Q1.

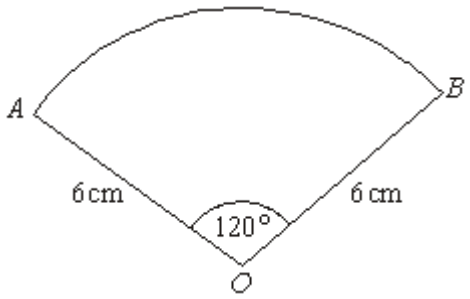

Diagram **NOT** accurately drawn

The diagram shows a sector of a circle, centre O.
The radius of the circle is 6 cm.
Angle AOB = 120°.

Work out the **perimeter** of the sector.
Give your answer in terms of π in its simplest form.

..... cm

(Total 3 marks)

M1.

Working	Answer	Mark	Additional Guidance
$\frac{120}{360} \times \pi \times 2 \times 6$	$4\pi + 12$	3	**M1** for $\frac{120}{360} \times \pi \times 2 \times 6$ oe allow 3.14, 3.142, $\frac{22}{7}$ for π **A1** for 4π or anything in the closed interval [12.56, 12.57], or $12\frac{4}{7}$ oe or $\frac{a\pi}{b}$ where a and b are integers with $a = 4b$ **A1** $4\pi + 12$ or $\pi 4 + 12$ oe SC (**B2** for a fully correct, but unsimplified expression for the perimeter, including $\left(\frac{2\pi r}{3}\right) + 12$ or $\left(\frac{2\pi r}{3}\right) + 2r$ Or for any value in the closed interval [24.56, 24.57])
			Total for Question: 3 marks

E1. The sector is, of course, in this case one third of its circle so the fraction demand was reasonable for a higher tier paper, although some candidates assumed it was a quarter of a circle.. Many candidates used the area formula and thus scored no marks. Of those that used the correct formula many could not simplify completely the expression for the arc length. Those that did get the arc length, did, however often go on to add 12 to get an expression for the perimeter although a few spoiled things at the end by writing $12 + 4\pi = 16\pi$.