

1.

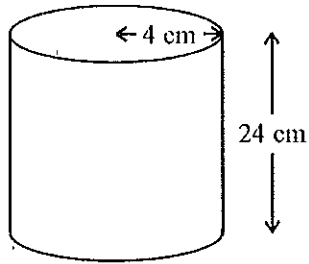


Diagram NOT accurately drawn

A cylinder has a height of 24 cm and a radius of 4 cm.
Work out the volume of the cylinder.
Give your answer correct to 3 significant figures.

$$\begin{aligned} \text{Volume} &= \pi r^2 h \\ &= \pi (4)^2 (24) \\ &= 1206.371579 \\ &= 21 \\ &= 1210 \text{ cm}^3 \quad (3 \text{ s.f.}) \end{aligned}$$

.....1210..... cm³
(Total 2 marks)



2. A can of drink is in the shape of a cylinder.
The can has a radius of 4 cm and a height of 15 cm.

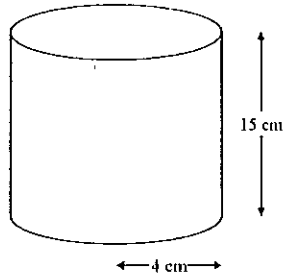


Diagram NOT accurately drawn

Calculate the volume of the cylinder.
Give your answer correct to 3 significant figures.

$$\begin{aligned} V &= \pi r^2 h \\ &= \pi (4)^2 (15) \\ &= 753.9822369 \\ &= 754 \text{ (3 s.f.) cm}^3 \end{aligned}$$

$$\dots\dots\dots 754 \text{ cm}^3 \dots\dots\dots$$

(Total 3 marks)

- 3.

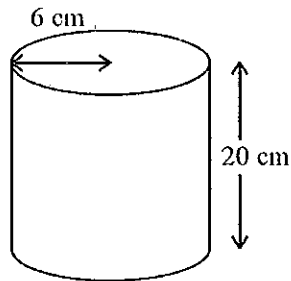


Diagram NOT accurately drawn

A solid cylinder has a radius of 6 cm and a height of 20 cm.

Calculate the volume of the cylinder.

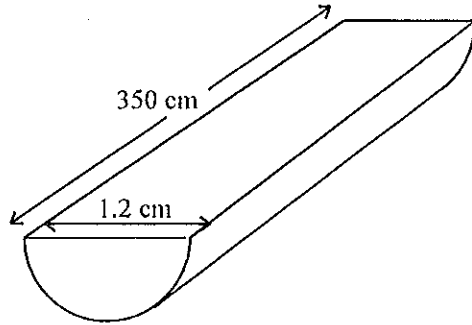
Give your answer correct to 3 significant figures.

$$\begin{aligned} V &= \pi r^2 h \\ &= \pi (6)^2 (20) \\ &= 720\pi \\ &= 2261.946711 \\ &= 2260 \text{ cm}^3 \text{ (3 s.f.)} \end{aligned}$$

$$\dots\dots\dots 2260 \text{ cm}^3 \dots\dots\dots$$

(Total 2 marks)

4.

Diagram **NOT** accurately drawn

The diagram shows a piece of wood.

The piece of wood is a prism of length 350 cm.

The cross-section of the prism is a semi-circle with diameter 1.2 cm.

Calculate the volume of the piece of wood.

Give your answer correct to 3 significant figures.

$$\begin{aligned}V &= \frac{1}{2} \pi r^2 h \\&= \frac{1}{2} \pi (0.6)^2 (350) \\&= 63\pi \\&= 197.9203372 \\&= 198 \text{ cm}^3 \text{ (3sf)}\end{aligned}$$

.....198..... cm³
(Total 4 marks)



5.

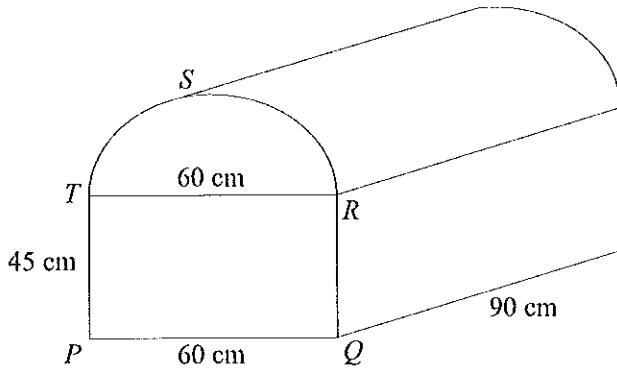


Diagram NOT accurately drawn

The diagram shows a prism of length 90 cm.
The cross section, $PQRST$, of the prism is a semi-circle above a rectangle.
 $PQRT$ is a rectangle.
 RST is a semi-circle with diameter RT .
 $PQ = RT = 60$ cm.
 $PT = QR = 45$ cm.

