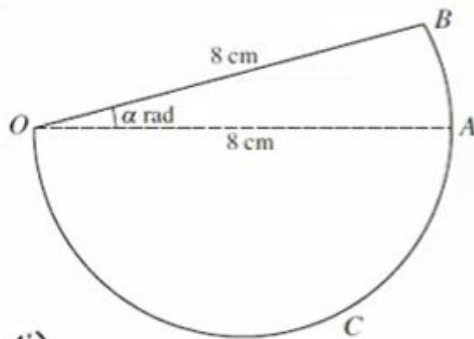




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Sectors, Area and Arc Length | Past Paper Question | CIE PI June 2013 Q3



In the diagram, OAB is a sector of a circle with centre O and radius 8 cm. Angle BOA is α radians. OAC is a semicircle with diameter OA . The area of the semicircle OAC is twice the area of the sector OAB .

- (i) Find α in terms of π . [3]
(ii) Find the perimeter of the complete figure in terms of π . [2]

(i)

Area of semicircle = 2(area of sector)

$$\therefore \frac{\pi(4)^2}{2} = 2 \left[\frac{\alpha}{2\pi} \times \pi(8)^2 \right]$$

$$\therefore 8\pi = 64\alpha$$

$$\therefore \alpha = \frac{8\pi}{64} = \frac{\pi}{8}$$

(ii)

$$\text{Perimeter} = \frac{\pi(8)}{2} + \frac{\pi}{8} \times 2\pi(8) + 8$$

$$= 4\pi + \pi + 8$$

$$= 5\pi + 8 \text{ cm}$$

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