

M1.

$$\pi \times 8^2 (\div 2)$$

oe

M1

$$32\pi$$

A1**[2]****M2.** $2 \times \pi \times 12$ or [75.3, 75.4]

oe

$$24\pi$$

M1

$$\frac{135}{360} \times 2 \times \pi \times 12 (+ 24)$$

or [28.2, 28.3]

oe

$$9\pi (+24)$$

M1dep

[52.2, 52.3]

*Do not award if $\pi = 3$ used***A1****[3]****M3.** 60° seen*Could be seen in calculation or on diagram***B1**

$$\frac{60}{360} \times 2 \times \pi \times 8$$

oe

M1

8.3(7...)

[8.3, 8.4] Allow $\frac{8}{3}\pi$

A1

[3]

M4. $\pi \times 8 \times 8$ oe

M1

$$\frac{130}{360} \times \pi \times 8 \times 8$$
 oe

M1dep

72.5... or 72.6...

A1

73 or 72.6

B1ft

[4]