Mathematics

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(Chapter – 6) (Measuring Space: Perimeter and Area) (Assignment 2)
(Class – 9)

Name _____ Date _____

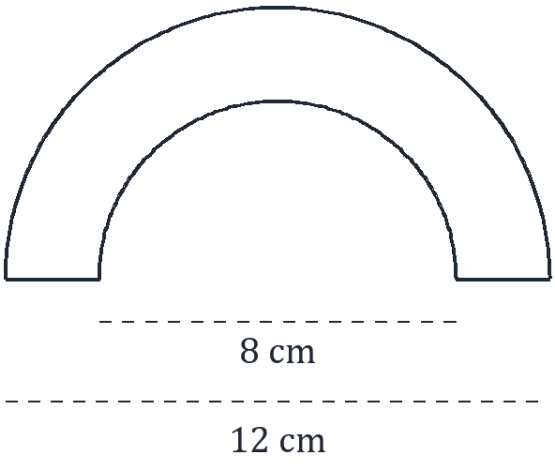
Answer all 15 questions. Choose one option for each MCQ. Show your working. Use $\pi \approx 22/7$ unless specified otherwise. Leave answers in terms of π when asked.

Section A: Multiple Choice Questions

1. The ratio of the perimeters of two circles is 5:4. What is the ratio of their radii?

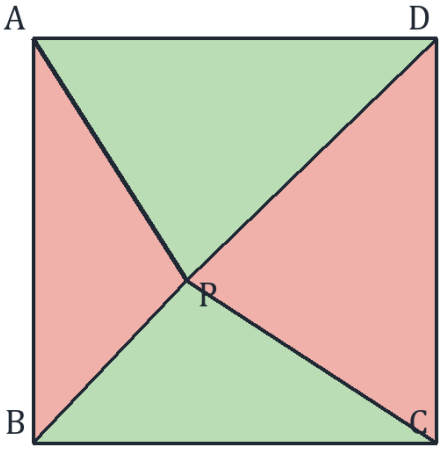
(a) 4 : 5
(b) 5 : 4
(c) 25 : 16
(d) 16 : 25

2. Find the perimeters of the following shapes (taking the arcs to be quarter or half or three-quarters of a circle, as appropriate) (see figure):



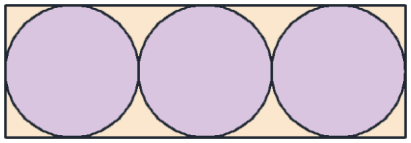
(a) 10π cm
(b) $10\pi + 4$ cm
(c) $20\pi + 4$ cm
(d) $2\pi + 4$ cm

3. Given a square ABCD, let P be a point within it. Join PA, PB, PC, PD (see figure). What is the ratio of the areas of the red region (ΔPAB and ΔPCD) and the green region (ΔPBC and ΔPDA)?



(a) 1 : 2
(b) 2 : 1
(c) 1 : 1
(d) Depends on P

4. What fraction of the rectangle is covered by the circles?



(a) π/6
(b) π/4
(c) 3π/4
(d) 1/2

5. A circle's diameter is increased from 8 cm to 16 cm. What happens to the ratio of its circumference to its diameter?

(a) It doubles.
(b) It halves.
(c) It stays equal to π.
(d) It becomes 2π.

Section B: Very Short Answer Questions

6. Calculate, correct to 3 significant figures, the circumference of a circle with: (ii) radius 10 cm.

Answer:

7. Calculate the length of the arc of a circle if: (ii) the radius is 6.3 m and the angle at the centre is 120°.

Answer:

8. The length of the minute hand of a clock is 7 cm. Find the area swept by the minute hand in 10 minutes.

Answer:

9. One diagonal of a rhombus is twice as long as the other diagonal. If the rhombus has area 128 cm^2, find the length of the shorter diagonal.

