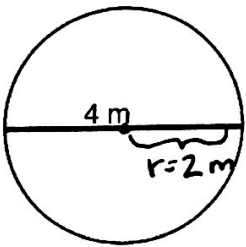


Lesson 8-8 Continued
Surface Area of Cylinders

How do you think we could find the surface area of a cylinder?

Review:

Find the circumference and area of the circle below.



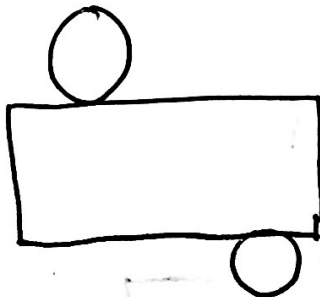
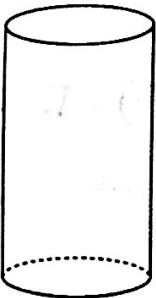
Circumference: πd

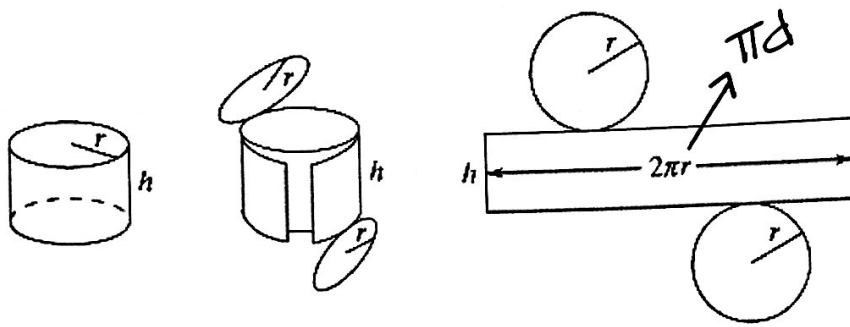
$$\pi(4) = \boxed{12.56 \text{ m}}$$

Area: πr^2

$$\pi(2^2) = \pi(4) = \boxed{12.56 \text{ m}^2}$$

If you cut up a cylinder, what shapes would you get? What would the net look like?





You can use a net of a cylinder to find its surface area.

EXAMPLE:

Crafts You plan to make a custom birthday present for your sister. The first step is to cover a coffee can with construction paper. How much construction paper do you need?

Step 1 Draw a net.

Step 2 Find the area of one circle.

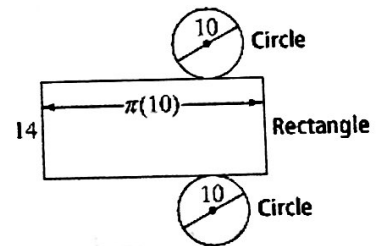
$$\begin{aligned}
 A &= \pi r^2 \\
 &= \pi(5)^2 \\
 &= \pi(25) \\
 &\approx 78.54 \text{ cm}^2
 \end{aligned}$$

Step 3 Find the area of the rectangle.

$$\begin{aligned}
 (\pi d)h &= \pi(10)(14) \\
 &= 140\pi \\
 &\approx 439.82 \text{ cm}^2
 \end{aligned}$$

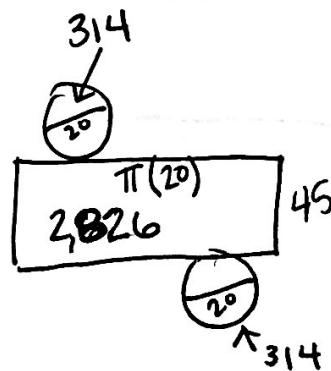
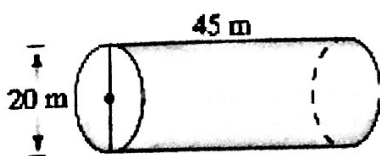
Step 4 Add the areas of the two circles and the rectangle.

$$\begin{aligned}
 \text{Surface area} &= 78.54 + 78.54 + 439.82 \\
 &= 596.9 \text{ cm}^2
 \end{aligned}$$



The amount of construction paper needed is about 597 cm².

Let's Try It!



$$\begin{aligned}
 O &= \pi r^2 \\
 &= \pi(10^2) = \pi(100) \\
 &= 314 \text{ m}^2
 \end{aligned}$$

$$\begin{aligned}
 \square &= l \times w \\
 &= \pi(20) \times 45 \\
 &= 62.8 \times 45 \\
 &= 2,826 \text{ m}^2
 \end{aligned}$$

$$314 + 314 + 2826 = \boxed{3,454 \text{ m}^2}$$