Mathematics — Ganita Manjari

Chapter 12 Test 4

Quadrilaterals

Class IX | 2026–27

Time Allowed: 45 Minutes | Maximum Marks: 25

General Instructions

1. All 13 questions are compulsory. Choose one option in A; show working in B–D.
2. No calculators. Give exact answers unless an approximation is requested.
3. Figures are not necessarily to scale. Give reasons for geometrical conclusions.

SECTION A

(5 questions × 1 mark = 5 marks)

1. P, Q are the midpoints of AB, AC in $\triangle ABC$. Which side is parallel to PQ?

(A) AB (B) AC
(C) BC (D) AP

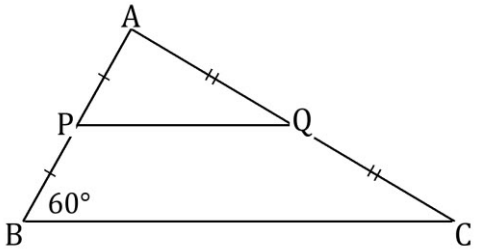
2. A segment joins the midpoints of two sides of a triangle. The third side is 15 cm. Find the segment's length.

(A) 30 cm (B) 7.5 cm
(C) 15 cm (D) 5 cm

3. Joining all three side midpoints of a triangle forms a central triangle. Its area is what fraction of the original area?

(A) $\frac{1}{4}$ (B) $\frac{1}{2}$
(C) $\frac{3}{4}$ (D) $\frac{1}{3}$

4. In figure, $AP = PB$ and $AQ = QC$. Find $\angle APQ$.



(A) 30° (B) 90°
(C) 120° (D) 60°

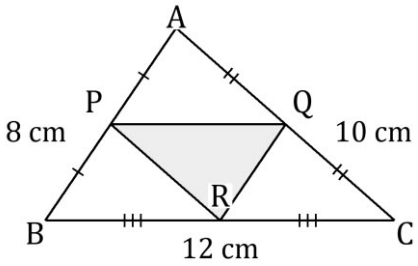
5. If the triangle formed by the three side midpoints is equilateral, the original triangle must be:

(A) Scalene (B) Equilateral
(C) Right-angled (D) Obtuse-angled

SECTION B

(4 questions × 2 marks = 8 marks)

6. In figure, P, Q, R are the midpoints of AB, AC, BC. Find the perimeter of $\triangle PQR$.



7. P, Q are midpoints of AB, AC. If the area of $\triangle ABC$ is 60 cm^2, find the area of quadrilateral $PBCQ$.

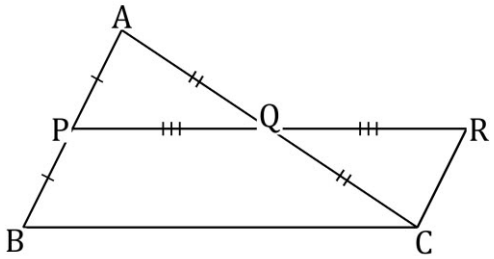
8. In $\triangle ABC$, $\angle A = 90°$. If P, Q, R are midpoints of AB, BC, CA, prove that $\angle PQR = 90°$.

9. Midpoints P, Q, R lie on AB, BC, CA, respectively. If $PQ = 4$, $QR = 7$ and $RP = 6$ cm, identify the longest side of $\triangle ABC$. Justify.

SECTION C

(3 questions × 3 marks = 9 marks)

10. In figure, P, Q are midpoints of AB, AC, and PQ is extended to R with $QR = PQ$. Derive the direction and length relations between PQ and BC.



11. In $\triangle ABC$, P, Q, R are midpoints of AB, AC, BC. Compare the four small triangles by SSS, giving the corresponding vertex order.

12. Two triangles have congruent triangles formed by their side midpoints. Must the original triangles be congruent? Prove your answer.

SECTION D

(1 application question × 3 marks = 3 marks)

13. A triangular garden has $AB = 20$, $AC = 16$, $BC = 24$ m. Points P, Q are midpoints of AB, AC. A path follows $B - P - Q - C$. (i) Find BP, PQ, QC. (ii) Find the path length. (iii) Compare it with the direct route BC.