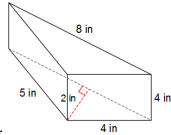


Problem of the Day: Find the total surface area of the figure below.



Plan for the Day: Collect surface area notes
 Notes on surface area of a cylinder
 More practice with surface area
 Objective: We will be able to find the surface area of a cylinder.
 Today is National Color Day and National Nut Day!!

Cylinders have the same basic formula for the lateral surface area as a prism. $S = Ph$

What do we call the perimeter of a circle?
Circumference

Lateral Surface Area of a Cylinder-

$L.S.A. = Ch$

where C is the circumference of the base and h is the height of the cylinder

$C = \pi d$, so we can rewrite it as $L.S.A. = \pi dh$.

Since $d = 2r$, then we can rewrite it as $L.S.A. = 2\pi rh$.

Example 1: Find the lateral surface area for a can of green beans.

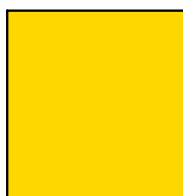
$LSA = 2\pi rh$
 $2 \cdot \pi \cdot 2.5$
 20π
 $LSA = 62.8 \text{ in}^2$



Example 2:

Julia is rolling coins to take to the bank. She ran out of the wrappers for the coins, so she wants to make her own. Help Julia find the surface area of a roll of quarters if the diameter is 2.5 cm and the height is 7.5 cm.

$LSA = 2\pi rh$
 $2 \cdot \pi \cdot 1.25 \cdot 7.5$
 $LSA = 58.9 \text{ cm}^2$



Surface Area of a Cylinder-

sum of all the sides including the lateral area and bases

$S.A. = L.S.A. + 2B$

For a cylinder, the bases are circles so the true formula is

$S.A. = 2\pi rh + 2\pi r^2$

Example 3: Find the surface area of soda can that is a cylinder if the soda can has a diameter of 4 inches and a height of 8 inches.



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

$r = 2$

$$2\pi \cdot 2 \cdot 8 + 2\pi \cdot 2^2$$

$$32\pi + 8\pi$$

$$40\pi$$

$$SA = 125.6 \text{ in}^2$$

Example 4: A roll of wrapping paper is covered in plastic wrap to prevent the paper from ripping. How much plastic is needed to cover a roll that is 36 inches long and has a diameter of 1.5 inches?



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

$r = .75$

$$2 \cdot \pi \cdot .75 \cdot 36 + 2 \cdot \pi \cdot .75^2$$

$$V = 173.1 \text{ in}^2$$