

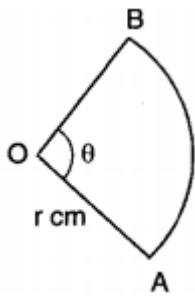
AREA RELATED TO CIRCLES

Class 10 - Mathematics

Time Allowed: 45 minutes

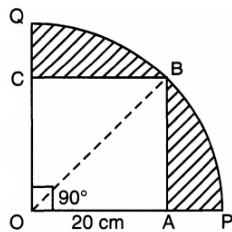
Maximum Marks: 45

1. Find the area (in cm^2) of the circle that can be inscribed in a square of side 8 cm. [1]
2. What is the perimeter of a square which circumscribes a circle of radius a cm? [1]
3. Write the formula for the area of a sector of angle θ (in degrees) of a circle of radius r . [1]
4. Find the ratio of the area of the incircle and circumcircle of a square. [1]
5. Is the area of the circle inscribed in a square of side a cm, $\pi a^2 \text{ cm}^2$? Give reasons for your answer. [1]
6. The area of a circle inscribed in an equilateral triangle is 154 cm^2 . Find the perimeter of the triangle. [Take $\pi = \frac{22}{7}$ and $\sqrt{3} = 1.73$.] [3]
7. Figure shows a sector of a circle of radius r cm containing an angle θ° . The area of the sector is $A \text{ cm}^2$ and perimeter of the sector is 50 cm. Prove that [3]



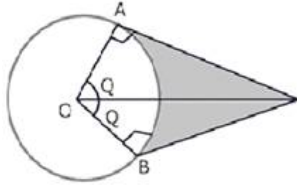
- i. $\theta = \frac{360}{\pi} \left(\frac{25}{r} - 1 \right)$
- ii. $A = 25r - r^2$

8. Area of a sector of central angle 200° of a circle is 770 cm^2 . Find the length of the corresponding arc of this sector. [3]
9. A square OABC is inscribed in a quadrant OPBQ of a circle. If $OA = 20$ cm, find the area of the shaded region. [3]
[Use $\pi = 3.14$]



10. The area of a circular playground is 22176 m^2 . Find the cost of fencing this ground at the rate of Rs 50 per m. [3]
11. An elastic belt is placed around therein of a pulley of radius 5cm. One point on the belt is pulled directly away from the center O of the pulley until it is at P, 10cm from O. Find the length of the best that is in contact with the [5]

rim of the pulley. Also, find the shaded area.



12. Find the difference of the areas of two segments of a circle formed by a chord of length 5 cm subtending angle of 90° at the centre. [5]

13. Find upto three places of decimal the radius of the circle whose area is the sum of the areas of two triangles whose sides are 35, 53, 66 and 33, 56, 65 measured in centimetres (Use $\pi = 22/7$). [5]

14. **Assertion (A):** If a wire of length 22 cm is bent in the shape of a circle, then area of the circle so formed is 40 cm^2 . [1]

Reason (R): Circumference of the circle = length of the wire.

- | | |
|---|---|
| a) Both A and R are true and R is the correct explanation of A. | b) Both A and R are true but R is not the correct explanation of A. |
| c) A is true but R is false. | d) A is false but R is true. |

15. **Assertion (A):** Perimeter of a circle is equal to its circumference. [1]

Reason (R): Area of a quadrant = $\frac{1}{2}\pi r^2$

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|---|---|
| a) Both A and R are true and R is the correct explanation of A. | b) Both A and R are true but R is not the correct explanation of A. |
| c) A is true but R is false. | d) A is false but R is true. |

16. **Assertion (A):** The length of the minute hand of a clock is 7 cm. Then the area swept by the minute hand in 5 minutes is $12\frac{5}{6} \text{ cm}^2$. [1]

Reason (R): The length of an arc of a sector of angle θ and radius r is given by $l = \frac{\theta}{360} \times 2\pi r$.

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|---|---|
| a) Both A and R are true and R is the correct explanation of A. | b) Both A and R are true but R is not the correct explanation of A. |
| c) A is true but R is false. | d) A is false but R is true. |

17. **Assertion (A):** If the circumference of two circles is in the ratio 2 : 3 then the ratio of their areas is 4 : 9. [1]

Reason (R): The circumference of a circle of radius r is $2\pi r$ and its area is πr^2 .

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|---|---|
| a) Both A and R are true and R is the correct explanation of A. | b) Both A and R are true but R is not the correct explanation of A. |
| c) A is true but R is false. | d) A is false but R is true. |

18. **Assertion (A):** Area of a segment of a circle of radius r units and central angle $60^\circ = \frac{1}{2}r^2 \left(\frac{\pi}{3} - \frac{\sqrt{3}}{2} \right)$ [1]

Reason (R): Area of a semicircle = $\frac{1}{2}\pi r^2$

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|---|---|
| a) Both A and R are true and R is the correct explanation of A. | b) Both A and R are true but R is not the correct explanation of A. |
| c) A is true but R is false. | d) A is false but R is true. |

Question No. 19 to 23 are based on the given text. Read the text carefully and answer the questions: [5.0]

