Mathematics Part II (Geometry)

SSC Board Exam March 2027 – Practice Paper No. 2

Practice Question Paper

Time: 2 hours **Max. Marks: 40**

(1) All questions are compulsory.
(2) Use of a calculator is not allowed.
(3) The numbers to the right of the questions indicate full marks.
(4) In case of MCQs [Q. No. 1(A)] only the first attempt will be evaluated and will be given credit.
(5) Draw proper figures wherever necessary.
(6) The marks of construction should be clear. Do not erase them.
(7) Diagram is essential for writing the proof of the theorem.

Q.1 (A) Four alternative answers are given for every sub-question. Select the correct alternative and write its alphabet with the sub-question number. **[4]**

(i) Two triangles have equal heights. Their bases are 6 cm and 15 cm. What is the ratio of their areas?

(A) 4 : 25 (B) 2 : 5
(C) 5 : 2 (D) 3 : 5

(ii) In $\triangle PQR$, $\angle Q = 90°$ and $\angle P = 45°$. If $PR = 6\sqrt{2}$ cm, what is the length of side PQ?

(A) $6\sqrt{2}$ cm (B) 3 cm
(C) 6 cm (D) 12 cm

(iii) Line l touches a circle at point A. Chord AB makes an angle of 48° with line l. What is the measure of the arc intercepted by this angle?

(A) 48° (B) 24°
(C) 96° (D) 132°

(iv) The radius of a circle is 9 cm. What is the length of an arc of this circle whose measure is 40°?

(A) π cm (B) 2π cm
(C) 4π cm (D) 9π cm

Q.1 (B) Solve the following sub-questions. **[4]**

(i) Find the co-ordinates of the midpoint of the segment joining the points (−3, 8) and (7, 2).

(ii) Find the value of $5 \sin^2 37° + 5 \cos^2 37°$.

(iii) In $\triangle PQR$, ray QS bisects $\angle PQR$ and point S lies on side PR. If PQ = 8, QR = 10 and PS = 4, find SR.

(iv) The area of the base of a cone is 45 cm^2 and its height is 8 cm. Find the volume of the cone.

Q.2 (A) Complete any two activities and rewrite them. **[4]**

(i) In the figure, secants containing chords AB and CD of a circle intersect each other at point P outside the circle. If PA = 4, AB = 5 and PC = 3, complete the following activity to find CD.

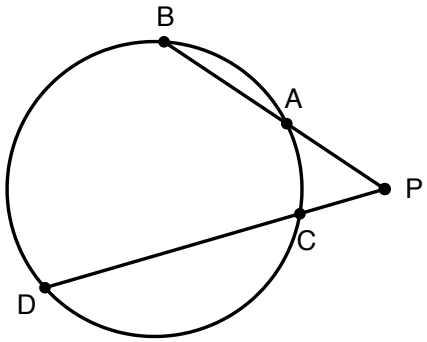
Activity: PB = PA + AB = 4 + 5 = 9

PA × PB = PC × ☐ ...(☐)

∴ 4 × 9 = 3 × PD

∴ PD = ☐

∴ CD = PD − PC = ☐



(ii) If 35 sin θ = 12 cos θ and θ is an acute angle, complete the following activity to find sec θ and cos θ.

Activity: 35 sin θ = 12 cos θ

∴ sin θ/cos θ = 12/35

∴ tan θ = ☐

Now, $1 + \tan^2\theta$ = ☐ ...(Trigonometric identity)

∴ $\sec^2\theta = 1 + 144/1225$ = ☐

∴ sec θ = 37/35 ...(θ is acute)

∴ cos θ = ☐

(iii) In the figure, in △ABC, ∠ACB is an acute angle and seg AD ⊥ side BC. If BC = 17, AC = 25 and DC = 7, complete the following activity to find AB.

Activity: In △ABC, ∠C is acute and seg AD ⊥ side BC.

