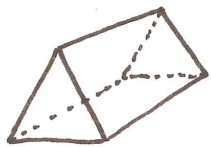


# Surface Area of Triangular Prisms

- Triangular prisms have 5 faces:



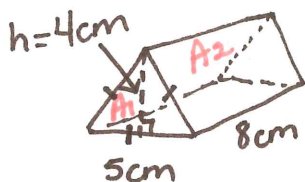
→ 2 congruent triangular faces

→ 3 rectangular faces

Therefore the 2 area formulas you will need are:  $A_{\Delta} = \frac{bh}{2}$  AND  $A_{\square} = lw$

- The number of calculations you need to perform will depend on the type of triangle.

## Scenario 1: Equilateral triangle - all sides are equal



$$A_1 = \frac{bh}{2}$$
$$= \frac{5(4)}{2}$$

$$= \frac{20}{2}$$

$$= 10\text{cm}^2$$

$$\times 2 \leftarrow \text{Because there are 2 congruent triangular faces}$$
$$\boxed{20\text{cm}^2}$$

$$A_2 = lw$$
$$= 5(8)$$
$$= 40\text{cm}^2$$

$$\times 3 \leftarrow \text{All 3 rectangles are the same because all 3 sides of triangle are.}$$
$$\boxed{120\text{cm}^2}$$

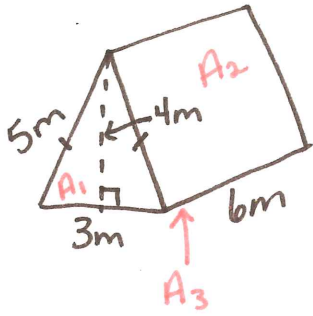
Some students omit dividing by 2 because you multiply by 2 and undo it.

Others find that confusing and do it as shown.

Up to you for what works best for you.

$$\text{S.A.} = 20\text{cm}^2 + 120\text{cm}^2$$
$$= \boxed{140\text{cm}^2}$$

Scenario 2: Isosceles triangle - 2 sides are equal



$$\begin{aligned}
 A_1 &= \frac{bh}{2} \\
 &= \frac{3(4)}{2} \\
 &= \frac{12}{2} \\
 &= 6\text{m}^2 \\
 &\quad \times 2 \\
 &= 12\text{m}^2
 \end{aligned}$$

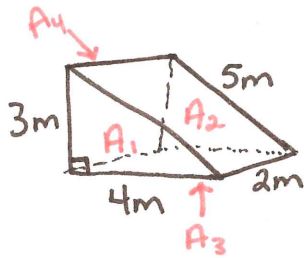
$$\begin{aligned}
 A_2 &= lw \\
 &= 6(5) \\
 &= 30\text{m}^2
 \end{aligned}$$

$$\begin{aligned}
 A_3 &= lw \\
 &= 6(3) \\
 &= 18\text{m}^2
 \end{aligned}$$

$\times 2 \leftarrow$  Because there are 2 rectangles that are the same

$$60\text{m}^2$$

Scenario 3: Scalene triangle - all 3 sides are different



$$\begin{aligned}
 A_1 &= \frac{bh}{2} \\
 &= \frac{3(4)}{2} \\
 &= \frac{12}{2} \\
 &= 6\text{m}^2 \\
 &\quad \times 2 \\
 &= 12\text{m}^2
 \end{aligned}$$

$$\begin{aligned}
 A_2 &= lw \\
 &= 2(5) \\
 &= 10\text{m}^2
 \end{aligned}$$

$$\begin{aligned}
 A_3 &= lw \\
 &= 4(2) \\
 &= 8\text{m}^2
 \end{aligned}$$

$$\begin{aligned}
 A_4 &= lw \\
 &= 3(2) \\
 &= 6\text{m}^2
 \end{aligned}$$

$$\begin{aligned}
 \text{S.A.} &= 12 + 10 + 8 + 6 \\
 &= 36\text{m}^2
 \end{aligned}$$