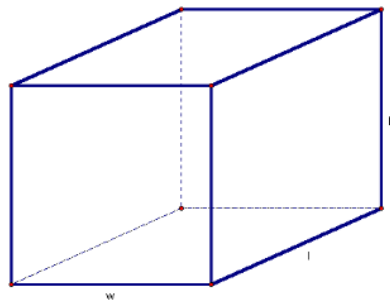


Section 1.3 - Surface Area

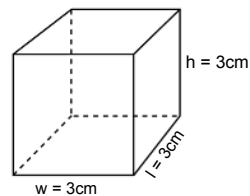
Find the surface area of the rectangular prism

$$\begin{aligned} w &= 5\text{cm} \\ h &= 8\text{cm} \\ l &= 12\text{cm} \end{aligned}$$



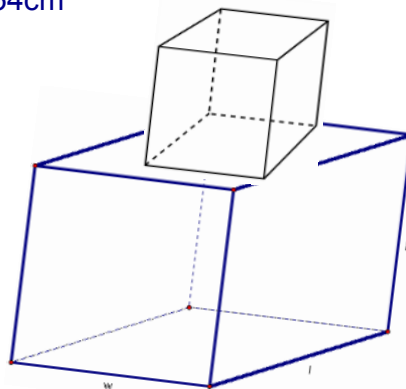
$$\begin{aligned} SA_{\text{rect prism}} &= 2(\text{top}) + 2(\text{front}) + 2(\text{side}) \\ &= 2(12 \times 5) + 2(5 \times 8) + 2(12 \times 8) \\ &= 120 + 80 + 192 \\ &= 392\text{cm}^2 \end{aligned}$$

Find the surface area of the cubic prism



$$\begin{aligned} SA_{\text{cube}} &= 2(\text{top}) + 2(\text{front}) + 2(\text{side}) \\ &= 2(3 \times 3) + 2(3 \times 3) + 2(3 \times 3) \\ &= 18 + 18 + 18 \\ &= 54\text{cm}^2 \end{aligned}$$

If we placed the cube on top of the rectangular prism, would the surface be the same if you added both the rectangular prism and the cubic prism?



To find the surface area you would subtract the overlaps

$$\begin{aligned} SA_{\text{overlaps}} &= 2(\text{base of cube}) \\ &= 2(3 \times 3) \\ &= 18\text{cm}^2 \end{aligned}$$

$$\begin{aligned} TSA &= SA_{\text{rect prism}} + SA_{\text{cube}} - SA_{\text{overlap}} \\ &= 392 + 54 - 18 \\ &= 428\text{cm}^2 \end{aligned}$$

