

LAUNCH - \*COPY\*

**Remember...**

Circumference of a Circle  
 $C = 2\pi r$

Area of a Circle  
 $A = \pi r^2$

For each of these formulas:  
r=radius  
 $\pi = 3.14159...$

**3.13 Surface Area: Prisms and Cylinders**

Objective: Students will interpret and use formulas lateral areas and total surface areas of prisms, pyramids, cylinders, and cones

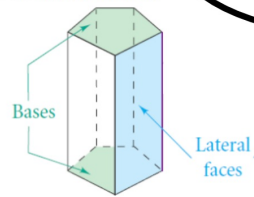
**PRISMS - 2 congruent parallel faces called the "bases".  
The other faces are called the lateral faces.**

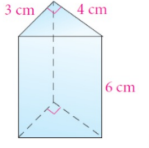
**Lateral Area:** The area of the lateral faces of a prism  
**Surface Area:** The lateral area plus the two bases of a prism

**Formulas:**  
 $LA = ph$   
 $SA = ph + 2B$   
 $V =$

**Parts of the formula:**  
 $p$  = perimeter of the base  
 $h$  = height  
 $B$  = area of the base

**PRISM**

**Picture(s):**  


**Example:**  


Find the surface area of the prism:

Prism:

$$LA = ph \quad SA = ph + 2B$$

$$p = 3 + 4 + 5 = 12 \text{ cm}$$

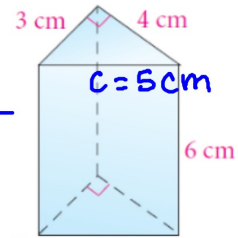
$$h = 6 \text{ cm}$$

$$B = \frac{1}{2}(4)(3) = 6 \text{ cm}$$

$$SA = (12)(6) + 2(6)$$

$$SA = 72^{LA} + 12$$

$$SA = 84 \text{ cm}^2$$



$$3^2 + 4^2 = c^2$$

$$9 + 16 = c^2$$

$$25 = c^2$$

$$c = 5$$

**CYLINDERS** - two parallel bases that are circles connected by a curved surface.

**Lateral Area:** The area obtained by "unrolling" a cylinder (ex. a soup can label)

**Surface Area:** The lateral area plus the two bases of the cylinder

Formulas:

$$LA = 2\pi rh$$

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

V =

Parts of the formula:

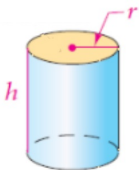
$$\pi = 3.14$$

r = radius

h = height

**CYLINDER**

Picture(s):



Example:



Find the Surface area of the Cylinder:

Cylinder:

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

4.5 inches

$$r = 1.5 \text{ in}$$

$$h = 4.5 \text{ in}$$

$$\pi = 3.14$$

$$SA = 2(3.14)(1.5)(4.5) + 2(3.14)(1.5)^2$$

$$SA = 2(3.14)(1.5)(4.5) + 2(3.14)(2.25)$$

$$SA = 42.39 + 14.13$$

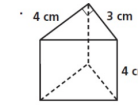
$$SA = 56.52 \text{ in}^2$$



## Homework: Surface Areas of Prisms and Cylinders

Exit Ticket:

Find the surface area of the prism



Find the surface area of the cylinder  
(in terms of pi)

