

NAME: \_\_\_\_\_

DATE: \_\_\_\_\_

SURFACE AREA & VOLUME

PERIOD: \_\_\_\_\_

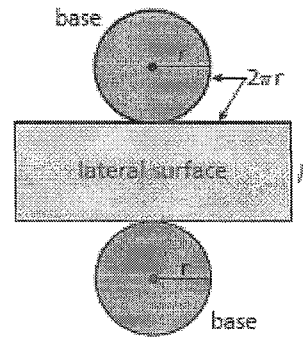
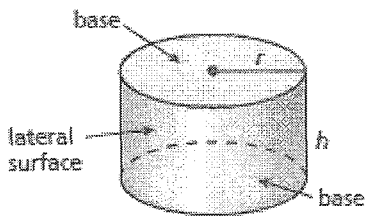
## How Do You Find Surface Area of Cylinders?

### (Topic #3)

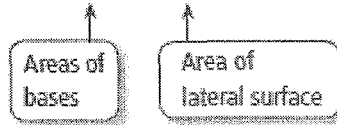
Imagine peeling off a label that wraps around the full height of a cylindrical can with radius  $r$  and height  $h$ . When you lay the label flat it will be a rectangle. The width of the rectangle is the height,  $h$ , of the can. Because the label wraps once around the circular can, the length of the other sides of the rectangle is equal to the circumference of the circular base which is  $2\pi r$ . Thus, the area of the rectangular label, called the **lateral surface area of the cylinder**, is the product of  $2\pi$  and  $h$ :

$$\text{Lateral Surface Area of a Cylinder} = 2\pi r h$$

The surface area of a cylinder with radius  $r$  and height  $h$  is the sum of the areas of its two circular bases, each of which has an area of  $\pi r^2$ , and its lateral surface area:

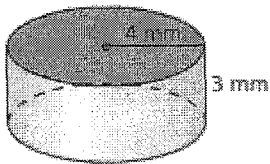


$$\text{Surface Area of a Cylinder} = 2\pi r^2 + 2\pi r h$$

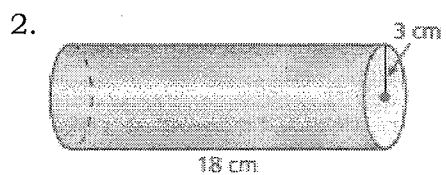
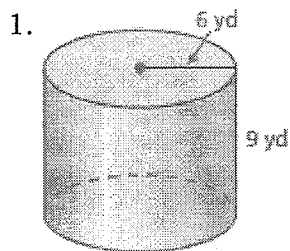


### **EXAMPLE 1:** Finding the Surface Area of a Cylinder

Find the surface area of the cylinder. Round your answer to the *nearest tenth*.

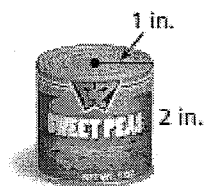


**PRACTICE:** Find the surface area of the cylinder. Round your answer to the nearest tenth.



**EXAMPLE 2:** Finding Surface Area

How much paper is used for the label on the can of peas?



NAME: \_\_\_\_\_

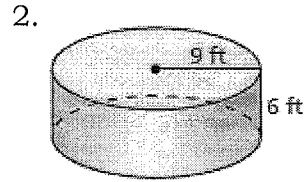
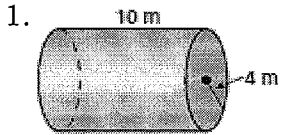
DATE: \_\_\_\_\_

SURFACE AREA & VOLUME

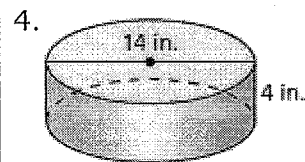
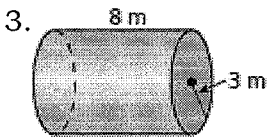
PERIOD: \_\_\_\_\_

**HOMEWORK – (Topic #3)**  
**Finding Surface Area of a Cylinder**

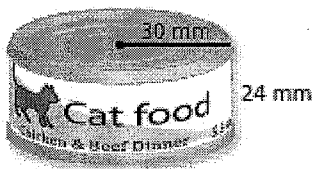
**Find the surface area of the cylinder. Round your answer to the *nearest tenth*.**



**Find the lateral surface area of the cylinder. Round your answer to the *nearest tenth*.**



5. How much paper is used in the label for the can of cat food? Round your answer to the nearest *whole number*.



NAME: \_\_\_\_\_

Key

SURFACE AREA &amp; VOLUME

DATE: \_\_\_\_\_

PERIOD: \_\_\_\_\_

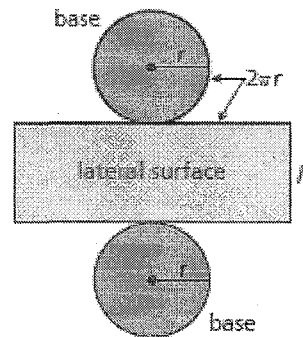
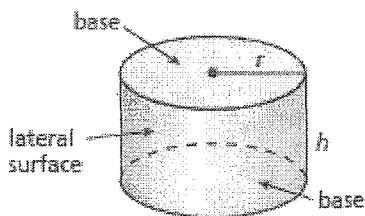
## How Do You Find Surface Area of Cylinders?

