

Ma 9

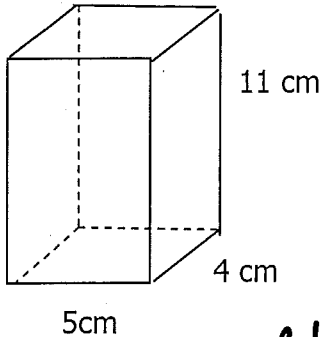
4.3

Name:

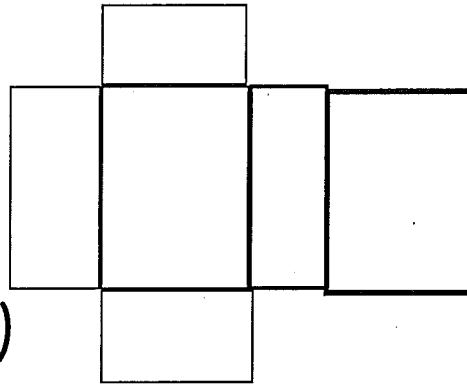
Surface Area of Basic 3-D Shapes and Overlap

Notes Key

Find the Surface area of this Rectangular Prism



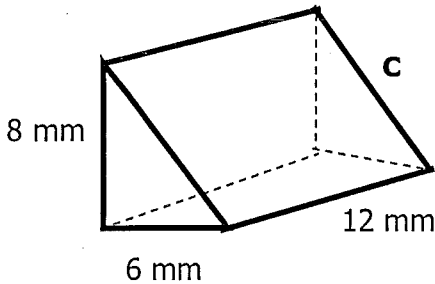
Draw a Net Diagram



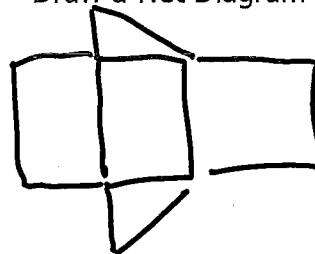
$$\begin{aligned}
 SA &= 2lw + 2lh + 2wh \\
 &= 2(5 \times 4) + 2(5 \times 11) + 2(4 \times 11) \\
 &= 40 + 110 + 88 \\
 &= 238 \text{ cm}^2
 \end{aligned}$$

$$SA = 2(l \times w) + 2(l \times h) + 2(w \times h)$$

Find the surface area of this triangular Prism



Draw a Net Diagram



Surface Area is the SUM of all the 5 faces

① Bottom

$$A = 6 \times 12 = \underline{72}$$

④ Front

$$\begin{aligned}
 A &= 12 \times 10 \\
 &= 120
 \end{aligned}$$

② Back

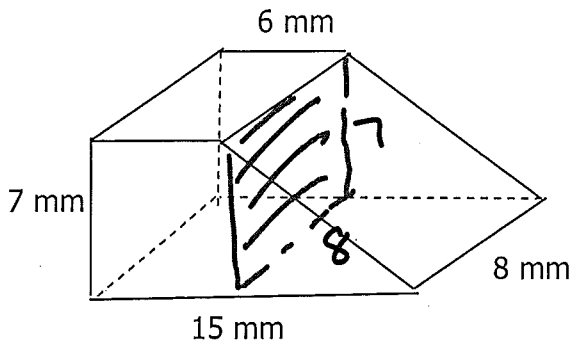
$$A = 8 \times 12 = \underline{96}$$

③ Triangles

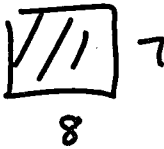
$$\begin{aligned}
 A &= 2 \times \left( \frac{6 \times 8}{2} \right) \\
 &= \underline{48}
 \end{aligned}$$

$$\begin{aligned}
 \rightarrow \text{Total SA} &= 72 + 96 + 48 + 120 \\
 &= 336 \text{ mm}^2
 \end{aligned}$$

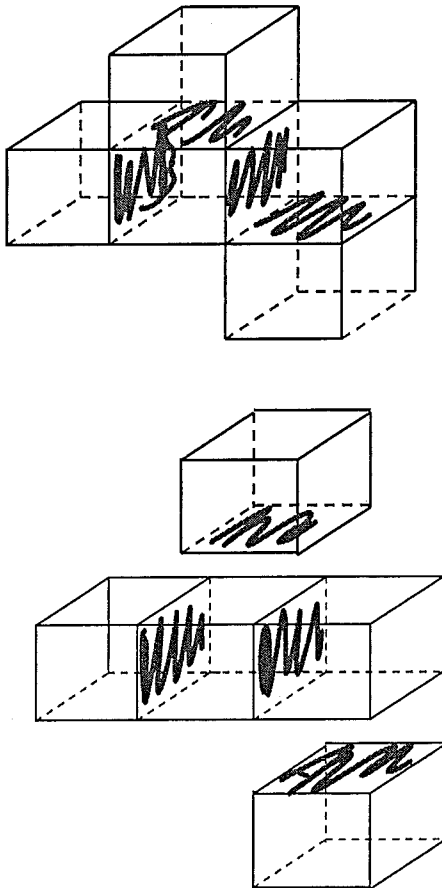
Find the area of "overlap" for this Composite 3-D Shape



- Identify the basic shapes
  - rec. prism
  - triangular prism
- Sketch in the overlap and label dimensions

•   $A = 8 \times 7 = 56 \text{ mm}^2$

Find the area of overlap of this group of cubes with all sides of 3 units



Decompose the structure

Draw onto isometric dot paper

Shade the overlapping faces

There are 4 overlap areas

The area of each face is  $3^2 = 9$

Therefore, the area of overlap is  $4 \times 9$  or  $36$  sf units