

# Geometry B Live Lesson Class

## U6L2 – Surface Areas of Prisms and Cylinders

(Chapter 11-2 in textbook)



# Agenda



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1. Review topics and problems from U6L2 - Surface Areas of Prisms and Cylinders.

2. Use the 2-column note system to take better notes in math class. Bring your math notebook and pen or pencil to each math LiveLesson class.

# 2-Column Notes Template



1. Announcements/To Do's
2. School-Wide Learner Outcomes
3. LL Objectives
4. Vocabulary words
5. Problems
6. Summary (End of class)

1. Write down important details.
2. What are you going to work on this week?
- 3.
4. Definitions (fill in as we go)
5. Steps to solving problems
6. 1 or 2 sentences about the LL class.

# Reminders and To – Do's



## Information

1. Complete 1 math lesson per day.
2. Check your WebMail every day
3. Be prepared to spend 4 - 6 hours per day on schoolwork.
4. Remind your Learning Coach to take daily attendance

## What to do

1. Go to your Planner in Connexus to find the math lesson for the day
2. Go to Connexus to find WebMail
3. Complete lessons for the day from your Planner. Do not get behind on lessons.
4. Have your Learning Coach log into Connexus daily.

# Reminders and To – Do's



## Information

5. Go to the Message Board first for information about our math class.

6. Contact Mr. Elizondo for math questions.

Remember: You need at least 2 phone calls with Mr. Elizondo per semester.

## What to do

6. Call (559) 549 - 3244 and leave a voicemail if call is not answered.

Make an appointment at:  
<https://elizondo.youcanbook.me>

Send a WebMail

## U6L2 – California Common Core State Standards

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- HSG-MG.A.1: Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).

# U6L2 – Objectives



- To find the surface area of a prism and a cylinder

# U6L2 – Vocabulary



- prism (base, lateral face, altitude, height, lateral area, surface area)
- right prism
- oblique prism
- cylinder (base, altitude, height, lateral area, surface area)
- right cylinder
- oblique cylinder



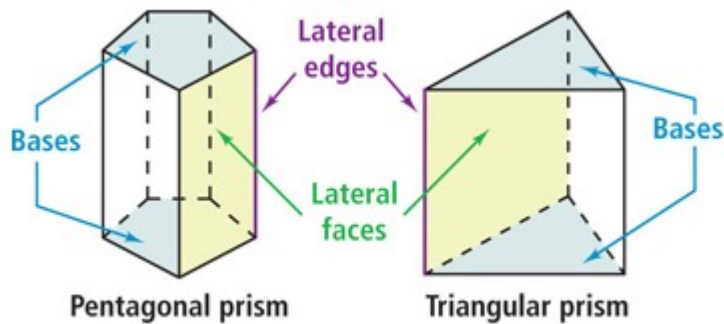
# U6L2 – Surface Areas of Prisms and Cylinders



## Prism

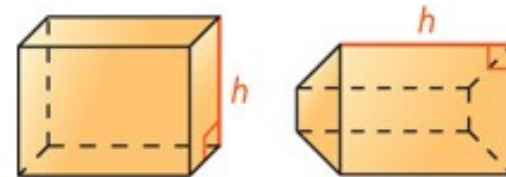
Prism: a polyhedron with two congruent, parallel faces, called **bases**.

- Other faces are called **lateral faces**.

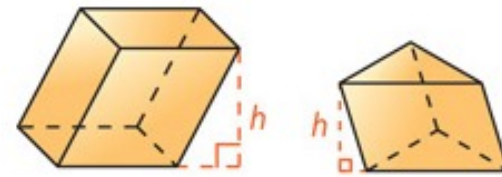


**Altitude:** perpendicular segment that joins the bases

**Height:** length of the altitude



Right prisms



Oblique prisms

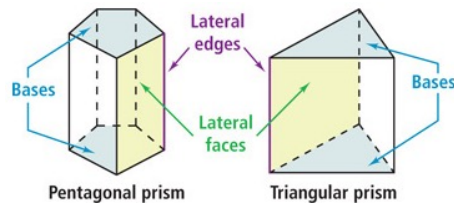
# U6L2 – Surface Areas of Prisms and Cylinders



