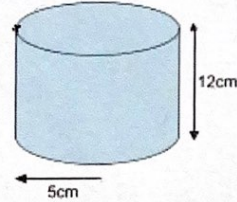




Quick Test - Surface area of a cylinder

1. A solid cylinder has a height of 12cm and a radius of 5cm.
Work out the total surface area.
Give your answer correct to 3 significant figures.

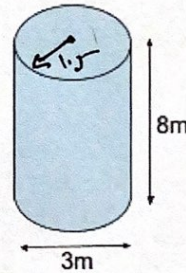


$$\begin{array}{l} \pi r^2 \\ \hline 10\pi \\ \hline 12 \times 10\pi \times 12 = 120\pi \end{array}$$

$$\pi r^2 \quad \pi (5)^2 = 25\pi$$

$$\begin{array}{r} TSA = 25\pi \\ 120\pi \\ \hline 25\pi \\ \hline 170\pi \\ = 534.0707511 \\ = \underline{\underline{534 \text{ cm}^2}} \quad (3 \text{ s.f.}) \end{array}$$

2. A solid cylinder has a diameter of 3m and a height of 8m.
Work out the total surface area of the cylinder.
Give your answer in terms of π .



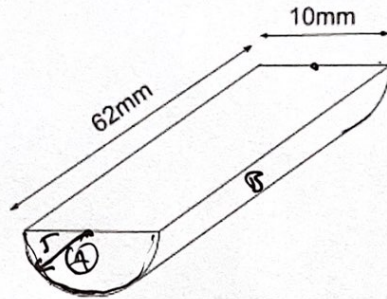
$$\begin{array}{l} \pi r^2 \\ \hline 3\pi \\ \hline 8 \times 3\pi \times 8 = 24\pi \end{array}$$

$$\pi r^2 \quad \pi (1.5)^2 = 2.25\pi$$

$$\begin{array}{r} TSA = 2.25\pi \\ 24.00\pi \\ \hline 2.25\pi \\ \hline 28.50\pi \\ TSA = \underline{\underline{28.5\pi \text{ m}^2}} \end{array}$$



3. A solid cylinder is cut in half to form a semi-cylinder with a radius of 10cm and a length of 62cm. Calculate the total surface area of the semi-cylinder.
Give your answer correct to 2 decimal places.



$$\frac{1}{2} \pi r^2 = \frac{1}{2} \pi (10)^2 = 157 \pi$$

Curved rectangle $62 \times 10 = 620$

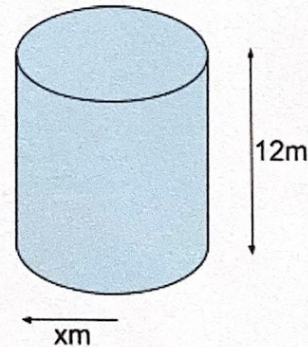
$$\frac{1}{2} \pi (10) \times 62 = 310 \pi$$

$$\frac{1}{2} \pi r^2 = \frac{1}{2} \pi (10)^2 = 157 \pi$$

Top $10 \times 62 = 620$

$$\begin{aligned} \text{TSA} &= 157 \pi \\ &+ 310.0 \pi \\ &+ 157 \pi \\ &+ 620.0 \\ &= 1672.4335 \text{ mm}^2 \\ &= \underline{\underline{1672.43 \text{ mm}^2}} \quad (2 \text{ dp}) \end{aligned}$$

4. A solid cylinder has a radius of x metres and a height of 12 metres. The total surface area of the cylinder is $216\pi \text{ m}^2$. Find the value of radius.



$$\pi r^2 \quad \pi (x)^2$$

$2\pi x \times 12 = 24\pi x$

$$\pi r^2 \quad \pi (x)^2$$

$$\begin{array}{r} -108 \\ +1x \quad -6 \end{array}$$

$$\begin{aligned} 216\pi &= 2\pi x^2 + 24\pi x \\ 0 &= 2x^2 + 24x - 216 \\ &= 2x^2 + 24x - 216 \\ &= x^2 + 12x - 108 \\ 0 &= (x + 18)(x - 6) \\ \therefore x &= -18 \quad \underline{\underline{x = 6 \text{ m}}} \end{aligned}$$