

Q1. (2018)

18	$\pi \times 10^2 - \pi \times 7^2$ or $100\pi - 49\pi$ or 51π or $\frac{1}{2} \times \pi \times 10^2 - \frac{1}{2} \times \pi \times 7^2$ or $\frac{1}{2} \times 100\pi - \frac{1}{2} \times 49\pi$ or $\frac{1}{2} \times 51\pi$ or 25.5π	M1	oe implied by 102π method to work out front and/or back faces – must not be part of a method to work out volume ($\times 30$) may be taken to be full circles
	$2 \times \pi \times 10 \times 30$ or 600π or $\frac{1}{2} \times 2 \times \pi \times 10 \times 30$ or 300π or $2 \times \pi \times 7 \times 30$ or 420π or $\frac{1}{2} \times 2 \times \pi \times 7 \times 30$ or 210π or 1020π or 510π	M1	oe method to work out outer and/or inner curved surfaces may be taken to be full circles 1122π implies M1M1
	$(\frac{1}{2} \times \pi \times 10^2 - \frac{1}{2} \times \pi \times 7^2) \times 2$ + $\frac{1}{2} \times 2 \times \pi \times 10 \times 30$ + $\frac{1}{2} \times 2 \times \pi \times 7 \times 30$ or $2 \times 25.5\pi + 300\pi + 210\pi$ or 561π	M1dep	oe dep on M1M1 correct method to work out total of front, back, outer curved and inner curved surfaces
	$2 \times 30 \times 3$ or 180	M1	implied by an answer of $\pi\pi + 180$ do not award if 180 is used as 180π
	$561\pi + 180$	A1	
Additional Guidance			
150 π and 105 π implies use of radius for curved surface areas			max M1M0M0M1A0
Condone use of [3.14, 3.142] for π up to M1M1M0M1A0			