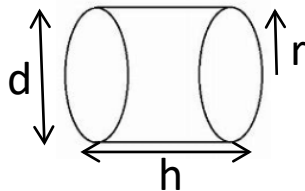# VOLUME AND SURFACE AREAS OF CYLINDERS
Geometry and Measures

Key Concepts

A **cylinder** is a **prism** with the cross section of a circle.
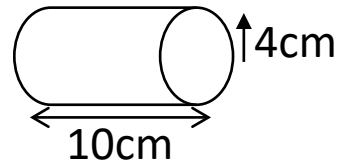

The **volume** of a cylinder is calculated by $\pi r^2 h$ and is the space inside the 3D shape

The **surface area** of a cylinder is calculated by $2\pi r^2 + \pi dh$ and is the total of the areas of all the faces on the shape.

Examples

From the diagram calculate:

4cm
10cm

a) **Volume**

$$V = \pi \times r^2 \times h$$

$$V = \pi \times 4^2 \times 10$$

$$V = 160\pi$$

$$\text{Or} = 502.65 cm^3$$

b) **Surface Area** – You can use the net of the shape to help you

4cm
10cm

$$Area\ of\ two\ circles$$
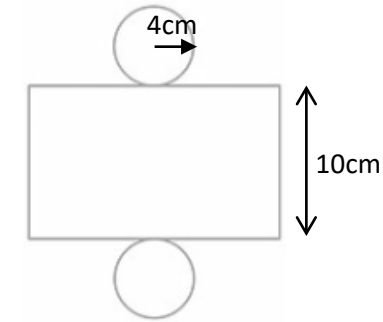$$= 2 \times \pi \times r^2$$
$$= 2 \times \pi \times 4^2$$
$$= 32\pi$$

$$Area\ of\ rectangle$$
$$= \pi \times d \times h$$
$$= \pi \times 8 \times 10$$
$$= 80\pi$$

$$Surface\ Area = 32\pi + 80\pi$$
$$= 112\pi$$
$$\text{or} = 351.86 cm^3$$

Key Words
Cylinder
Surface Area
Radius
Diameter
Pi
Volume
Prism

Calculate the volume and surface area of this cylinder

7cm
15cm

ANSWERS: Volume = 735π or $2309.07cm^3$ Surface area = 308π or $967.61cm^3$