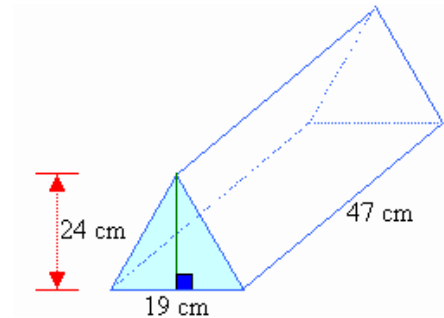


Warm Up: Calculate the volume and surface area.

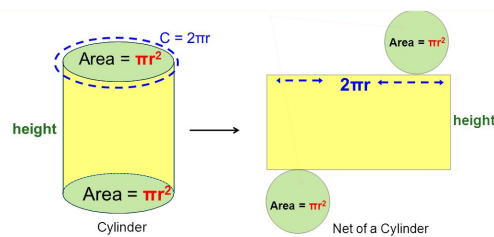


A cylinder is a three dimensional solid with identical parallel circular bases. The lateral surface is curved and extends from one base to the other base.

The volume of a cylinder is the same as a prism:

$$V = A_{\text{base}} \times \text{height}$$

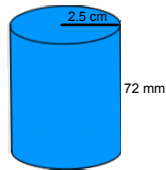
or $V =$



The net of a cylinder shows two circular bases and the lateral surface unfolds to reveal a simple rectangle. So, the surface area of a cylinder is:

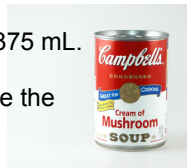
The height of the rectangle is the height of the prism, while the length of the rectangle is the circumference of the circular base. Therefore,

Example 1: Calculate the volume and surface area of the following cylinder.



Example 2: A can of soup has a volume of 375 mL.

- a) If the height of the can is 12 cm determine the radius of the can. (Note: 1 mL = 1cm³)



- b) How much paper is required to make the soup label?

Example 3: A roll of toilet paper has a height and diameter of 11.2cm. If the inner cardboard roll is 4cm in diameter, what is the volume of toilet paper on the roll?



Example 4: How much plastic would be required to package 12 toilet paper rolls from example 3, if they are arranged in a 2 by 3 by 2 orientation?