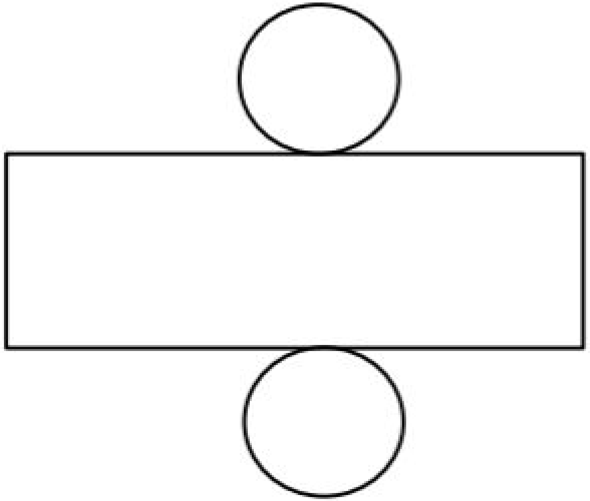
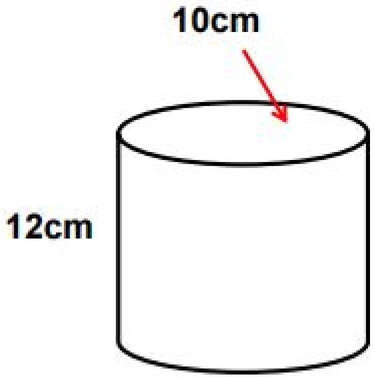
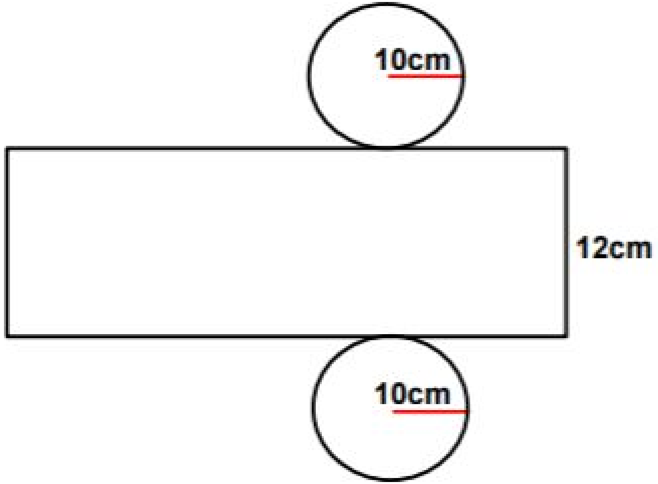
Surface Area of Cylinders

Net of a Cylinder

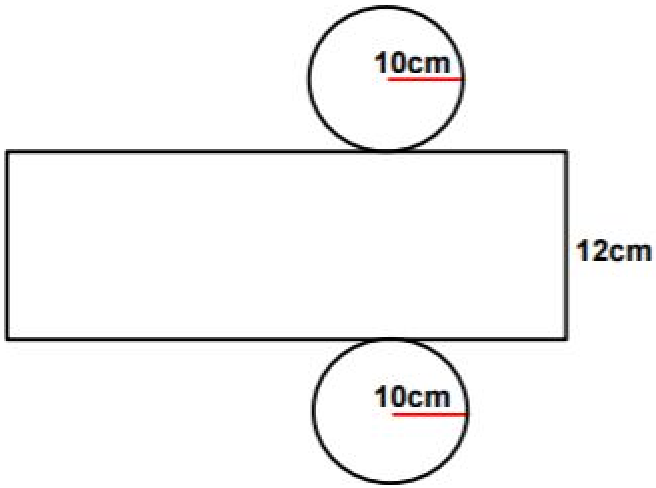



10cm
12cm


10cm
12cm
10cm

Example 1

Let's actually solve for the area of the Cylinder:



To get the length of the rectangle we need to do some calculations. The rectangle wraps around the circle. So the length is the same as the circumference of the circle. We will use the formula $C = \pi r$ in order to determine the length.

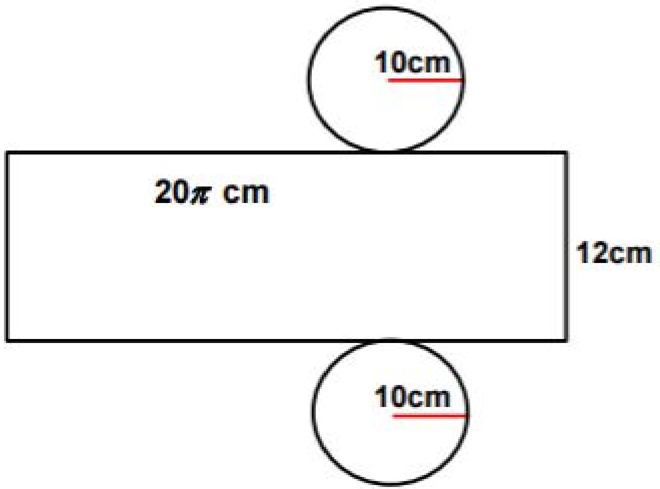
$$C = 2\pi r$$

$$C = 2\pi\ (10\text{cm})$$

$$C = 20\pi\ \text{cm}$$

Example - Continued

We can now add this dimension to our diagram.



Example - Continued

Both circles are exactly the same. In other words, the circles are congruent. So we can calculate the area of one of them and then double it.

$$A = \pi r^2$$

$$A = \pi(10cm)^2$$

$$A = 100\pi cm^2$$

Next we have the rectangle.

$$Area = length \times width$$

$$Area = (20\pi cm)(12cm)$$

$$Area = 240\pi cm^2$$

Example - Continued

Finally, we will add the area of all the pieces to get the total surface area.

$$200\pi \text{cm}^2 + 240\pi \text{cm}^2$$

When we add these together, you can think of π the same way you would if it said 200x + 240x. We would combine the coefficients (the numbers in front) and keep the variable the same.

$$(200 + 240)\pi \text{cm}^2 = 440\pi \text{cm}^2$$

Example 2

Draw the net and find the area: