

Name: Key  
Date: \_\_\_\_\_

Mr. Johnson  
Math 8

### Lesson 4.7 – Surface Area of a Right Cylinder

Recall:

How do you calculate the area of circle?

$$A_0 = \pi r^2$$

How do you calculate the <sup>circumference</sup> ~~area~~ of a circle?

$$C = \pi d \quad \text{or} \quad C = 2\pi r$$

What is pi? (not the one we eat!!!!)

Pi is a ratio of any circle's circumference to its diameter ( $\pi = \frac{C}{d}$ )

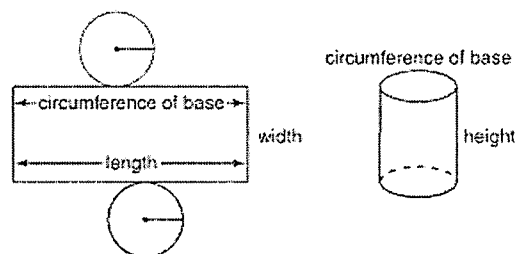
Notes:

A cylinder is an object with two parallel, congruent, circular bases. A cylinder can be broken down into one rectangle and two circles.

The surface area of a cylinder is:

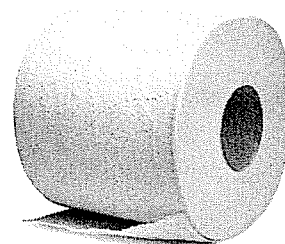
$$SA = (2 \times \text{area of one circular base}) + (\text{area of rectangle})$$

~~SA = 2\pi r^2 + 2\pi r h~~



But what if a cylinder does not have a base, only a curved area like a toilet paper roll?

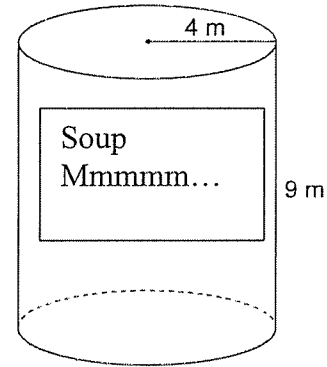
$$SA = \text{area of rectangle} \\ = (\text{Circumference of base} \times \text{width})$$



Examples:

1. Mr. Johnson loves his soup. Nothing better on a cold winters day! What is the surface <sup>area</sup> of this tin can of soup? (answer to one decimal place, no drooling!)

$$\begin{aligned}
 SA &= (2 \times \text{Area of circle}) + (\text{Area of rectangle}) \\
 &= 2\pi(4)^2 + [2\pi(4) \times 9] \\
 &= 32\pi + 72\pi \\
 &= 104\pi \\
 &\approx 326.73
 \end{aligned}$$



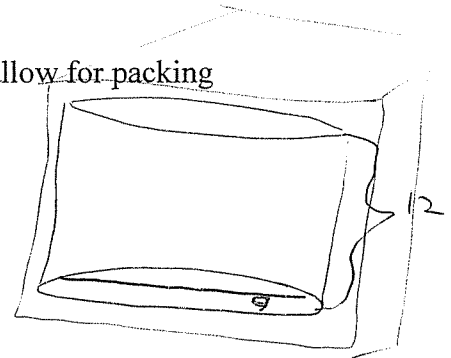
2. A cylindrical candle has diameter 9 cm and height 12 cm.

It is placed in a cylindrical box.

There is a space of 0.5 cm between the candle and the box to allow for packing material.

- a) What is the height of the cylindrical box?

$$\begin{aligned}
 \text{box height} &= 12 + 0.5 + 0.5 \\
 &= 13 \text{ cm}
 \end{aligned}$$

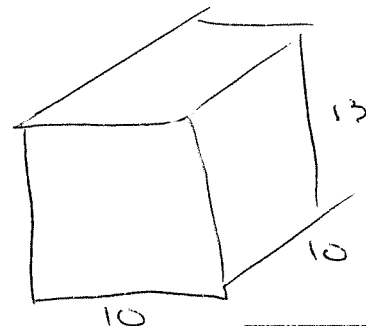


- b) What is the radius of the cylindrical box?

$$\begin{aligned}
 \text{radius of box} &= \frac{9}{2} + 0.5 + \cancel{0.5} \\
 &= \cancel{5} \\
 &= 5 \text{ cm}
 \end{aligned}$$

- c) What is the surface area of the box?

$$SA =$$



Assignment:

Pg. 212-214  
#s 2-8, 12, 16