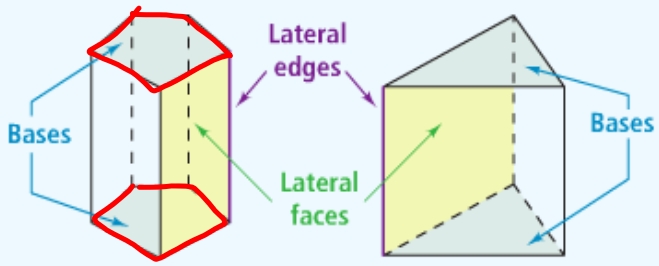
Geometry

Chapter 11

Section 11-2, 11-4

A **prism** is a polyhedron with two congruent, parallel faces, called **bases.** The other faces are **lateral faces.** You can name a prism using the shape of its bases.



An **altitude** of a prism is a perpendicular segment that joins the planes of the bases. The **height** h of a prism is the length of an altitude. A prism may either be right or oblique.

**Note:

Assume a right prism unless drawn or stated otherwise

LA = Lateral Area

Area of all the lateral surface between parallel bases

$8 \times 11 \times 2$

$+ 7 \times 11 \times 4$

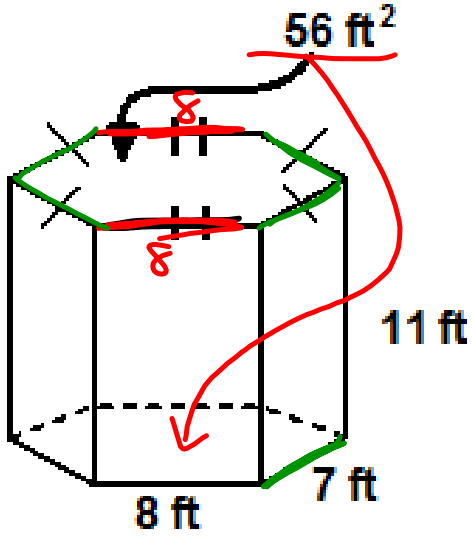
176

$+ 308$

484 ft^2

SA = Surface Area

Area of the entire surface of a 3D figure



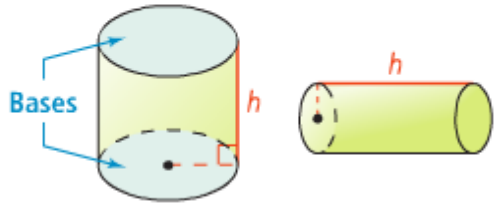
484

$+ 56$

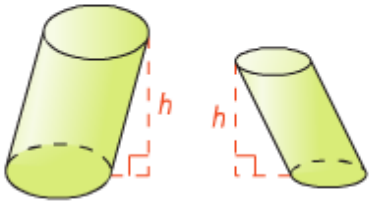
$+ 56$

596 ft^2

A **cylinder** is a solid that has two congruent parallel **bases** that are circles. An **altitude** of a cylinder is a perpendicular segment that joins the planes of the bases. The **height** h of a cylinder is the length of an altitude.



Right cylinders



Oblique cylinders

**Note:

Assume a right cylinder unless drawn or stated otherwise

take note

Theorem 11-1 Lateral and Surface Areas of a Prism

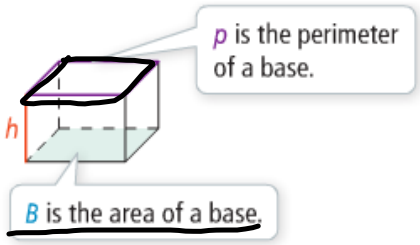
The lateral area of a right prism is the product of the perimeter of the base and the height of the prism.

L.A. $= ph$

The surface area of a right prism is the sum of the lateral area and the areas of the two bases.

S.A. $=$ L.A. $+ 2B$

$SA = ph + 2B$



take note

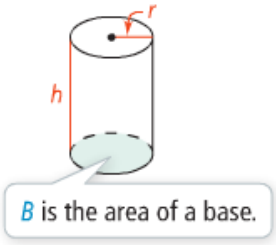
Theorem 11-2 Lateral and Surface Areas of a Cylinder

The lateral area of a right cylinder is the product of the circumference of the base and the height of the cylinder.

