Mathematics — Ganita Manjari

Chapter 6 Test 6

Measuring Space: Perimeter and Area

Class IX | 2026–27

Time Allowed: 45 Minutes | Maximum Marks: 25

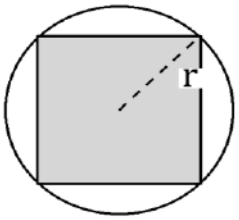
General Instructions

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 square is inscribed in a circle of radius r. What fraction of the disc's area does it occupy?



(A) $1/2$
(B) $\pi/4$
(C) $2/\pi$
(D) $1/\pi$

2. Which familiar quadrilateral is always cyclic?

(A) Any parallelogram
(B) Any kite
(C) Any rhombus
(D) Any rectangle

3. A trapezium has parallel sides a and b and perpendicular height h. Its area is:

(A) $\frac{1}{2}(a+b)h$
(B) $(a+b)h$
(C) abh
(D) $\frac{1}{2}(a-b)h$

4. For a fixed central angle, doubling the radius multiplies the arc length by:

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

5. For side lengths 3, 4 and 7, Heron's product is zero. This describes:

(A) An equilateral triangle
(B) A triangle of area 7
(C) A degenerate triangle
(D) A right triangle

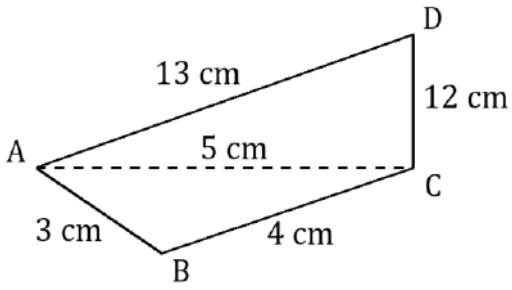
SECTION B

(4 questions × 2 marks = 8 marks)

6. An obtuse triangle has base 8 cm and perpendicular distance 5 cm from the opposite vertex to the base line. Find its area. Why need the height not lie inside the triangle?

7. A circle's radius increases by 10%. Find the percentage increases in its circumference and area.

8. Diagonal AC is 5 cm. The other labelled sides are AB = 3, BC = 4, CD = 12 and DA = 13 cm. Find the area of quadrilateral ABCD.



9. A rhombus has area 144 cm^2 and one diagonal twice the other. Find both diagonals.

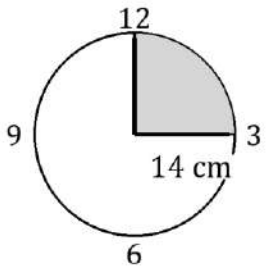
SECTION C

(3 questions × 3 marks = 9 marks)

10. An isosceles trapezium has bases 2a and 2b, with b > a and equal legs c. Show that its area is $(a+b)\sqrt{c^2-(b-a)^2}$.

11. An equilateral triangle has side 12 cm. Find its area, its inradius, and the area outside its incircle but inside the triangle.

12. The minute hand is 14 cm long. Find the angle, tip-path length and area swept in 15 minutes.



SECTION D

(1 application question × 3 marks = 3 marks)

13. Two non-overlapping wipers each pivot at one end of a 28 cm blade. Each sweeps 120°. Find the total area swept in one sweep of both blades.