Mathematics

Practice Test Paper 4

(Chapter 11: Areas Related to Circles)

Class X | 2026–27

Time Allowed: 45 Minutes | Maximum Marks: 25

General Instructions

1. All 13 questions are compulsory. The paper has four sections: A, B, C and D.
2. Section A - 5 marks; Section B - 8 marks; Section C - 9 marks; Section D - 3 marks.
3. Choose one correct option in Section A. Show the necessary steps and reasoning in Sections B, C and D.
4. Use $\pi = 22/7$ unless stated otherwise. Use of calculators is not allowed.

SECTION A

(5 questions × 1 mark = 5 marks)

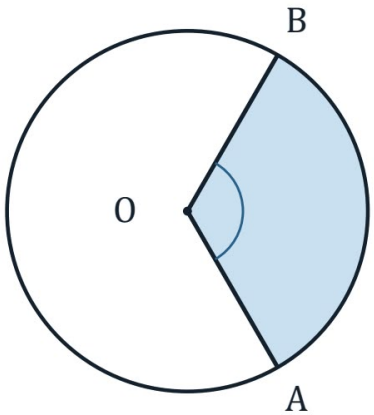
1. The angle through which the hour hand turns in two hours is:

(A) 30° (B) 60°
(C) 90° (D) 120°

2. A sector has arc length 12 cm and radius 5 cm. Its area is:

(A) 60 cm^2 (B) 17 cm^2
(C) 30 cm^2 (D) 24 cm^2

3. For the shaded sector with radius 42 cm and angle 120°, the area equals:

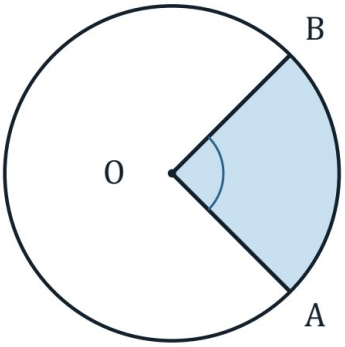


(A) 924 cm^2 (B) 3696 cm^2
(C) 616 cm^2 (D) 1848 cm^2

4. The areas of two sectors with equal radii and angles 40° and 70° are in the ratio:

(A) 7 : 4 (B) 16 : 49
(C) 2 : 7 (D) 4 : 7

5. Two perpendicular radii bound the shaded sector. This region is called a:



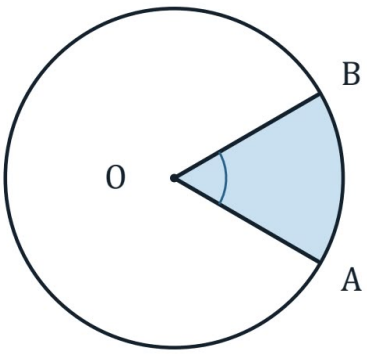
(A) semicircle (B) quadrant
(C) major segment (D) diameter

SECTION B

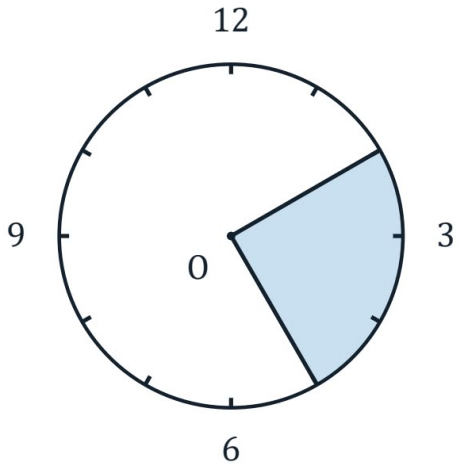
(4 questions × 2 marks = 8 marks)

6. Two sectors have equal central angles and radii 4 cm and 10 cm. The smaller area is 12 cm^2. Find the larger area.

7. Arc AB is 33 cm long and subtends 60° at O. Find the radius and area of sector OAB.



8. The hour hand of a clock is 7 cm long. Find the angle and area it sweeps from 2 p.m. to 5 p.m.

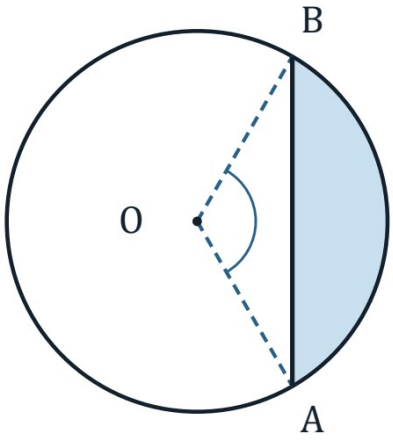


9. A semicircular protractor has total perimeter 36 cm. Find its radius and area.

SECTION C

(3 questions × 3 marks = 9 marks)

10. The radius of the circle is 21 cm and ∠AOB = 120°. Find the exact area of the shaded segment, leaving $\sqrt{3}$ in your answer.



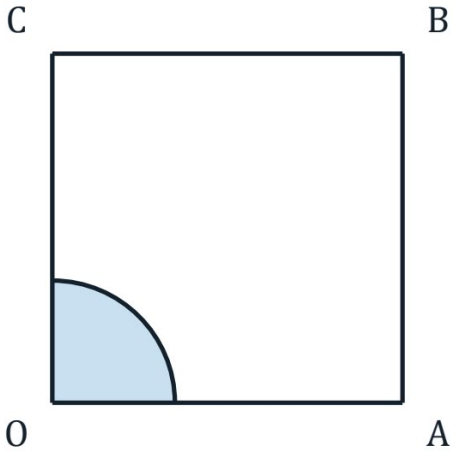
11. A car has two wipers with non-overlapping sweeps. Each blade is 25 cm long and sweeps a sector of 115°. Find the total area cleaned per sweep, correct to two decimal places.

12. A 120° sector of radius 7 cm and a 30° sector of radius 14 cm have equal areas. Verify this and compare their perimeters.

SECTION D

(Application Based Question - 3 marks)

13. A goat is tied at corner O of a square field of side 20 m by a rope 7 m long. The shaded region shows where it can graze.



(i) State the sector angle.

(ii) Find the grazing area.

(iii) Find the ungrazed area of the field.