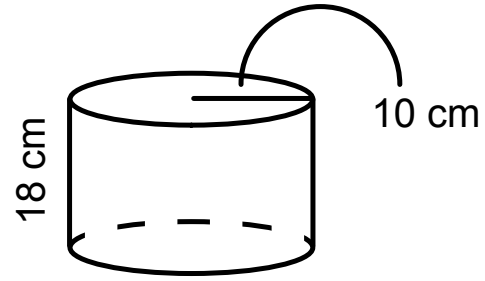
L.A. $= 2\pi r \cdot h$, or L.A. $= \pi dh$

The surface area of a right cylinder is the sum of the lateral area and the areas of the two bases.

S.A. $=$ L.A. $+ 2B$, or S.A. $= 2\pi rh + 2\pi r^2$



Find the lateral area and surface area of the figures.



$LA = 2\pi rh$

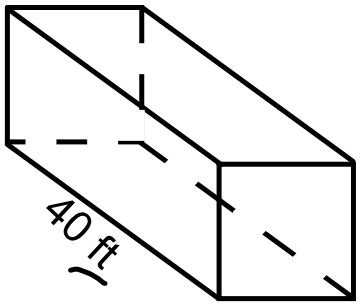
$LA = 2\pi(10)(18)$

$LA = 360\pi \text{ cm}^2$

$SA = LA + 2B$

$SA = 360\pi + 2(100)\pi$ (10^2)

$SA = 560\pi \text{ cm}^2$



15ft

15ft

$LA = (60)(40) = 2400 \text{ ft}^2$

$SA = 2400 + 2(225)$

450

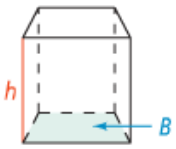
$SA = 2850 \text{ ft}^2$

take note

Theorem 11-6 Volume of a Prism

The volume of a prism is the product of the area of the base and the height of the prism.

$V = Bh$



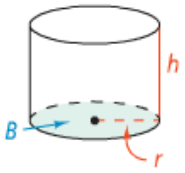
Square or Rect Prism → $V = (L \cdot w) \cdot h$

take note

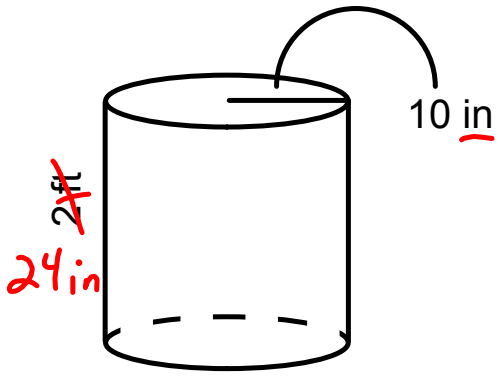
Theorem 11-7 Volume of a Cylinder

The volume of a cylinder is the product of the area of the base and the height of the cylinder.

$V = Bh$, or $V = \pi r^2 h$



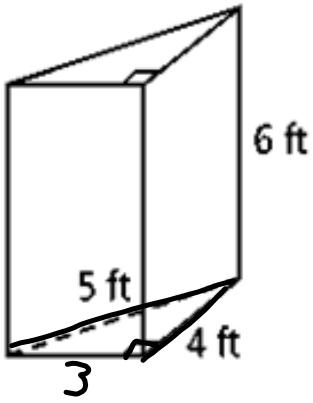
Find the lateral ~~area and surface~~ volume area of the figures.



$V = Bh$

$V = (100\pi)(24)$

$V = 2400\pi \text{ in}^3$



$V = Bh$

$V = \left(\frac{1}{2} \cdot 3 \cdot 4\right)(6)$

$6 \cdot 6$

$V = 36 \text{ ft}^3$

Homework

Pages 704 - 705
11 - 23 odd

Pages 721 - 722
6 -18 even