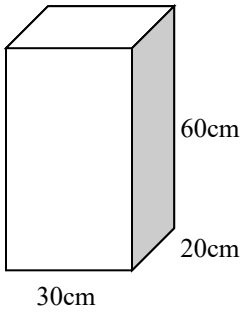
Surface Area

Demo: Packing Explorer (smart board)

The key to determining surface area is being able to identify all the faces of the shape and total the appropriate areas.

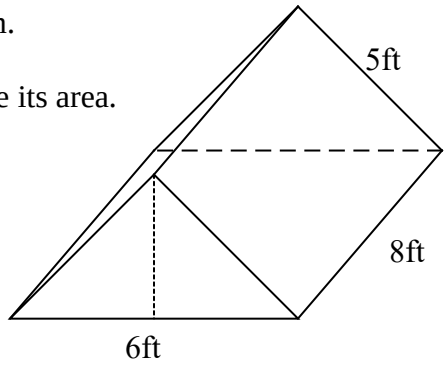
Example 1: Determine the surface area of the following box.



$A_{front} = l \times w$ $A_{side} = l \times w$ $A_{top} = l \times w$
$= 30 \times 60$ $= 20 \times 60$ $= 30 \times 20$
$= 1800$ $= 1200$ $= 600$

$SA = 2(1800) + 2(1200) + 2(600)$
$SA = 3600 + 2400 + 1200$
$SA = 7200$

Example 2: Determine the surface area of the prism.



First, we need the height of the triangle to determine its area.

$a^2 + b^2 = c^2$
$3^2 + h^2 = 5^2$
$h^2 = 25 - 9$
$h^2 = 16$
$h = 4$

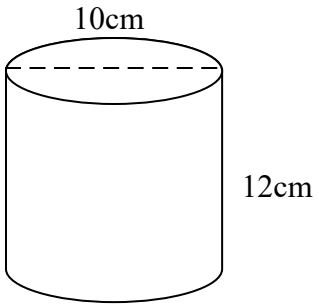
$A_{front} = \frac{bh}{2}$
$= \frac{(6)(4)}{2} = \mathbf{12}$

$A_{side} = l \times w$
$= 8 \times 5$
$= 40$

$A_{bottom} = l \times w$
$= 8 \times 6$
$= 48$

$SA = 2(12) + 2(40) + 48$
$SA = 24 + 80 + 48$
$SA = 152$

Example 3: Determine the surface area of the tin.

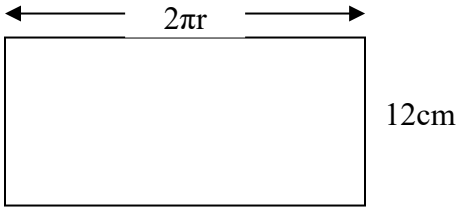


For the top and bottom, we have circles, so:

$A_{top} = \pi r^2$
$= \pi (5)^2$
$= 78.54$

For the rest of the tin, imagine peeling a label off a soup tin.

The width of the label is the same as the height of the can. The length of the label is the distance around the outside of the can – that is, the perimeter of the circle.



$A_{label} = l \times w$
$= (2\pi r)(h)$
$= 2\pi (5)(12)$
$= 376.99$

$SA = 2(78.54) + 376.99 = 534.07$ cm²