### (Topic #3)

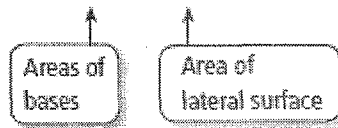
Imagine peeling off a label that wraps around the full height of a cylindrical can with radius  $r$  and height  $h$ . When you lay the label flat it will be a rectangle. The width of the rectangle is the height,  $h$ , of the can. Because the label wraps once around the circular can, the length of the other sides of the rectangle is equal to the circumference of the circular base which is  $2\pi r$ . Thus, the area of the rectangular label, called the **lateral surface area of the cylinder**, is the product of  $2\pi$  and  $h$ :

$$\text{Lateral Surface Area of a Cylinder} = 2\pi r h$$

The surface area of a cylinder with radius  $r$  and height  $h$  is the sum of the areas of its two circular bases, each of which has an area of  $\pi r^2$ , and its lateral surface area:

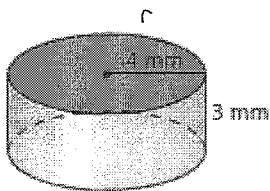


$$\text{Surface Area of a Cylinder} = 2\pi r^2 + 2\pi r h$$



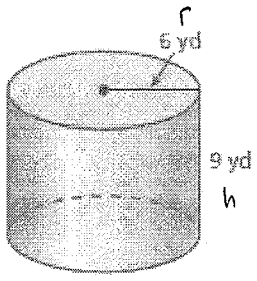
### **EXAMPLE 1:** Finding the Surface Area of a Cylinder

Find the surface area of the cylinder. Round your answer to the *nearest tenth*.



$$\begin{aligned} SA &= 2\pi r^2 + 2\pi r h \\ &= 2\pi (4)^2 + 2\pi (4)(3) \\ &= 32\pi + 24\pi \\ &= 56\pi \\ &= 175.9 \text{ mm}^2 \end{aligned}$$

**PRACTICE:** Find the surface area of the cylinder. Round your answer to the nearest tenth.

1. 

Base

$$A = 2\pi r^2$$

$$A = 2\pi(6)^2$$

$$A = 226.2$$


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Lateral Surface

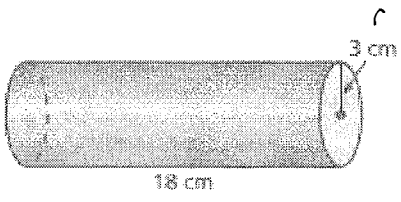
$$A = 2\pi r h$$

$$A = 2\pi(6)(9)$$

$$A = 339.3$$
  

$$SA = 226.2 + 339.3$$

$$= 565.5 \text{ yd}^2$$

2. 

Base

$$A = 2\pi r^2$$

$$A = 2\pi(3)^2$$

$$A = 56.5$$
  

Lateral Surface

$$A = 2\pi r h$$

$$A = 2\pi(3)(18)$$

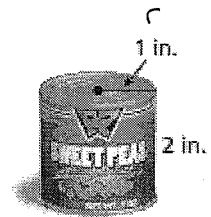
$$A = 339.3$$
  

$$SA = 56.5 + 339.3$$

$$= 395.8 \text{ cm}^2$$

**EXAMPLE 2: Finding Surface Area**

How much paper is used for the label on the can of peas?



$$SA = 2\pi r h$$

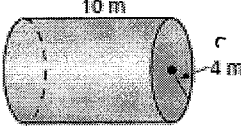
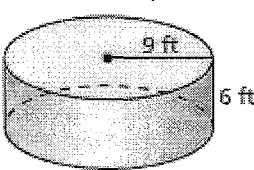
$$= 2\pi(1)(2)$$

$$= 4\pi$$

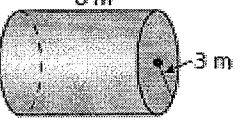
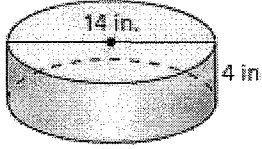
$$= 12.6 \text{ in}^2$$

**HOMEWORK – (Topic #3)**  
**Finding Surface Area of a Cylinder**

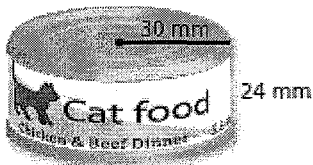
Find the surface area of the cylinder. Round your answer to the *nearest tenth*.

<p>1. </p> <p style="text-align: center;"><u>Base</u></p> $A = 2\pi r^2$ $A = 2\pi(4)^2$ $A = 100.5$ <p style="text-align: center;"><u>Lateral</u></p> $A = 2\pi r h$ $A = 2\pi(4)(10)$ $A = 251.3$ <p style="text-align: right;"><math>SA = 100.5 + 251.3</math>  <math>SA = 351.8 \text{ m}^2</math></p>	<p>2. </p> <p style="text-align: center;"><u>Base</u></p> $A = 2\pi r^2$ $A = 2\pi(9)^2$ $A = 508.9$ <p style="text-align: center;"><u>Lateral</u></p> $A = 2\pi r h$ $A = 2\pi(9)(6)$ $A = 339.3$ <p style="text-align: right;"><math>SA = 508.9 + 339.3</math>  <math>SA = 848.2 \text{ ft}^2</math></p>
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Find the lateral surface area of the cylinder. Round your answer to the *nearest tenth*.

<p>3. </p> $SA = 2\pi r h$ $= 2\pi(3)(8)$ $= 48\pi$ $= 150.8 \text{ m}^2$	<p>4. </p> <p style="text-align: center;"><math>r = 7</math></p> $SA = 2\pi r h$ $= 2\pi(7)(4)$ $= 56\pi$ $= 175.9 \text{ in}^2$
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5. How much paper is used in the label for the can of cat food? Round your answer to the nearest *whole number*.



$$SA = 2\pi r h$$

$$= 2\pi(30)(24)$$

$$= 4523.893421\dots$$

$$= 4524 \text{ mm}^2$$