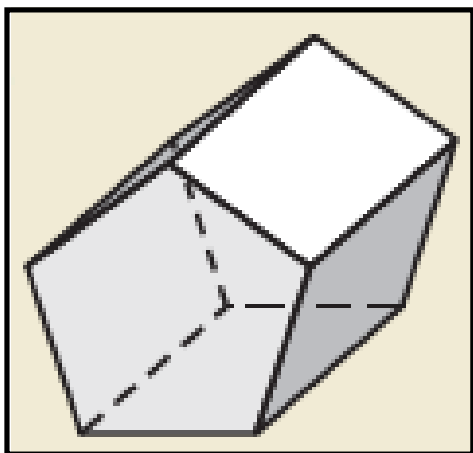


Bellwork
05/09/12

Find the number of faces, edges, and vertices.

1.



7 f.
15 e.
10 v.

$$7 + 10 = 15 + 2$$
$$17 = 17 \checkmark$$

Geometry
12.2 Surface Area of Prisms and Cylinders
Standard(s): 4

Vocabulary:

Prism: A polyhedron with two congruent faces (called bases) that lie in parallel planes.

Lateral Faces: Parallelograms formed by connecting the vertices of the bases.

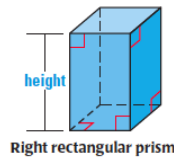
Lateral Edges: Segments connecting the vertices of the bases.

Surface Area: The sum of the areas of its faces.

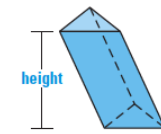
Lateral Area: The sum of the areas of the lateral faces.

Right Prism: Each lateral edge is perpendicular to both bases.

Oblique Prism: A prism with lateral edges that are not perpendicular to the bases.



Right rectangular prism



Oblique triangular prism

Cylinder: A solid with congruent circular bases that lie in parallel planes.

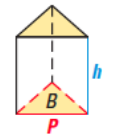
Right Cylinder: The segment joining the centers of the bases is perpendicular to the bases.

THEOREM*For Your Notebook***THEOREM 12.2** Surface Area of a Right Prism

The surface area S of a right prism is the sum of the **base areas** and **lateral area**:

$$S = 2B + Ph,$$

where B is the area of the base, P is the perimeter of a base, and h is the height.



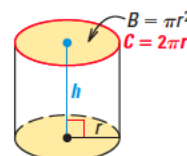
$$S = 2B + Ph$$

THEOREM*For Your Notebook***THEOREM 12.3** Surface Area of a Right Cylinder

The surface area S of a right cylinder is the sum of the **base areas** and the **lateral area**:

$$S = 2B + Ch = 2\pi r^2 + 2\pi rh,$$

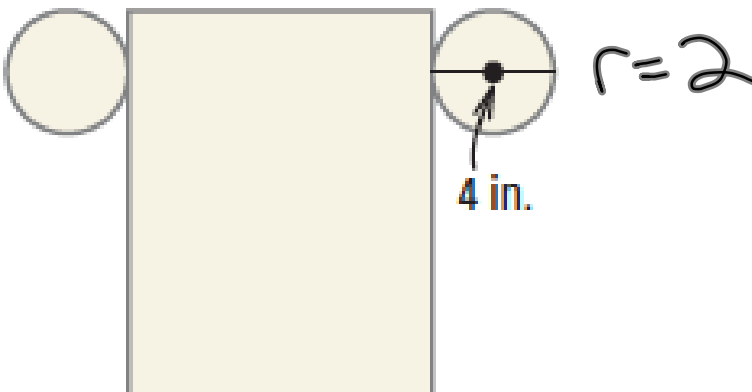
where B is the area of a base, C is the circumference of a base, r is the radius of a base, and h is the height.



$$S = 2B + Ch = 2\pi r^2 + 2\pi rh$$

Surface Area Using Net

Find the surface area of the solid formed by the net. Round the answer to the nearest hundredth.

