

Year 8 Knowledge Organiser

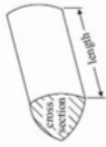
VOLUME AND SURFACE AREA OF PRISMS

Key Concept

The **volume** of an object is the amount of space that it occupies. It is measured in units cubed e.g. cm^3 .

To calculate the volume of any prism we use:

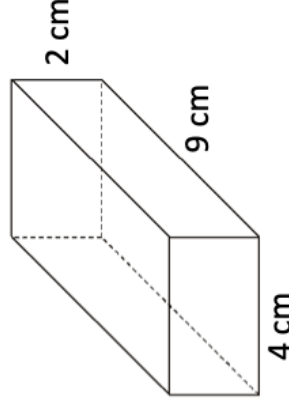
$$\text{area of cross section} \times \text{length}$$



A **prism** is a 3D shape which has a continuous cross-

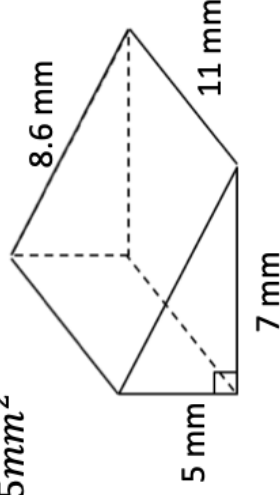
~~the~~ **surface area** of an object is the sum of the area of all of its faces. It is measured in units squared e.g. cm^2 .

Examples



$$\begin{aligned} \text{Volume} &= 4 \times 9 \times 2 \\ &= \mathbf{72\text{cm}^3} \end{aligned}$$

$$\begin{aligned} \text{Area of triangle} &= \frac{5 \times 7}{2} \\ &= 17.5\text{mm}^2 \end{aligned}$$



$$\begin{aligned} \text{Volume} &= 17.5 \times 11 \\ &= \mathbf{192.5\text{mm}^3} \end{aligned}$$

Surface area:

$$\begin{aligned} \text{Front} &= 4 \times 2 = 8 \\ \text{Back} &= 4 \times 2 = 8 \\ \text{Side 1} &= 9 \times 2 = 18 \\ \text{Side 2} &= 9 \times 2 = 18 \\ \text{Bottom} &= 4 \times 9 = 36 \\ \text{Top} &= 4 \times 9 = 36 \\ \text{Total} &= \mathbf{124\text{cm}^2} \end{aligned}$$

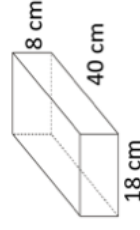
Surface area:

$$\begin{aligned} \text{Front} &= \frac{7 \times 5}{2} = 17.5 \\ \text{Back} &= \frac{7 \times 5}{2} = 17.5 \\ \text{Side} &= 5 \times 11 = 55 \\ \text{Bottom} &= 7 \times 11 = 77 \\ \text{Top} &= 11 \times 8.6 = 94.6 \\ \text{Total} &= \mathbf{261.6\text{cm}^2} \end{aligned}$$

Key Words

Volume
Capacity
Prism
Surface area
Face

Find the volume and surface area of each of these prisms:



1)

2)



ANSWERS: 1) Volume = 5760 cm^3 Surface area = 2368 cm^2 2) Volume = 162 m^3 Surface area = 241.2 m^2