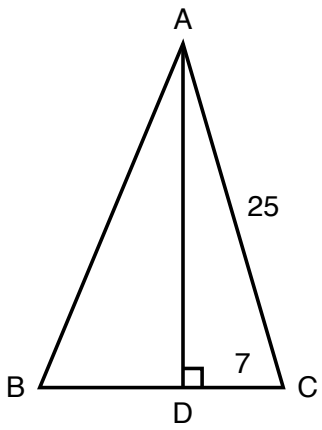
$\therefore AB^2 = BC^2 + AC^2 - 2BC \times$ ☐ ...(Application of Pythagoras theorem)

$\therefore AB^2 = 17^2 + 25^2 - 2 \times 17 \times 7$

$\therefore AB^2 = 289 + 625 -$ ☐

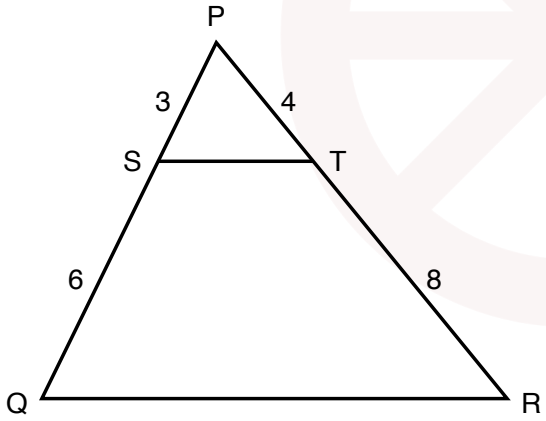
$\therefore AB^2 =$ ☐

$\therefore AB =$ ☐



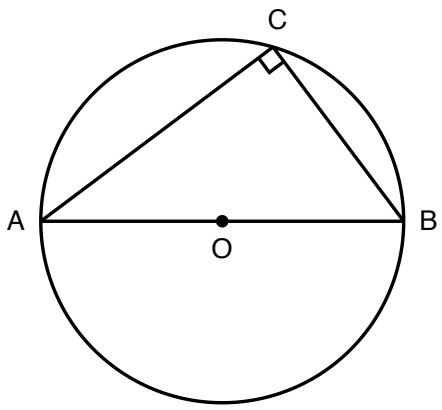
Q.2 (B) Solve any four of the following sub-questions. **[8]**

(i) In the figure, point S lies on side PQ and point T lies on side PR of △PQR. If PS = 3, SQ = 6, PT = 4 and TR = 8, is seg ST ∥ side QR? Give reason.



(ii) A rectangular iron gate is 1.5 m wide and 2 m high. To make it strong, a straight iron bar is fixed along one of its diagonals. Find the length of the bar.

(iii) In the figure, seg AB is a diameter of the circle with centre O. Point C lies on the circle. If AC = 16 cm and BC = 12 cm, find the radius of the circle.



(iv) A circle has its centre at O(2, −3) and passes through the point P(7, 9). Find the radius of the circle. If seg PQ is a diameter of this circle, find the co-ordinates of point Q.

(v) The area of a sector of a circle of radius 14 cm is 154 cm^2. Find the length of the arc of this sector.

Q.3 (A) Complete any one activity of the following and rewrite it. **[3]**

(i) Complete the following activity to show that the points P(−1, 1), Q(4, 2), R(6, 6) and S(1, 5) are the vertices of a parallelogram.

Activity: Slope of line PQ = (2 − 1)/(4 − (−1)) = ☐ ...(I)
Slope of line QR = (6 − 2)/(6 − 4) = ☐ ...(II)
Slope of line RS = (5 − 6)/(1 − 6) = 1/5 ...(III)
Slope of line SP = (1 − 5)/(−1 − 1) = ☐ ...(IV)
From (I) and (III), slope of line PQ = slope of line RS
∴ line PQ ∥ line ☐
From (II) and (IV), slope of line QR = slope of line SP
∴ line QR ∥ line SP
Both pairs of opposite sides of □PQRS are parallel.
∴ □PQRS is a ☐.

