Mathematics

Practice Test Paper 8

(Chapter 11: Areas Related to Circles)

Class X | 2026–27

Time Allowed: 45 Minutes | Maximum Marks: 25

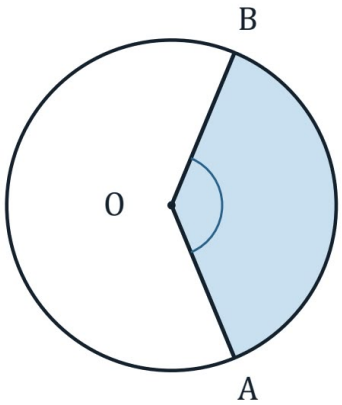
General Instructions

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 shaded sector has radius 14 cm and central angle 135°. Find its area.



$\angle AOB = 135°$

$OA = 14$ cm

(A) 154 cm^2
(B) 308 cm^2
(C) 462 cm^2
(D) 231 cm^2

2. An arc subtends 240° at the centre. It forms what fraction of the circumference?

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

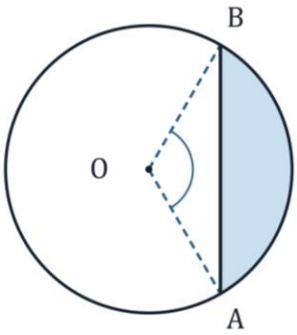
(C) $\frac{3}{4}$ (D) $\frac{1}{4}$

3. A sector's perimeter is 38 cm and its radius is 9 cm. Its arc length is:

(A) 29 cm (B) 47 cm

(C) 20 cm (D) 18 cm

4. To find the shaded minor segment in the diagram, which area must be subtracted from the area of sector OAB?



$\angle AOB = 120°$

(A) the whole circle (B) triangle OAB

(C) the major sector (D) a semicircle

5. The minute hand sweeps 90° in:

(A) 5 minutes (B) 10 minutes

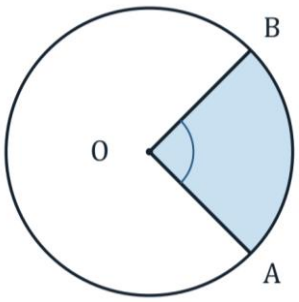
(C) 20 minutes (D) 15 minutes

SECTION B

(4 questions × 2 marks = 8 marks)

6. A sector has area 33 cm^2 and radius 6 cm. Find its arc length and central angle.

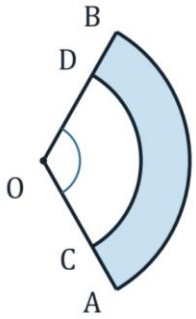
7. The shaded sector of radius 14 cm has area 154 cm^2. Find its angle and perimeter.



$\angle AOB = \theta$

OA = 14 cm

8. The shaded region lies between concentric sectors of angle 120° with radii 21 cm and 14 cm. Calculate its area.



$\angle AOB = 120°$

OA = 21 cm

OC = 14 cm

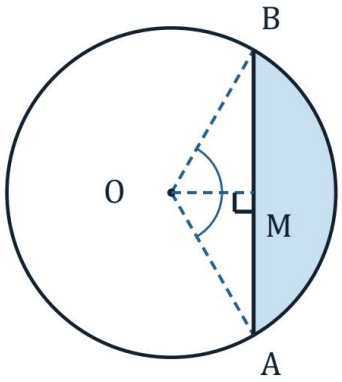
9. The two sectors formed by the same radii have angles in the ratio 3 : 5. Find the angles and identify the minor sector.

SECTION C

(3 questions × 3 marks = 9 marks)

10. A circular clock's minute hand is 9 cm long. Find the area swept in 25 minutes and the distance travelled by the tip. Give exact answers in terms of π.

11. Chord AB subtends 120° at the centre of a circle of radius 10 cm. Find the perpendicular distance of AB from O and the exact minor segment area in terms of π and $\sqrt{3}$.



∠AOB = 120°

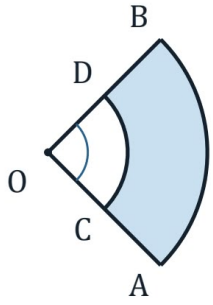
OA = 10 cm

12. Two sectors have the same radius. Their angles are 75° and 125°, and their areas differ by 55 cm^2. Find both areas and the area of the full circle.

SECTION D

(Application Based Question - 3 marks)

13. The shaded walkway is between concentric quadrants of radii 14 m and 7 m. Its two straight end edges are also part of its boundary.



∠AOB = 90°

OA = 14 m

OC = 7 m

(i) Find the walkway area.

(ii) Find the combined length of the two arcs.

(iii) Find the complete perimeter.