## Prism

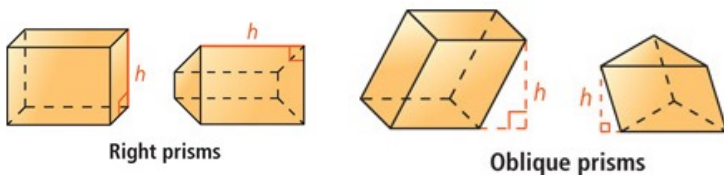
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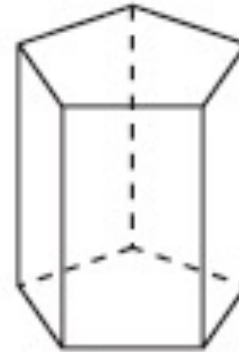


**Altitude:** perpendicular segment that joins the bases

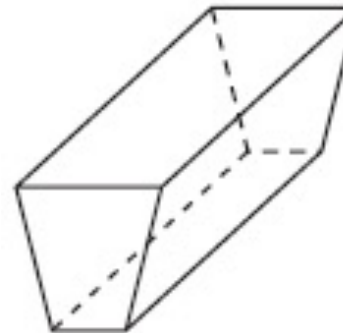
**Height:** length of the altitude



Name the prism using the shape of its bases.



pentagonal prism



trapezoidal prism

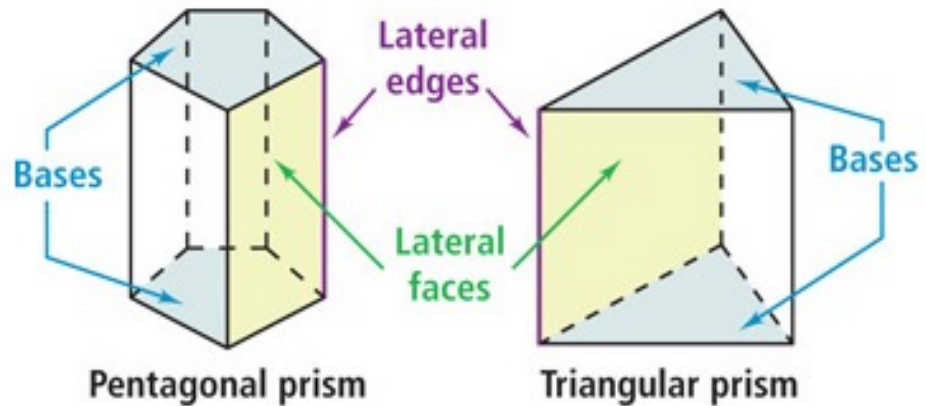
# U6L2 – Surface Areas of Prisms and Cylinders



Lateral Area and Surface Area

Lateral area (LA): sum of areas of the lateral faces

Surface Area (SA): sum of lateral area and area of the bases

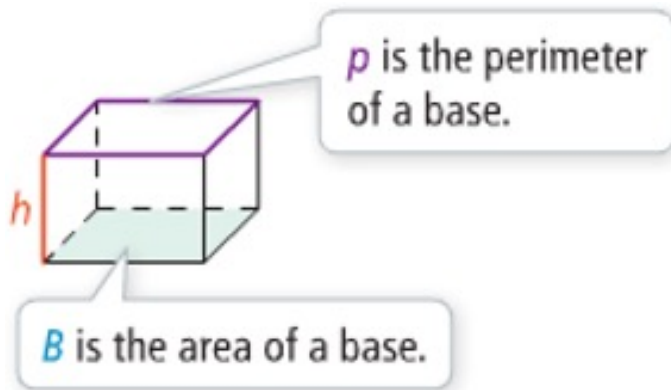


# U6L2 – Surface Areas of Prisms and Cylinders

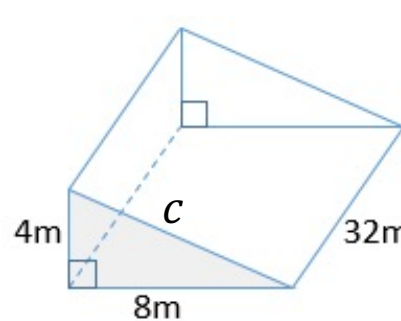


## Prisms

Shape	Lateral Area	Surface Area
Prism	$LA = ph$	$SA = LA + 2B$



What is the lateral and surface area of the following prism?



