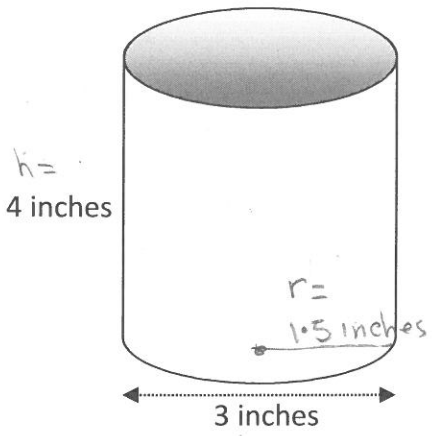
Example 3: Surface Area with Missing Pieces

Find the surface area of this container that has a bottom, but no lid:



top

Surface area of container = side + bottom

$2\pi rh + \pi r^2$

surface area of side $= 2\pi rh$

$= 2 \times \pi \times 1.5'' \times 4''$

$= 37.7 \text{ inches}^2$

surface area of bottom $= \pi r^2$

$= \pi \times (1.5)^2$

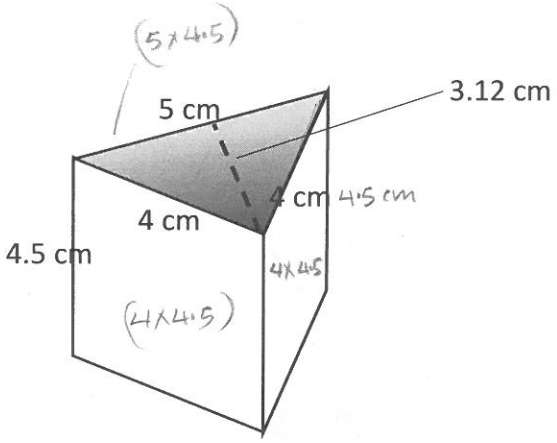
$= 7.1 \text{ inches}^2$

Surface Area of container $= 37.7 \text{in}^2 + 7.1 \text{in}^2$

$= 44.8 \text{ in}^2$

Example 4

Calculate the surface area of the following box used as a mold to make triangular chocolate treats. It has a bottom, but no top. The peak of the end triangle is 3.12 cm from the 5 cm base.



(A) Surface Area = Area of 3 sides + Area of the bottom

(1) Area of 3 sides (rectangle) $= 2(4.5\text{cm} \times 4\text{cm}) + (5\text{cm} \times 4.5\text{cm})$

$= 36\text{cm}^2 + 22.5\text{cm}^2$

Area of 3 sides $= 58.5\text{ cm}^2$

(2) Area of Bottom $= 4.5\text{cm} \times 5\text{cm}$

$= 22.5\text{cm}^2$

Total surface Area $= 58.5\text{cm}^2 + 22.5\text{cm}^2$

$= 81\text{cm}^2$