January 2019
4PM0 Further Pure Mathematics Paper 1

Question number	Scheme	Marks
1	$27 = \frac{1.5}{2}r^2 \Rightarrow r = \sqrt{36} = 6$ (cm) $l = 6\times1.5 = 9 \Rightarrow P = 6+6+9 = 21$ cm	M1A1 M1A1 [4]

Additional Notes	
Mark	**Guidance**
M1	Uses correct formula for the area of the sector of a circle; $A = \frac{\theta}{2}r^2$ or $r^2 = \frac{2A}{\theta}$ **and** substitutes $A = 27$ and $\theta = 1.5$ correctly to achieve a value for r (must be r and not just r^2)
A1	$r = 6$
M1	Uses correct formula for the length of an arc of a circle; $l = r\theta$,substitutes in their value for r and $\theta = 1.5$ correctly **and** adds 2 × their r to achieve a value for the perimeter.
A1	$P = 21$ (cm)
For a value of 21 cm without any working, award M1A1M1A1	

ALT – Works in degrees	
Mark	**Guidance**
M1	Changes 1.5 radians into degrees and uses correct formula for the area of the sector of a circle; 1.5 radians $= \frac{270}{\pi} = 85.9...^\circ \Rightarrow 27 = \frac{85.9...^\circ}{360}\times\pi\times r^2 \Rightarrow r = '6'$ (and achieves a value for r (must be r and not just r^2) The conversion of 1.5 radians to degrees must be correct.
A1	$r = 6$ Accept a value of r that rounds to 6.
M1	Uses correct formula for the length of an arc of a circle; $l = \frac{85.9...^\circ}{360}\times2\times\pi\times'6' = '9'$ **and** adds 2 × their r to achieve a value for the perimeter.
A1	$P = 21$ (cm)
For a value of 21 cm without any working, award M1A1M1A1	