

Surface Area



Rectangular Prism

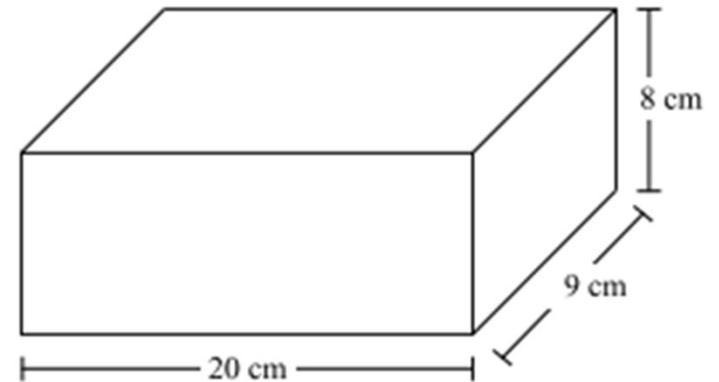
The surface area S.A. of a rectangular prism with base l , width w , and height h is the sum of the areas of its faces.

$$S.A. = 2lh + 2lw + 2hw$$



Practice Problem 1

- Find the surface area of the rectangular prism shown to the right.



$$S.A. = 2lw + 2lh + 2hw$$

$$S.A. = 2(20)(9) + 2(20)(8) + 2(8)(9)$$

$$S.A. = 360 + 320 + 144$$

$$S.A. = 824\text{cm}^2$$

Triangular Prism

- To find the surface area of a triangular prism, it is more efficient to find the area of each face and calculate the sum of all of the faces.

$$SA = 2 \left(\frac{bh}{2} \right) + \text{area of side 1} + \text{area of side 2} + \text{area of side 3}$$



Practice Problem 2

- Find the surface area of the triangular prism shown to the right.
- Find the area of each shape and add.

Area of the triangles

$$A = \frac{bh}{2}$$

$$A = \frac{12(16)}{2}$$

$$A = \frac{192}{2}$$

$$A = 96$$

$$96(2) = 192\text{cm}^2$$

Area of rectangle 1

$$A = bh$$

$$A = 20(10)$$

$$A = 200\text{ cm}^2$$

Area of rectangle 2

$$A = bh$$

$$A = 16(10)$$

$$A = 160\text{ cm}^2$$

Area of rectangle 3

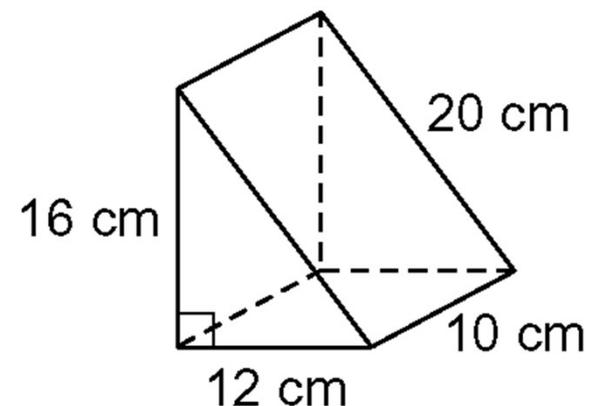
$$A = bh$$

$$A = 12(10)$$

$$A = 120\text{ cm}^2$$

$$SA = 192 + 200 + 160 + 120$$

$$SA = 672\text{cm}^2$$

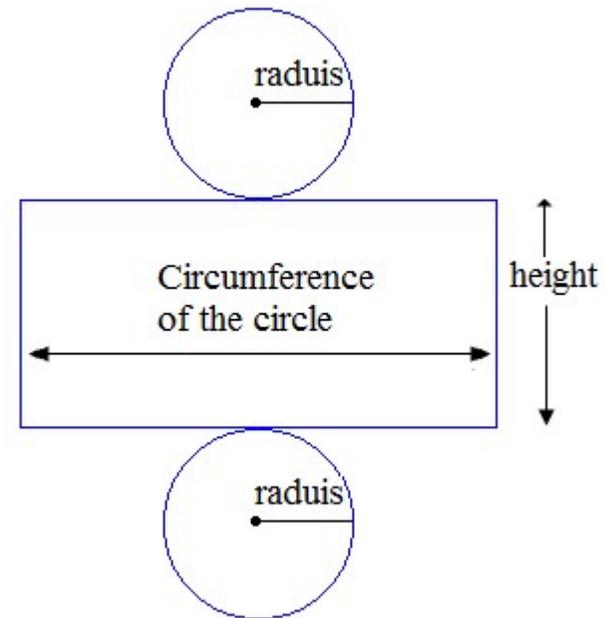


Surface Area of a Cylinder

- The surface area S.A. of a cylinder with height h and radius r is the area of the two bases plus the area of the curved surface (parallelogram).

Model	Net	Area
2 circular bases	2 congruent circles with radius r	$2\pi r^2$
1 curved surface	1 rectangle with width h and length $2\pi r$	$2\pi r(h)$

$$SA = 2\pi r^2 + 2\pi r(h)$$



Practice Problem

- Find the surface area of the cylinder. Round your answers to the nearest hundredth.

$$\begin{aligned}SA &= 2\pi r^2 + 2\pi r(h) \\SA &= 2\pi 6^2 + 2\pi 6(18) \\SA &= 2\pi(36) + 2\pi 6(18) \\SA &= 72\pi + 216\pi \\SA &= 226.19467 \dots + 678.5840 \dots \\SA &= 226.19 + 678.58 \\SA &= 904.77in^2\end{aligned}$$