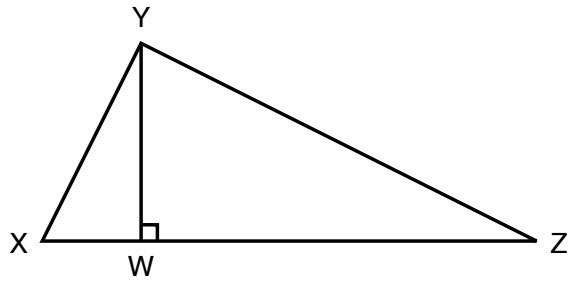
(ii) Complete the following activity to prove that (1 + sec θ)(1 − cos θ) = sin θ tan θ.

Activity: LHS = (1 + sec θ)(1 − cos θ)
= 1 − cos θ + sec θ − sec θ cos θ
= 1 − cos θ + sec θ − ☐ ...(∵ sec θ × cos θ = 1)
= sec θ − cos θ
= 1/cos θ − cos θ
= ☐/cos θ
= ☐/cos θ ...(∵ $\sin^2\theta + \cos^2\theta = 1$)
= sin θ × ☐
= sin θ tan θ
= RHS

Q.3 (B) Solve any two of the following sub-questions. **[6]**

(i) Draw a circle with centre O and radius 2.8 cm. Take a point M at a distance of 6.4 cm from the centre. Draw tangents to the circle from point M.

(ii) In the figure, in △XYZ, ∠XYZ = 90° and seg YW ⊥ side XZ. If XW = 4 and WZ = 16, find YW, XY and YZ.



(iii) A straight ramp is built so that loaded trolleys can be pushed up onto a loading platform 0.75 m high. The ramp makes an angle of 30° with the horizontal ground. Find the length of the ramp and the horizontal distance it covers on the ground. ($\sqrt{3} = 1.73$)

(iv) A plastic flower-pot is in the shape of a frustum of a cone. The radii of its top and bottom are 18 cm and 12 cm and its height is 14 cm. How many litres of soil will fill the pot to the brim? ($\pi = 22/7$, 1 litre = 1000 cm^3)

Q.4 Solve any two of the following sub-questions. **[8]**

(i) Prove that if a line parallel to a side of a triangle intersects the remaining sides in two distinct points, then the line divides the sides in the same proportion.

(ii) The vertices of △ABC are A(10, 13), B(−3, 4) and C(5, −2). Seg AD is a median of △ABC and G is its centroid.
(a) Find the co-ordinates of D and the length of median AD.
(b) Find the co-ordinates of G.
(c) Verify that AG : GD = 2 : 1.

(iii) △XYZ ~ △X′YZ′. In △XYZ, XY = 5 cm, YZ = 7.5 cm and XZ = 6 cm, and YZ/YZ′ = 5/3. Construct △XYZ and △X′YZ′.

Q.5 Solve any one of the following sub-questions. **[3]**

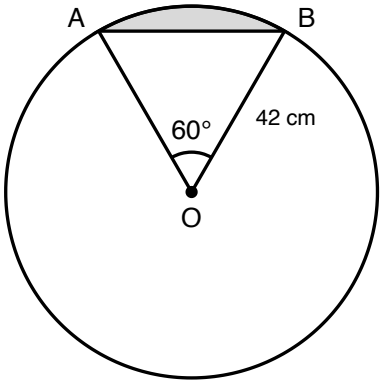
(i) In a science exhibition, Sneha makes a pinhole camera. The pinhole O is at the same level as the foot B of a tree AB which is 6 m tall and 15 m away from the pinhole. The screen is vertical and 25 cm behind the pinhole. The image A′B′ of the tree is formed upside down on the screen, so that A, O, A′ and B, O, B′ are collinear.
(a) Draw a figure from the given information.
(b) Name the similar triangles and write the test of similarity.
(c) Find the height of the image A′B′ in cm.

(ii) For a rangoli competition, a circular board of radius 42 cm is decorated. In the figure, O is the centre of the board and chord AB subtends $\angle AOB = 60°$ at the centre. The minor segment cut off by chord AB (shaded) is to be filled with coloured powder.

(a) Find the area of sector O-AB.

(b) Find the area of $\triangle OAB$.

(c) Find the area of the shaded segment. ($\pi = 22/7$, $\sqrt{3} = 1.73$)



All the best for your exam!