$SA = 2B + Ch$


$B = r^2 \pi$
 $= 2^2 \pi$
 $= 4\pi$

$C = 2r\pi$
 $= 2(2)\pi$
 $= 4\pi$

$h = 10 \text{ in.}$

$$SA = 2(4\pi) + 4\pi(10)$$

$$= 8\pi + 40\pi$$

$$SA = 48\pi$$

$$SA = 150.8 \text{ in}^2$$

Surface Area of a Right Prism

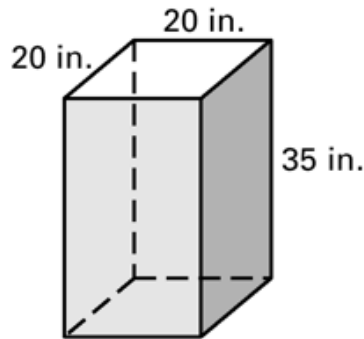
Find the surface area of the right prism. Round your answer to the nearest hundredth.

$$SA = 2B + Ph$$

$$\begin{aligned} B &= s^2 \\ &= 20^2 \\ &= 400 \end{aligned}$$

$$\begin{aligned} P &= 4(s) \\ &= 4(20) \\ &= 80 \end{aligned}$$

$$h = 35$$



$$\begin{aligned} SA &= 2(400) + 80(35) \\ &= 800 + 2800 \end{aligned}$$

$$SA = 3600 \text{ in}^2$$

$$SA = 2B + Ph$$

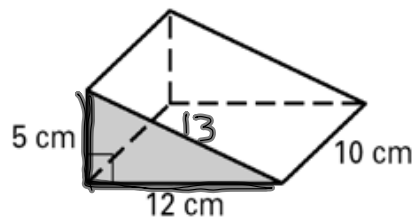
$$\begin{aligned} B &= \frac{1}{2}bh \\ &= \frac{1}{2}(12)(5) \\ &= 30 \end{aligned}$$

$$\begin{aligned} P &= 5 + 12 + 13 \\ &= 30 \end{aligned}$$

$$h = 10$$

$$SA = 2(30) + 30(10)$$

$$\begin{aligned} &= 60 + 300 \\ SA &= 360 \text{ cm}^2 \end{aligned}$$



$$\begin{aligned} h^2 &= 5^2 + 12^2 \\ h^2 &= 169 \\ h &= 13 \end{aligned}$$

Surface Area of a Right Cylinder

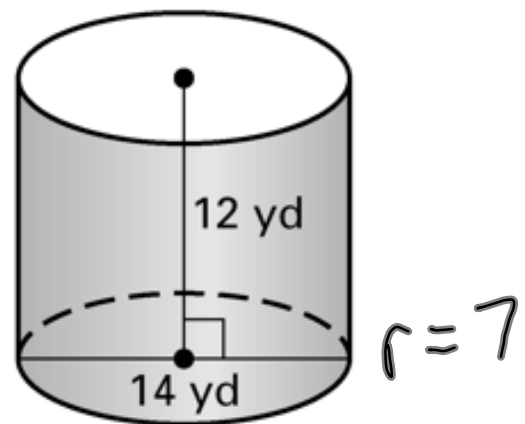
Find the surface area of the right cylinder. Round your answer to the nearest hundredth.

$$SA = 2B + Ch$$

$$\begin{aligned} B &= r^2 \pi \\ &= 7^2 \pi \\ &= 49\pi \end{aligned}$$

$$\begin{aligned} C &= 2r\pi \\ &= 2(7)\pi \\ &= 14\pi \end{aligned}$$

$$h = 12$$



$$\begin{aligned} SA &= 2(49\pi) + 14\pi(12) \\ &= 98\pi + 168\pi \\ &= 266\pi \end{aligned}$$

$$SA = 835.66 \text{ yd}^2$$

Solve for a Missing Value

Solve for x given the surface area. Round your answer to the nearest hundredth.

$$SA = 2B + CH$$

$$S = 326.73 \text{ cm}^2$$

$$B = r^2 \pi$$

$$= 4^2 \pi$$

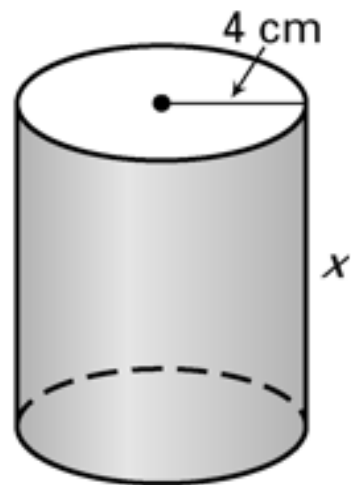
$$= 16\pi$$

$$C = 2r\pi$$

$$= 2(4)\pi$$

$$= 8\pi$$

$$h = x$$



$$326.73 = 2(16\pi) + 8\pi(x)$$

$$326.73 = 32\pi + 8\pi x$$

$$-32\pi$$

$$\frac{326.73 - 32\pi}{(8\pi)} = \frac{8\pi x}{8\pi}$$

$$x = 9 \text{ cm}$$

Homework Assignment

Pg. 806-807
#5-15 All

