Mathematics — Ganita Manjari

Chapter 6 Test 9

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

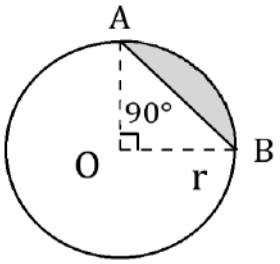
(5 questions × 1 mark = 5 marks)

1. A regular polygon has perimeter P and apothem r. Its area is:

(A) Pr (B) $2Pr$

(C) $\frac{1}{2}Pr$ (D) P/r

2. For the shaded minor segment, which expression gives its area?



(A) $\pi r^2/4$ (B) $\pi r^2/4 - r^2/2$

(C) $\pi r^2/4 + r^2/2$ (D) $\pi r^2/2 - r^2$

3. Which quantity is measured in the same units as an arc length?

(A) Sector area (B) Radius

(C) Disc area (D) Square of diameter

4. When a shape is enlarged uniformly, which ratio stays fixed?

(A) P/A (B) A/P

(C) $P + A$ (D) P^2/A

5. A rhombus is cyclic only when it is a:

(A) Square

(B) Non-square rectangle

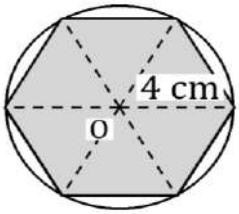
(C) Kite with unequal sides

(D) Trapezium with unequal bases

SECTION B

(4 questions × 2 marks = 8 marks)

6. A regular hexagon is inscribed in a circle of radius 4 cm. Find its area.



7. Semicircles are drawn on the three sides of a right triangle. Show that the areas on the two legs add to the area on the hypotenuse.

8. A trapezium has area 84 cm^2 and parallel sides 8 cm and 20 cm. Find the perpendicular distance between them.

9. Taking 3.14159 as a reference value, compare the absolute errors in 3.14 and 3.1416 as approximations to π. Which is closer?

SECTION C

(3 questions × 3 marks = 9 marks)

10. A rhombus has side 5 cm and height 3 cm. A pupil uses Brahmagupta's formula to obtain 25 cm^2. Find the correct area and explain the mistake.

11. Among rectangles with positive side lengths and perimeter 40 cm, is there a smallest positive area? Explain.

12. A circular path has inner radius 5 m and area 24π m^2. Find its outer radius and uniform width.

SECTION D

(1 application question × 3 marks = 3 marks)

13. The chord BC of the outer circle is tangent to the inner circle at A and has length 10 cm. Both circles have centre O. Find the shaded ring area without finding either radius.