$$a^2 + b^2 = c^2$$

$$4^2 + 8^2 = c^2$$

$$16 + 64 = c^2$$

$$80 = c^2$$

$$c = 8.944$$

$$\text{Perimeter} = 4m + 8m + 8.944m = \mathbf{20.94m}$$

$$h = 32m$$

$$LA = ph$$

$$LA = (20.94m)(32m)$$

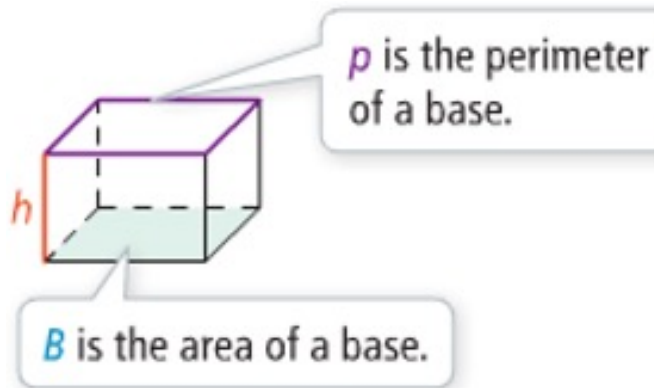
$$\mathbf{LA = 670.08 m^2}$$

# U6L2 – Surface Areas of Prisms and Cylinders

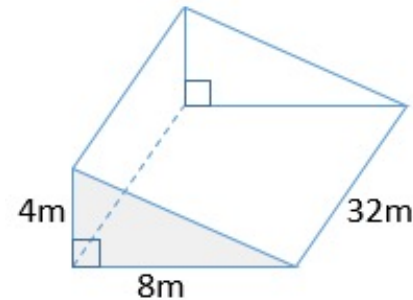


## Prisms

Shape	Lateral Area	Surface Area
Prism	$LA = ph$	$SA = LA + 2B$



What is the lateral and surface area of the following prism?



$$LA = 670.08 \text{ m}^2$$

$$SA = LA + 2B$$

$$B \text{ (area of base)} = \frac{1}{2} \cdot 4\text{m} \cdot 8\text{m} = 16 \text{ m}^2$$

$$SA = 670.08 \text{ m}^2 + 2(16 \text{ m}^2)$$

$$SA = 670.08 \text{ m}^2 + 32\text{m}^2$$

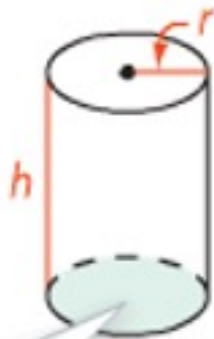
$$\mathbf{SA = 702.08 \text{ m}^2}$$

# U6L2 – Surface Areas of Prisms and Cylinders



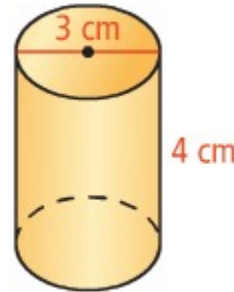
## Cylinders

Shape	Lateral Area	Surface Area
Cylinder	$LA = 2\pi rh$	$SA = 2\pi rh + 2\pi r^2$



$B$  is the area of a base.

Find the LA and SA for the following cylinder (in terms of  $\pi$ ):



$$LA = 2\pi rh$$

$$LA = 2\pi(1.5 \text{ cm})(4 \text{ cm})$$

$$LA = 12\pi \text{ cm}^2$$

$$SA = 2\pi(1.5 \text{ cm})(4 \text{ cm}) + 2\pi(1.5 \text{ cm})^2$$

$$SA = 12\pi \text{ cm}^2 + 4.5\pi \text{ cm}^2$$

$$SA = 16.5\pi \text{ cm}^2$$

# U6L2 – Surface Areas of Prisms and Cylinders

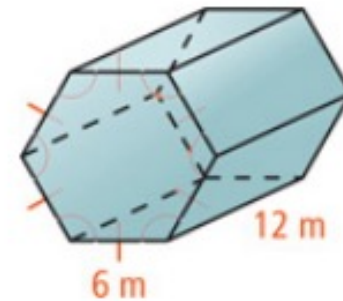


## Prisms

Shape	Lateral Area	Surface Area
Prism	$LA = ph$	$SA = LA + 2B$

Shape	Lateral Area	Surface Area
Prism	$LA = ph$	$SA = LA + 2B$

What is the lateral and surface area of the following prism?



