, θ = ∠ROQ = 60°

OR (r) = ☐

Length of arc RXQ = ☐ x 2πr

$= \frac{60}{360} \times 2 \times \frac{22}{7} \times 7$

= ☐

Length of arc RXQ is ☐

(ii) For arc MYN, OM(r) = 21 cm, θ = ∠MON = 60°

Length of arc MYN = $\frac{60}{360} \times 2 \times \frac{22}{7} \times 21$

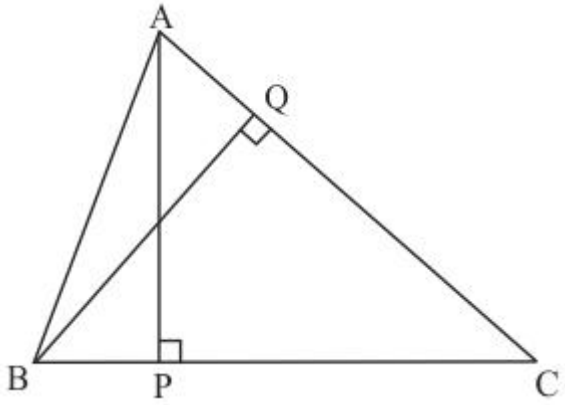
= ☐

Length of arc(MYN) is ☐

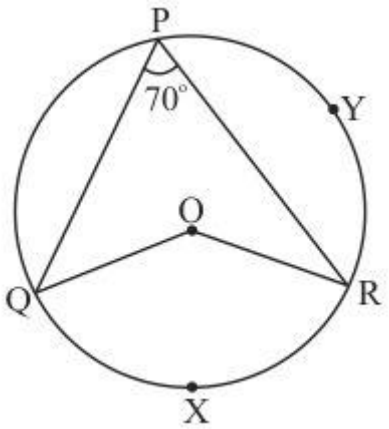
(B) Solve the following: (Any TWO) **6**

(1) Find the slope of the diagonals of a quadrilateral with vertices A(1,7), B(6,3), C(0,-3) and D(-3,3).

(2) In Δ ABC, AP ⊥ BC, BQ ⊥ AC, B – P – C, A – Q – C then prove that, ΔCPA ~ ΔCQB. If AP = 7, BQ = 8, BC = 12 then find AC.



(3)



In the given figure, O is centre of circle. ∠QPR = 70° and m(arc PYR) = 160°, then find the value of each of the following :

(a) m(arc QXR) (b) ∠QOR © ∠PQR

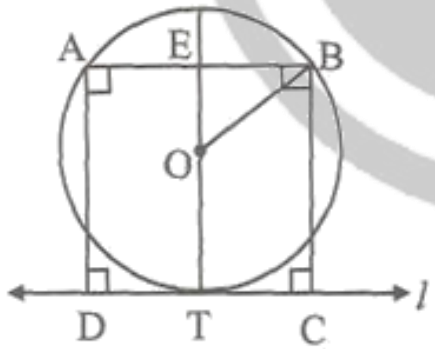
(4) Draw a circle with radius 4.1 cm. Construct tangents to the circle from a point at a distance 7.3 cm from the centre.

Q.4 Solve the following: (Any TWO) **8**

(1) In a right-angled triangle with sides a and b and hypotenuse c, the altitude drawn on the hypotenuse is x. Prove that ab = cx.

(2) If $a \cos \theta + b \sin \theta = m$ and $a \sin \theta - b \cos \theta = n$, prove that $a^2 + b^2 = m^2 + n^2$.

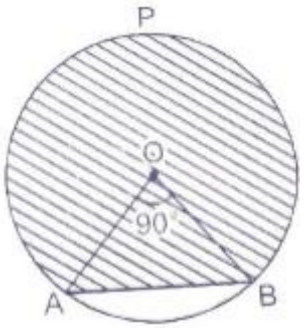
(3) A square has two of its vertices on a circle and the other two on a tangent to the circle. If the diameter of the circle is 10 cm, determine the side of the square.



Q.5 Solve the following: (Any ONE) **3**

(1) There is a hemispherical bowl. A cone is to be made such that, if it is filled with water twice and the water is poured in the bowl, it will be filled just completely. State how will you decide the radius and perpendicular height of the cone.

(2) Find the area of the major segment APB in the figure of a circle of radius 35 cm and ∠AOB 90°



....All The Best....