

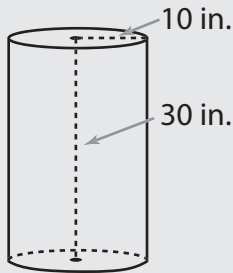
17

Circles & Cylinders

SOL 7.8

Example

Which is the *best estimate* of the surface area of the cylinder?

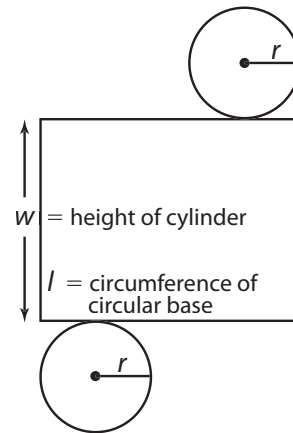


- A 300 in.²
 B 1,050 in.²
 C 2,500 in.²
 D 10,050 in.²

Thinking It Through

Solve — *Simplify It* Break the cylinder down into the shapes that make it up and find their area.

Look at the drawing of the cylinder and compare it with the net shown below.



$$\begin{aligned} \text{Surface area of cylinder} &= \text{area of 2 circles} + \text{area of rectangle} \\ &= 2 \times \pi r^2 + l \times w \end{aligned}$$

Substitute circumference for length and height for width:

$$\begin{aligned} &= 2 \times \pi r^2 + 2 \times \pi r \times h \\ &= 2 \times \pi \times 10^2 + 2 \times \pi \times 10 \times 30 \\ &= 200\pi + 600\pi \\ &= 800\pi \end{aligned}$$

And since $\pi \approx 3.14$, $800\pi \approx 800 \times 3.14 \approx 2,500$, *answer choice C*.

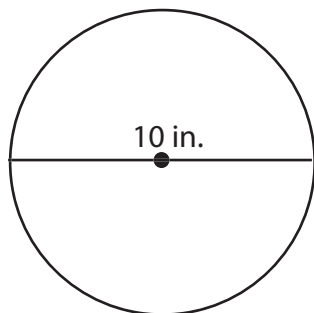
Review

- A **circle** is the set of all points the same distance from a fixed point. The distance all points on the circle are from this fixed point, or center of the circle, is the length of the **radius**. The **diameter** is a line segment connecting points on the circle and passing through the center. Its length is twice the length of the radius.
- Formula for finding the area of a circle: $A = \pi r^2$. Surface area of a cylinder: $2\pi r^2 + 2\pi rh$.
- $\pi \approx 3.14$, $\frac{22}{7}$, or $3\frac{1}{7}$. (The exact value of π is not known, but is approximated.)
- The **circumference** of a circle is the distance around it. It is the perimeter of the circle. Formula for finding the circumference of a circle: $C = 2\pi r$ when using the radius, or πd when using the diameter.

Circles & Cylinders

DIRECTIONS Read and solve each question. Then circle the letter of the best answer.

- 1 Which set of measurements shows the correct circumference C and area A for the circle below?



- A $C = 10\pi$, $A = 100\pi$
 B $C = 10\pi$, $A = 25\pi$
 C $C = 20\pi$, $A = 100\pi$
 D $C = 100\pi$, $A = 10\pi$



The diameter is shown. What would the radius be?

- 2 The net of a cylinder can be made from which figures?

- F 1 circle and 2 rectangles
 G 2 circles and 1 square
 H 1 rectangle and 2 circles
 J 2 rectangles and 2 circles

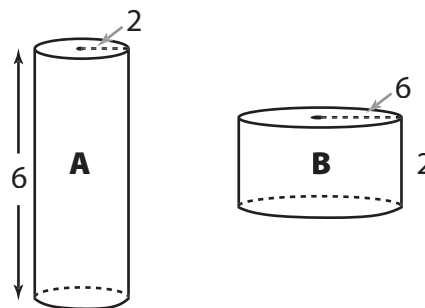
- 3 Look at the units shown below.

I	II	III	IV
cm	cm ²	in. ²	ft ³

Which units could *not* be used to describe the surface area of a cylinder?

- A I
 B II
 C II and III
 D I and IV

- 4 Which statement is true? (The figures are not drawn to scale.)



- F Cylinder A has 3 times the surface area of cylinder B.
 G The surface areas are the same.
 H Cylinder B has 3 times the surface area of cylinder A.
 J Cylinder A has twice surface area of cylinder B.