Mathematics

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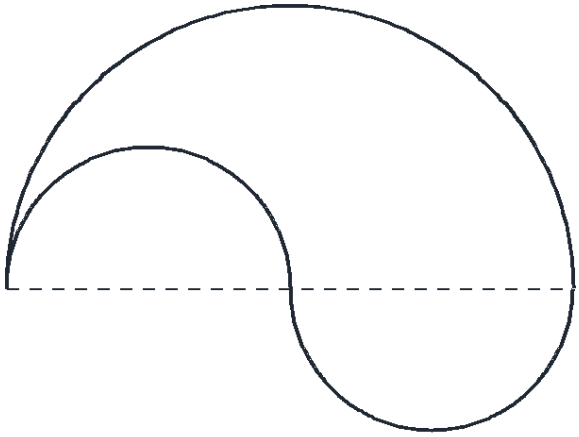
(Chapter – 6) (Measuring Space: Perimeter and Area) (Assignment 5)
(Class – 9)

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.

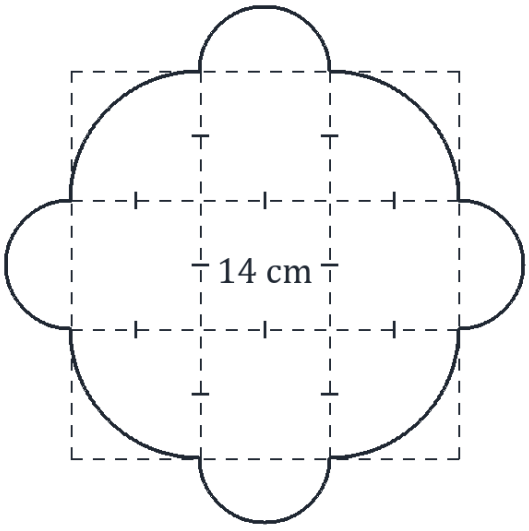
Section A: Multiple Choice Questions

1. 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):



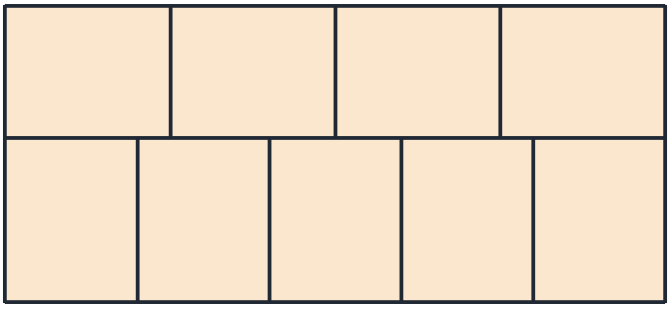
(a) 10π cm
(b) 15π cm
(c) 20π cm
(d) 30π cm

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) 28π cm
(b) 42π cm
(c) 56π cm
(d) 84π cm

3. The figure shows nine identical rectangles fitted together to make a large rectangle whose area is 72 cm^2. Find the perimeter of each small rectangle.



(a) 12 cm
(b) $18\sqrt{10}/5$ cm
(c) $8\sqrt{10}/5$ cm
(d) 16 cm

4. Find the area of a quadrant of a circle whose circumference is 44 cm.

(a) 19.25 cm^2
(b) 38.5 cm^2
(c) 77 cm^2
(d) 154 cm^2

5. In Heron's formula for a triangle with sides a, b and c, what does s represent?

(a) a + b + c
(b) abc
(c) (a + b + c)/2
(d) (a + b + c)/3

Section B: Very Short Answer Questions

6. Find the perimeter of a sector (i.e., the curved portion as well as the two straight portions) of a circle of radius 14 cm and sector angle 75°.

Answer:

7. Find the area of a triangle, given that its sides are 8 cm and 11 cm long, and its perimeter is 32 cm.

Answer:

8. The sides of a triangular plot are in the ratio 3: 5: 7; its perimeter is 300 m. Find its area.

Answer:

9. The sides of a triangle are in the ratio 2: 3: 4, and its perimeter is 45 cm. Find its area.

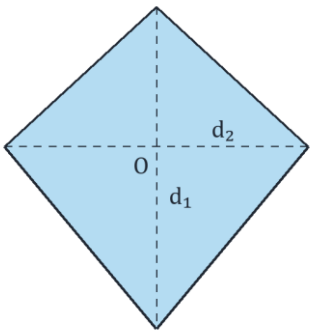
Answer:

10. The sides of a triangle have lengths 7 cm, 24 cm, 25 cm. Find the area of the triangle in two different ways.

Answer:

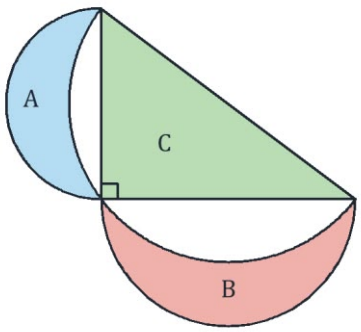
Section C: Short and Long Answer Questions

11. Show that the area of a kite is half the product of its diagonals. Show this: (i) using algebra, and (ii) using geometry.



Answer:

12. In the figure, semicircles have been drawn on all the sides of a right-angled triangle as shown. Show that Area (A) + Area (B) = Area (C).

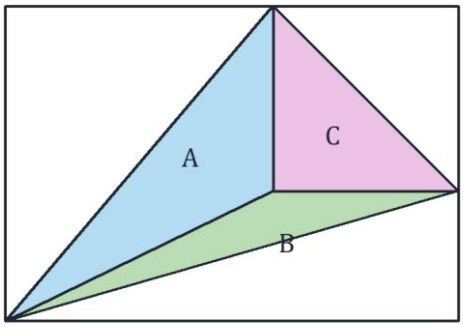


Answer:

13. A cyclic quadrilateral has consecutive side lengths 6 cm, 8 cm, 10 cm and 12 cm. Find its area using Brahmagupta's formula. Why is the word "cyclic" important?

Answer:

14. In the figure, we see three triangles within a rectangle. The areas of the triangles are A, B, C, as marked. Show that the area of the rectangle is $\frac{2(A+C)(B+C)}{C}$.



Answer:

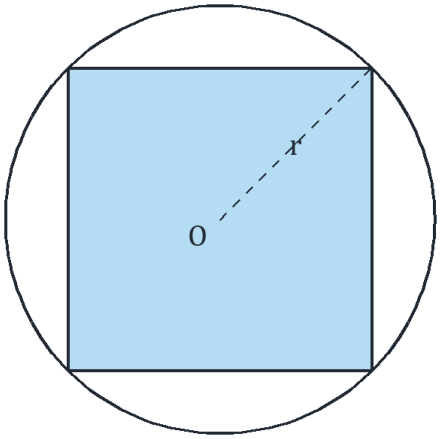
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(Class – 9)

15. A square is inscribed in a circle of radius r. Show that the ratio of the area of the square to the area of the circle is equal to $\frac{2}{\pi} \approx 0.637$.



Answer: