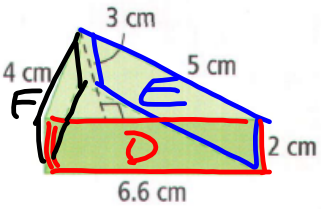
Surface Area of a Triangular Prism

This tent is made of canvas, including a canvas floor. How do the manufacturers determine the area of canvas needed to make the tent?

Example 1: Find Surface Area

Find the surface area of the triangular prism.



$A_{\Delta s} = \frac{1}{2} \times b \times h$

$= \frac{1}{2} \times 6.6 \times 3$

$= 9.9 \text{ cm}^2$

$\Rightarrow 2A_s = 2(9.9)$

$= 19.8 \text{ cm}^2$

$A_D = 6.6 \times 2$

$= 13.2 \text{ cm}^2$

$A_E = 5 \times 2$

$= 10 \text{ cm}^2$

$A_F = 4 \times 2$

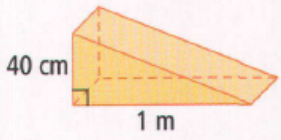
$= 8 \text{ cm}^2$

Total surface area $= 19.8 + 13.2 + 10 + 8$

$= 51 \text{ cm}^2$

Example 2: Use Surface Area and Convert Units

Gary has 2 m^2 of plywood and wants to make a small skateboard ramp. If he makes each right triangular face 1 m long and 40 cm high, how much plywood is left for the three rectangular faces?



Convert 40 cm → m
$= 40 \div 100$
$= 0.4\text{m}$

$\text{Area}_\Delta = \frac{1}{2} \times b \times h$
$= \frac{1}{2} \times 1 \times 0.4$
$= 0.2\text{m}^2$

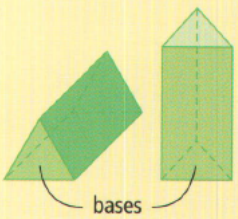
$\Rightarrow 2\,\Delta s = 2(0.2)$
$= 0.4\text{m}^2$

Plywood = $\Delta s + \square s$
$2 = 0.4 + x$
$2 - 0.4 = x$
$1.6 = x$

$\Rightarrow$ Gary has 1.6m^2 of plywood for the rectangular faces.

Key Ideas

- The surface area of a triangular prism is the sum of the areas of its faces.
- A triangular prism has two congruent triangular faces and three rectangular faces. The two triangular faces are often called the bases, even though they may not be horizontal.



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