

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
	$\left(\frac{1}{2} \times \pi \times 10^2 - \frac{1}{2} \times \pi \times 7^2\right) \times 2$ + $\frac{1}{2} \times 2 \times \pi \times 10 \times 30$ + $\frac{1}{2} \times 2 \times \pi \times 7 \times 30$ 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 $n\pi + 180$ 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			

Q2. (2021)

Question	Answer	Mark	Comments
27	$5^2 \times \pi (\div 6)$ or $25\pi (\div 6)$	M1	oe allow 3.14 or better for π throughout
	$\frac{1}{2} \times 5 \times 5 \times \sin 60$ or $\frac{1}{2} \times 5 \times 2.5 \tan 60$ or $\frac{25}{2} \times \frac{\sqrt{3}}{2}$	M1	oe correct method to work out the area of the triangle or the area of the hexagon implied by $75 \sin 60$ or $37.5 \tan 60$ or $\frac{75\sqrt{3}}{2}$ oe
	$\frac{25\pi}{6} - \frac{25\sqrt{3}}{4}$	A1	oe eg $\frac{1}{6} \left(25\pi - \frac{75\sqrt{3}}{2} \right)$ implied by correct answer
	$\frac{50\pi - 75\sqrt{3}}{12}$	A1	oe in correct form eg $\frac{50\pi - 15\sqrt{75}}{12}$
Additional Guidance			
Using Pythagoras to work out the perpendicular height of the triangle may lead to an area of $\frac{5\sqrt{18.75}}{2}$ for the triangle or $15\sqrt{18.75}$ for the area of the hexagon			2nd M1