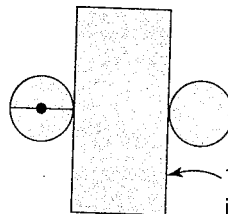


Key Ideas

- The surface area of a cylinder is the sum of the areas of its faces.
- A net of a cylinder is made up of one rectangle and two circles.
- To find one of the dimensions of the rectangle, calculate the circumference of the circle.



The length of this side is the circumference of the circle $C = \pi \times d$ or $C = 2 \times \pi \times r$

Communicate the Ideas

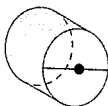
1. What are the similarities and differences between finding the surface area of a prism and finding the surface area of a cylinder?
2. Explain why you need to find the circumference of a circle to find the surface area of a cylinder.

Check Your Understanding

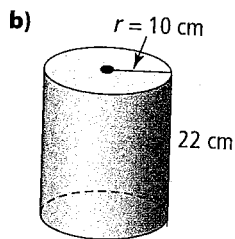
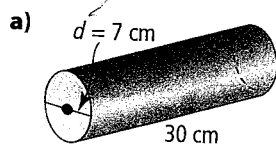
Practise

For help with #3 to #7, refer to Examples 1 and 2 on pages 183–185.

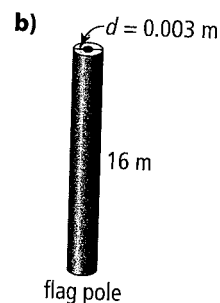
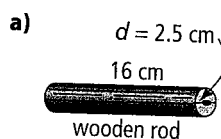
3. a) Draw a net for this cylinder.
b) Sketch a different net for this cylinder.



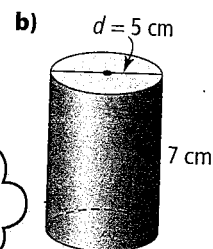
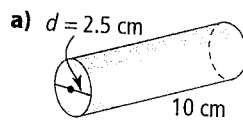
4. Estimate the surface area of each cylinder. Then, calculate each surface area to the nearest tenth of a square centimetre.



5. Find the surface area of each object to the nearest tenth of a square unit.



6. Use the formula $S.A. = 2 \times (\pi \times r^2) + (\pi \times d \times h)$ to calculate the surface area of each object. Give each answer to the nearest hundredth of a square unit.

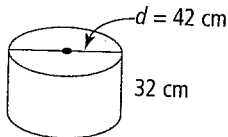


You can simplify the formula:
 $S.A. = 2 \times (\pi \times r^2) + (\pi \times d \times h)$
 $= 2\pi r^2 + \pi dh$

7. Do you prefer to find the surface area of a cylinder by using the sum of the area of each face or by using a formula? Give at least two reasons for your choice.

Apply

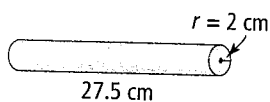
8. Anu wants to re-cover the cylindrical stool in his bedroom. How much material does he need if there is no overlap and he does not cover the bottom of the stool?



9. Kaitlyn and Hakim each bought a tube of candy. Both containers cost the same amount. Which container required more plastic to make?



10. Paper towel is rolled around a cardboard tube. Calculate the outside surface area of the tube.

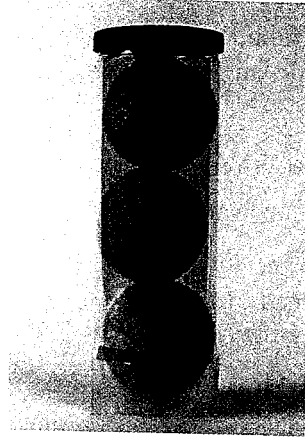


Did You Know?

Each person produces about 1.59 kg of trash each day. Most of this is paper products.

Extend

11. If each tennis ball has a diameter of 7 cm, calculate the amount of material needed to make a can that holds three tennis balls.



12. Coins can be stored in a plastic wrapper similar to a cylinder. A roll of dimes contains 50 coins. Each dime has a diameter of 17.5 mm and a thickness of 1 mm. Calculate the minimum surface area of the plastic wrapper.

13. A paint roller in the shape of a cylinder with a radius of 4 cm and a length of 21 cm is rolled vertically on a wall.

- What is the length and width of the wet path after ten complete rolls?
- What area does the paint cover?

Did You Know?

Douglas J. Cardinal, one of the world's most acclaimed architects, uses his European, Blackfoot, and Ojibwa roots when designing buildings. He is known for his design of The Canadian Museum of Civilization in Gatineau, Québec, as well as a number of buildings in Western Canada, such as Telus World of Science in Edmonton and First Nations University of Canada in Regina.

MATH LINK

For the cylindrical building you created in the Math Link on page 175, how much material do you need to cover the exterior walls and the roof of the building?