Calculate the volume of the prism.
Give your answer correct to 3 significant figures.
State the units of your answer.

$$\begin{aligned} \text{Volume} &= \frac{1}{2} \pi r^2 h + lwh \\ &= \frac{1}{2} \pi (30)^2 (90) + (45)(60)(90) \\ &= 370234.5025 \\ &= 370000 \text{ cm}^3 \end{aligned}$$

$$\underline{\underline{370000 \text{ cm}^3}}$$

(Total 5 marks)



6.

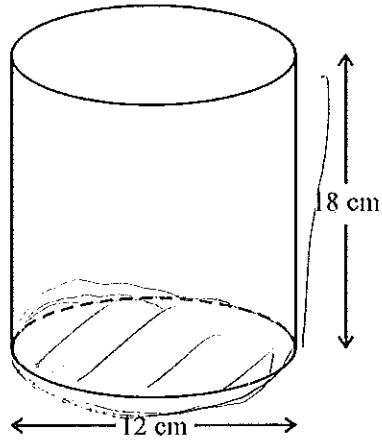


Diagram NOT accurately drawn

The diagram shows a solid cylinder.

The cylinder has a diameter of 12 cm and a height of 18 cm.

Calculate the **total** surface area of the cylinder.

Give your answer correct to 3 significant figures.

$$\begin{aligned} S.A. &= 2\pi r^2 + 2\pi r h \\ &= 2\pi(6)^2 + 2\pi(6)(18) \\ &= 288\pi \\ &= 905 \text{ cm}^2 \text{ (3sf)} \end{aligned}$$

.....9.05..... cm²
(Total 4 marks)

7.

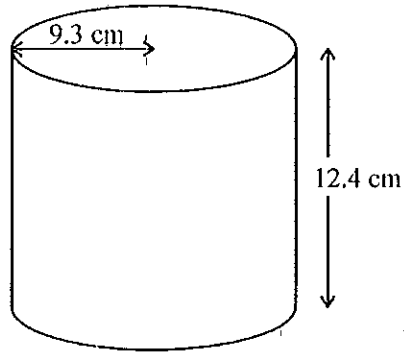


Diagram NOT accurately drawn

The diagram shows a solid cylinder.
The radius of the cylinder is 9.3 cm.
Its height is 12.4 cm.

Calculate the total surface area of the cylinder.
Give your answer correct to 3 significant figures.

$$\begin{aligned} \text{s.a.} &= 2\pi r^2 + 2\pi r h \\ &= 2\pi(9.3)^2 + 2\pi(9.3)(12.4) \\ &= 1268.009627 \\ &= 1270 \text{ cm}^2 \text{ (3sf)} \end{aligned}$$

..... 1270 cm²
(Total 4 marks)

8.

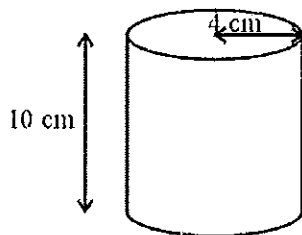


Diagram NOT accurately drawn

The diagram shows a cylinder with a height of 10 cm and a radius of 4 cm.

- (a) Calculate the volume of the cylinder.
Give your answer correct to 3 significant figures.

$$\begin{aligned}
 V &= \pi r^2 h \\
 &= \pi (4)^2 (10) \\
 &= 502.6548246 \text{ cm}^3
 \end{aligned}$$

$$\underline{\underline{503 \text{ cm}^3}} \quad (3 \text{ sf})$$

The cylinder is solid.

- (b) Calculate the total surface area of the cylinder.
Give your answer correct to 3 significant figures.

$$\begin{aligned}
 \text{S.A.} &= 2\pi r^2 + 2\pi r h \\
 &= 2\pi (4)^2 + 2\pi (4)(10) \\
 &= 351.8583772 \\
 &= 352 \text{ cm}^2 \quad (3 \text{ sf})
 \end{aligned}$$

$$\underline{\underline{352 \text{ cm}^2}}$$

(3)
(Total 6 marks)