Mathematics — Ganita Manjari

Chapter 6 Test 10

Measuring Space: Perimeter and Area

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. Leave π and square roots exact unless directed otherwise.
3. Figures are schematic. Use the stated dimensions and show your working.

SECTION A

(5 questions × 1 mark = 5 marks)

1. If a circle's circumference is doubled, its area is multiplied by:

(A) 2
(B) 4
(C) 8
(D) $1/2$

2. A square has diagonal d. Its area is:

(A) d^2
(B) $2d^2$
(C) $d^2/2$
(D) $d^2/4$

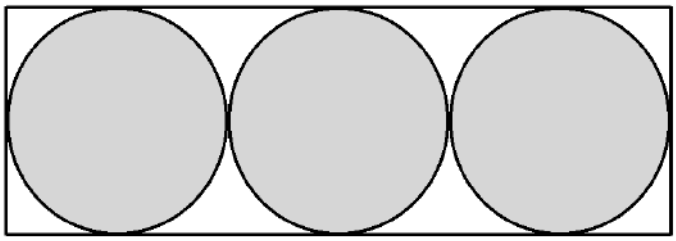
3. Two shapes of equal area must have:

(A) Equal perimeters
(B) The same shape
(C) The same number of sides
(D) The same amount of enclosed space

4. For a fixed radius, tripling a sector's angle (without exceeding 360°) makes its area:

(A) Three times as large
(B) Nine times as large
(C) One-third as large
(D) Unchanged

5. Three congruent circles fit exactly in a row inside the rectangle. What fraction of the rectangle is covered by the discs?



(A) $\pi/3$
(B) $\pi/4$
(C) $3\pi/4$
(D) $\pi/6$

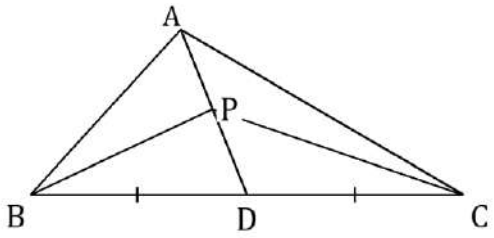
SECTION B

(4 questions × 2 marks = 8 marks)

6. An equilateral triangle inscribed in a circle has area $18\sqrt{3}$ cm^2. Find the area of a regular hexagon inscribed in the same circle, explaining the relationship.

7. A right triangle has sides 6, 8 and 10 cm. Find the ratio of its inradius to its circumradius.

8. D is the midpoint of BC and P lies on AD. Prove that triangles ABP and ACP have equal area.



9. Triangles ABC and DBC have equal areas, and A and D are distinct points on the same side of line BC. Show that AD is parallel to BC.

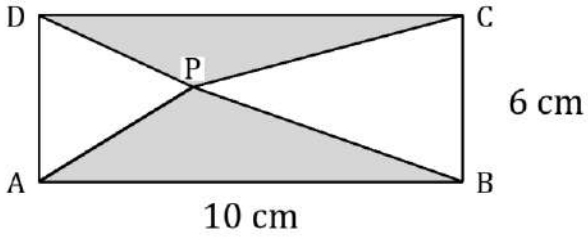
SECTION C

(3 questions × 3 marks = 9 marks)

10. An 18 cm by 8 cm rectangle is cut into 36 identical squares without waste. Find each square's side and the sum of their perimeters. Explain why this sum exceeds the original perimeter.

11. Two rectangles have equal areas and equal perimeters. Prove that their side lengths agree, possibly in reverse order.

12. P is inside the 10 cm by 6 cm rectangle. Find the sum of the areas of triangles PAB and PCD. Compare it with the sum for PBC and PDA.



SECTION D

(1 application question × 3 marks = 3 marks)

13. A 60° sector of a ring has inner radius 7 cm and outer radius 14 cm. Find its area and complete perimeter, including both straight ends.