Wednesday, May 20, 2020

Sec 11-2: Surface Areas of Prisms and Cylinders

Space Figure: a 3-D figure

Polyhedron: A space figure whose surfaces are polygons

Prism: A polyhedron with two opposite surfaces that are congruent polygons (Bases)

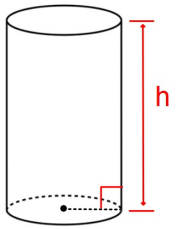
Cylinder:

Bases are CIRCLES.
Therefore, a cylinder is not a Polyhedron or a Prism.

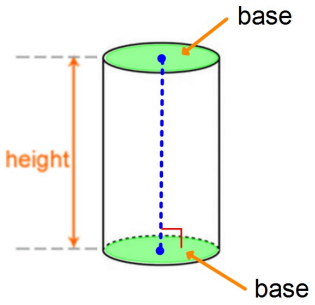
Cylinders don't have Lateral Faces or Lateral Edges.

Height of a Cylinder:

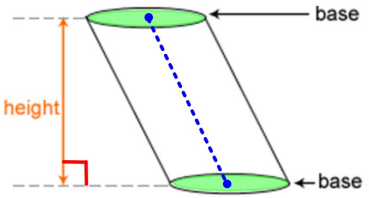
The perpendicular distance between the two Bases.



Right Cylinder:



Oblique Cylinder:



We will be working with Right Cylinders only at this time.

Total Surface Area of a Cylinder:

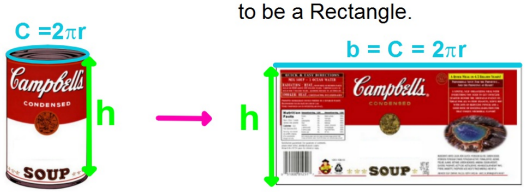
$$SA = LA + 2B$$

Lateral Area

Area of the 2 Bases

LA of a cylinder:

LA of a soup can is the area of the label. When peeled off of the can it turns out to be a Rectangle.



LA = bh = (2πr)(h) LA = **2πrh**

2B of a cylinder:

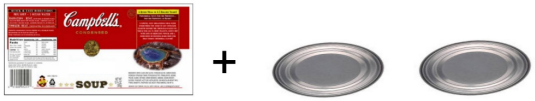
2B of a soup can is the area of the top and bottom which are both Circles.

2B = area of 2 circles = $2(\pi r^2)$

$2B = 2\pi r^2$

SA of a cylinder:

SA =

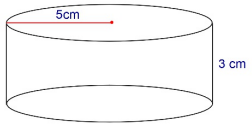


SA = LA + 2B

$SA = 2\pi rh + 2\pi r^2$

SA = LA + 2B

Find the SA of this cylinder. Leave answer in terms of π.



r = 5cm h = 3cm

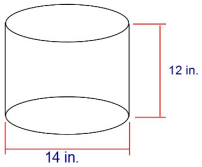
$SA = 2\pi rh + 2\pi r^2$

$SA = 2\pi(5)(3) + 2\pi(5)^2$

$SA = 30\pi + 50\pi$

$SA = 80\pi \text{ cm}^2$

Find the SA of this cylinder to the nearest tenth.



d = 14 in → r = 7 in h = 12 in

$SA = 2\pi rh + 2\pi r^2$

$SA = 2\pi(7)(12) + 2\pi(7)^2$

$SA = 168\pi + 98\pi$

$SA = 266\pi = 835.66 \text{ in}^2$

Given the radius of a cylinder is 6 in and the SA = 250 in^2

Find the height of the cylinder to the nearest hundredth.

$SA = 2\pi rh + 2\pi r^2$

$250 = 2\pi(6)h + 2\pi(6)^2$

$250 = 12\pi h + 72\pi$

$-72\pi \quad -72\pi$

$\frac{250 - 72\pi}{12\pi} = \frac{12\pi h}{12\pi}$

$h = \frac{250 - 72\pi}{12\pi}$

h = 0.63 in

You can now finish Practice #25

This practice will be due on
Thursday, May 21 by 10:00 pm