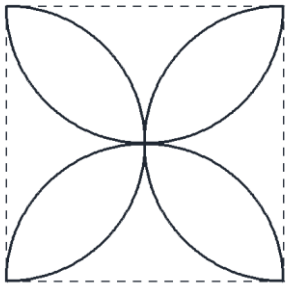
Answer:

10. If the wheel of a bicycle has a diameter of 60 cm, find how far a cyclist will have travelled after the wheel has rotated 100 times.

Answer:

Section C: Short and Long Answer Questions

11. Find the total perimeter of all the petals in each of the given flowers.

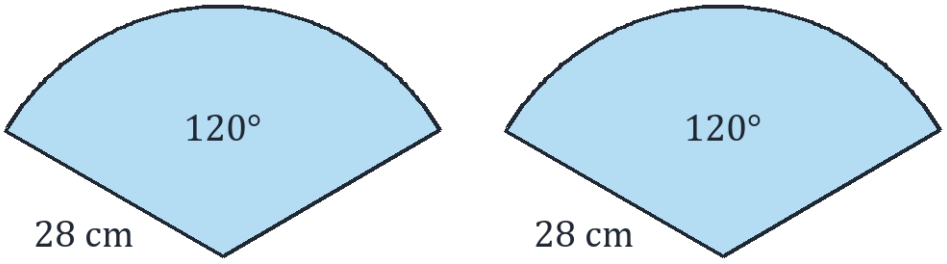


14 cm

The centres of the arcs are the midpoints of the sides of the square.

Answer:

12. A car has two wipers which do not overlap. Each wiper has a blade of length 28 cm and sweeps through an angle of 120°. Find the total area cleaned at each sweep of the blades.

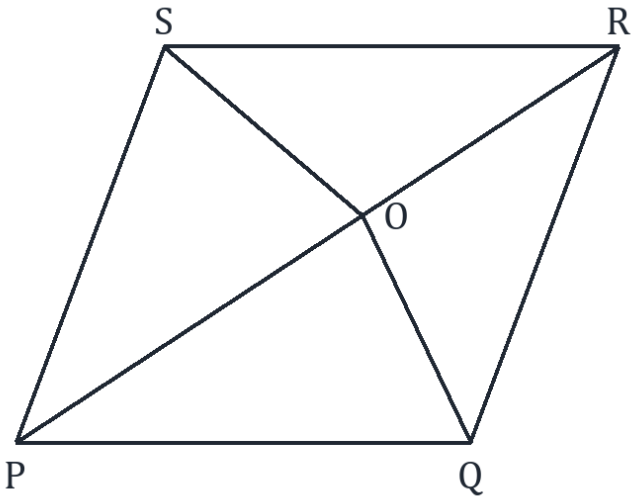


Answer:

13. A sector has radius 21 cm and central angle 120°. Find its arc length, perimeter and area. Explain why its perimeter is greater than its arc length.

Answer:

14. O is any point on the diagonal PR of a parallelogram PQRS. Prove that the areas of triangles PSO and PQO are equal.



Answer:

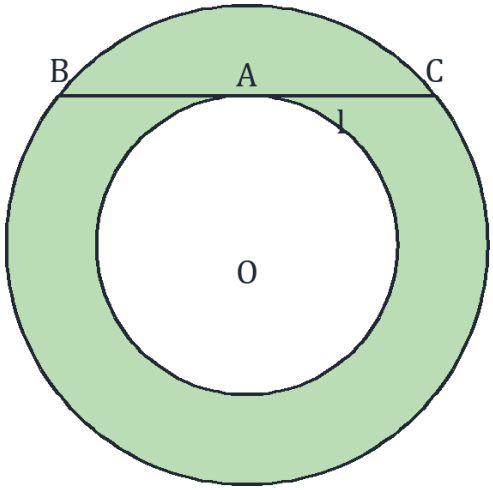
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15. In the figure we see two concentric circles with a common centre O. A chord BC of the larger circle is drawn, touching the smaller circle at A. The length of BC is l. Show that the area of the green region enclosed between the two circles is $\frac{1}{4}\pi l^2$.



Answer: