# Arc length and sector area

6 questions | 18 marks

Equivalent correct methods earn the corresponding marks.

**1.** Find arc length for $r = 10$ cm, $\theta = \frac{\pi}{5}$. [3 marks]

$s = \frac{10\pi}{5}$.

**Answer:** $2\pi$ cm

**2.** Find sector area for $r = 5$ m, $\theta = 1.2$ rad. [3 marks]

$K = \frac{25(1.2)}{2} = 15$.

**Answer:** 15 m².

**3.** Find the exact arc for radius 8 cm and angle $135^\circ$. [3 marks]

$135^\circ = \frac{3\pi}{4}$; multiply by 8.

**Answer:** $6\pi$ cm

**4.** A sector has radius 7 cm and arc 14 cm. Find angle and area. [3 marks]

$\theta = \frac{14}{7} = 2$; $K = \frac{49(2)}{2} = 49$.

**Answer:** 2 rad;49 cm².

**5.** Find the full perimeter of a sector $r = 4$ cm, $\theta = \frac{\pi}{2}$. [3 marks]

Arc is $\frac{4\pi}{2} = 2\pi$; add both radii.

**Answer:** $8 + 2\pi$ cm

**6.** A 12 m² sector has radius 4 m. Find its angle in radians and degrees to one decimal place. [3 marks]

$12 = 8\theta$, so $\theta = 1.5$.

$1.5(\frac{180}{\pi}) = 85.9437\ldots$.

**Answer:** $1.5$ rad $\approx 85.9^\circ$.