Mathematics

Practice Test Paper 6

(Chapter 11: Areas Related to Circles)

Class X | 2026–27

Time Allowed: 45 Minutes | Maximum Marks: 25

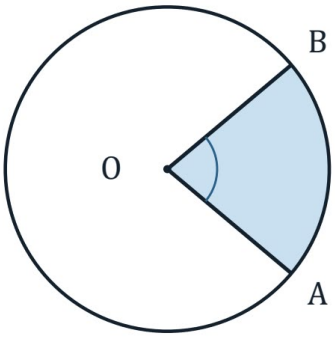
General Instructions

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. For a sector of radius 9 cm and angle 80°, the curved boundary has length:



$\angle AOB = 80°$

$OA = 9$ cm

(A) $\frac{44}{7}$ cm (B) $\frac{88}{7}$ cm

(C) $\frac{176}{7}$ cm (D) 18 cm

2. An arc of radius 7 cm subtends 180°. Its length is:

(A) 7 cm (B) 14 cm

(C) 11 cm (D) 22 cm

3. The ratio of sector area to corresponding arc length is:

(A) $\frac{r}{2}$ (B) r^2

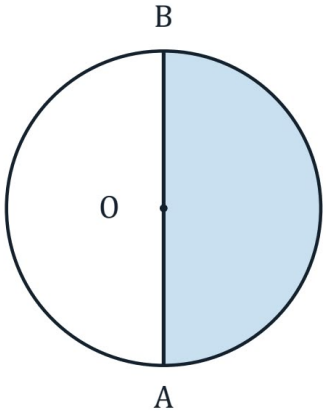
(C) $2r$ (D) $\frac{1}{r}$

4. A sector has area 84 cm^2 and radius 7 cm. Its arc length is:

(A) 12 cm (B) 24 cm

(C) 42 cm (D) 6 cm

5. The shaded semicircle has radius r. Which expression gives its entire perimeter?



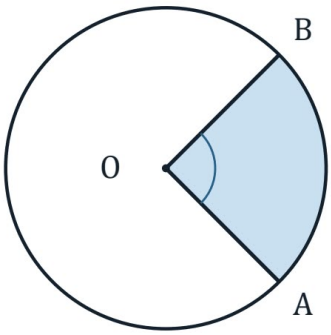
(A) πr (B) $2\pi r$
(C) $\pi r + r$ (D) $\pi r + 2r$

SECTION B

(4 questions × 2 marks = 8 marks)

6. Explain why the perimeter of a sector is not equal to its arc length. Calculate the perimeter when the radius is 4 cm and arc length is 9 cm.

7. A sector of radius 10 cm has arc length 5π cm. Find the central angle and its exact area in terms of π.



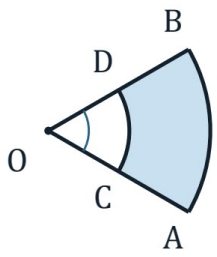
$\angle AOB = \theta$

arc AB = 5π cm

OA = 10 cm

8. At a fixed angle, a sector's radius is reduced by 20%. By what percentage does its area decrease?

9. Two concentric sectors of angle 60° have radii 14 cm and 7 cm. Find the area of the shaded band between their arcs.



$\angle AOB = 60°$

OA = 14 cm

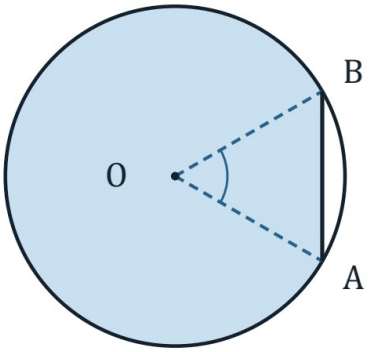
SECTION C

(3 questions × 3 marks = 9 marks)

10. A fan has seven equal panels, each subtending 15° at the pivot. Its radius is 24 cm. Find the lace length needed along the entire boundary and the fan area.

11. Two sectors have equal areas. Their radii are 6 cm and 9 cm, and the angle of the first is 135°. Find the second angle and the ratio of their arc lengths.

12. Chord AB subtends 60° at the centre of a circle of radius 14 cm. Find the exact areas of the minor segment and the shaded major segment.



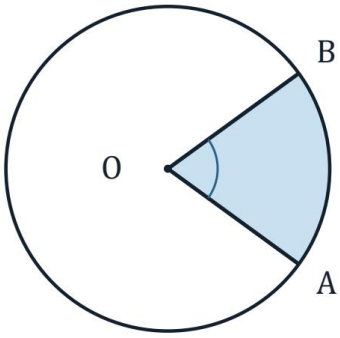
$\angle AOB = 60°$

$OA = 14$ cm

SECTION D

(Application Based Question - 3 marks)

13. A lighthouse illuminates a 72° sector of sea up to 15 km away. Use $\pi = 3.14$.



$\angle AOB = 72°$

$OA = 15$ km

(i) What fraction of the circular area is illuminated?

(ii) Find the illuminated area.

(iii) Find the outer arc length.