S.A =

$2\pi rh$

$+ 2\pi r^2$

You need to find the lateral area. The radius of the circular fence is 35 feet. The height is 2 feet.

$L.A. = 2\pi rh$ Lateral area of a cylinder

$L.A. = 2\pi(35)(2)$ Replace r with 35 and h with 2.

$L.A. \approx 439.8$ Simplify.

So, about 439.8 square feet of material is needed to make the fence.

Got It? **Do these problems to find out.**

$2(3.14)(5.1)(2.9)$

c. Find the area of the label of a can of tuna with a radius of 5.1 centimeters and a height of 2.9 centimeters. Round to the nearest tenth.

d. Find the total surface area of a cylindrical candle with a diameter of 4 inches and a height of 2.5 inches. Round to the nearest tenth.

$r = 2$ $2(3.14)(2)(2.5) + 2(3.14)(2)^2$

c. **92.9 cm²**

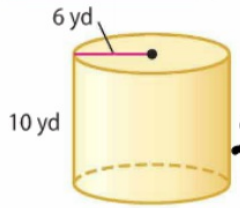
d. **56.5 in²**

Find the total surface area of each cylinder. Round to the nearest tenth. (Example 1)

$S.A = 2\pi rh + 2\pi r^2$

1. **603.2 yd²**

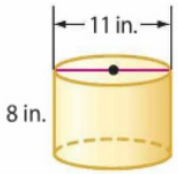
Show your work.



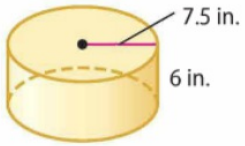
$2(3.14)(6)(10) = 376.8$ L.A

$2(3.14)(6)^2 = 226.08$ 2 bases

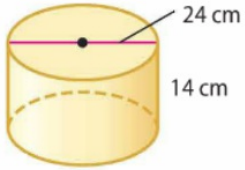
2. **466.5 in²**

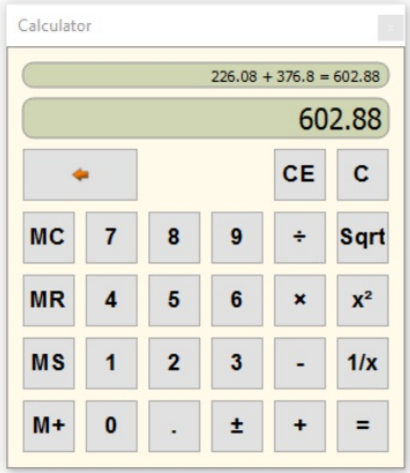


3. **636.2 in²**



4. **1960.4 cm²**



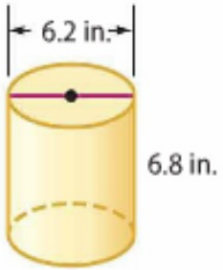


5. Find the total surface area of a water tank with a height of 10 meters and a diameter of 10 meters. Round to the nearest tenth. (Example 1) **471.2 m²**

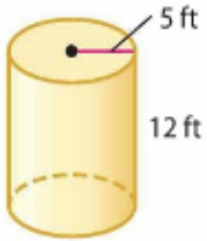
5. Find the total surface area of a water tank with a height of 10 meters and a diameter of 10 meters. Round to the nearest tenth. (Example 1) **471.2 m^2**

Find the lateral area of each cylinder. Round to the nearest tenth. (Example 2)

6. **132.4 in^2**



7. **377.0 ft^2**



8. Find the area of the label of a cylindrical potato chip container with a radius of 3.1 inches and a height of 9.2 inches. Round to the nearest tenth. (Example 2)

179.2 in^2

9. **Building on the Essential Question** How is a calculation affected if you round π to 3.14 or use the π key on your calculator? Explain.

Sample answer: Calculating with more decimal places produces an answer closer to the exact value.

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Independent Practice

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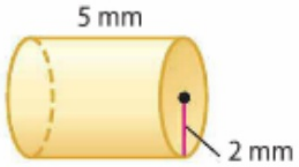
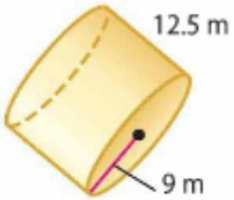
Find the total surface area of each cylinder. Round to the nearest tenth. (Example 1)

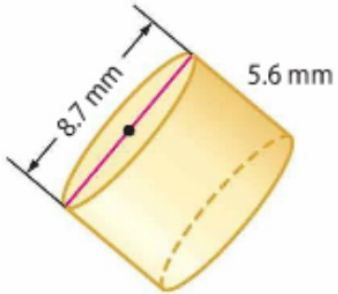
1. $88.0\ mm^2$



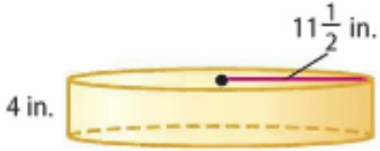
2. $1{,}215.8\ m^2$



3. $272.0\ mm^2$



4. $1{,}120.0\ in^2$

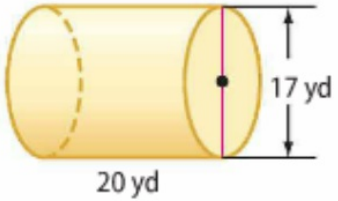


5. A cylindrical candle has a diameter of 4 inches and a height of 7 inches. To the nearest tenth, what is the total surface area of the candle? (Example 1) $113.1\ in^2$

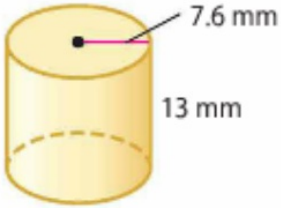
6. Find the total surface area of an unsharpened cylindrical pencil that has a radius of 0.5 centimeter and a height of 19 centimeters. Round to the nearest tenth. (Example 1) **61.3 cm^2**

Find the lateral area of each cylinder. Round to the nearest tenth. (Example 2)

7. **1,068.1 yd^2**



8. **620.8 mm^2**



9 Find the lateral area of a cylindrical copper pipe that has a diameter of 6.4 inches and a height of 12 inches. Round to the nearest tenth.

(Example 2) **241.3 in^2**

10. CCSS **Model with Mathematics** Refer to the graphic novel frame below.

a. What is the least amount of paper that will be needed to wrap one candle with no overlap? **56.9 in^2**

b. How many square feet of wrapping paper will be needed to wrap all 70 candles? **27.7 ft^2**

H.O.T. Problems Higher Order Thinking

11. **Persevere with Problems** If the height of a cylinder is doubled, will its surface area also double? Explain your reasoning.

No, the surface area of the side of the cylinder will double, but the area of the bases will not.

12. **Reason Inductively** Which has a greater surface area: a cylinder with radius 6 centimeters and height 3 centimeters or a cylinder with radius 3 centimeters and height 6 centimeters? Explain your reasoning.

A cylinder with radius 6 cm and height 3 cm has a greater surface area than a cylinder with height 6 cm and radius 3 cm; Sample answer: The first cylinder has a surface area of 339.3 cm^2 while the second cylinder has a surface area of 169.6 cm^2.

13. **Reason Inductively** A baker is icing a cylindrical cake with radius r and height h. The baker will ice the top and sides of the cake. Write an equation giving the total area A that the baker will ice. Explain why your equation is not the same as the formula for the total surface area of a cylinder.

$A = 2\pi rh + \pi r^2$; Sample answer: The baker will not ice the bottom of the cake, so you only need to include the area of one of the bases in the equation.