$$\text{Lateral Area} = \text{Perimeter} \cdot \text{height}$$

$$\text{Lateral Area} = (6 \text{ sides} \cdot 6\text{m}) \cdot 12\text{m}$$

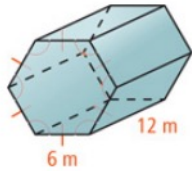
$$\text{Lateral Area} = 36\text{m} \cdot 12\text{m}$$

$$\text{Lateral Area} = 432 \text{ m}^2$$

# U6L2 – Surface Areas of Prisms and Cylinders



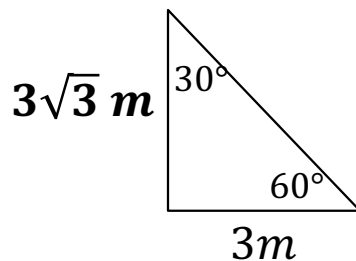
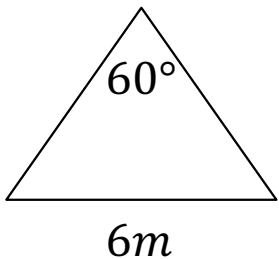
What is the lateral and surface area of the following prism?



$$\text{Surface Area} = LA + 2 \text{ bases}$$

$$\text{Surface Area} = 432 \text{ m}^2 + 2 \text{ bases}$$

$$\text{Surface Area} = 432 \text{ m}^2 + 2\left(\frac{1}{2} aP\right)$$



$$\text{Perimeter of hexagon} = 36 \text{ m}$$

$$\text{Surface Area} = 432 \text{ m}^2 + 2\left(\frac{1}{2}(3\sqrt{3} \text{ m})(36 \text{ m})\right)$$

$$\text{Surface Area} = 432 \text{ m}^2 + 187.06 \text{ m}^2$$

$$\text{Surface Area} = 619.06 \text{ m}^2$$

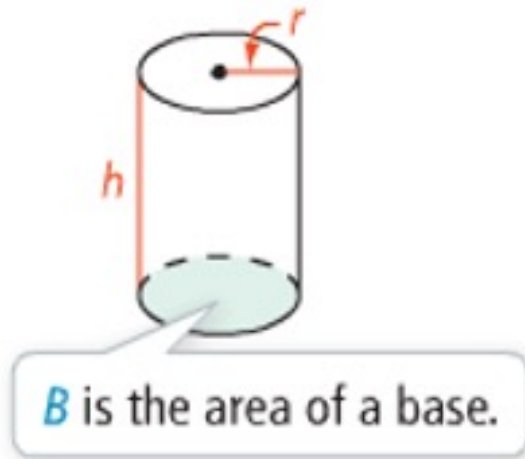


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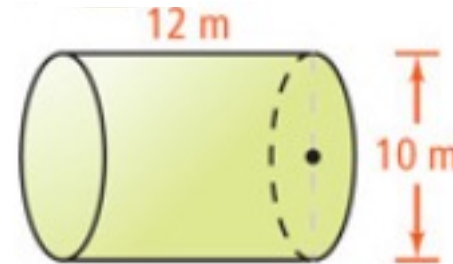


## Prisms and Cylinders

Shape	Lateral Area	Surface Area
Cylinder	$LA = 2\pi rh$	$SA = 2\pi rh + 2\pi r^2$



Find the LA and SA for the following cylinder (in terms of  $\pi$ ):



$$LA = 2\pi(5m)(12m)$$

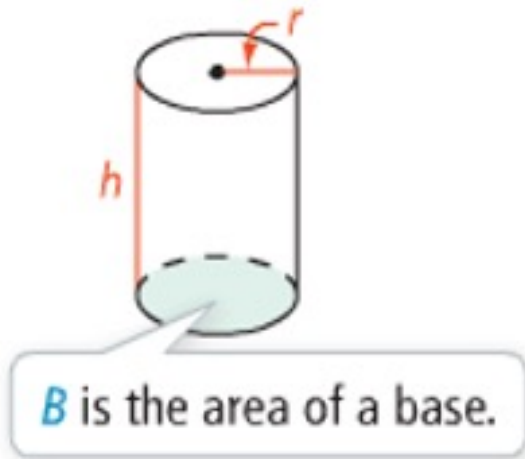
$$LA = 120\pi m^2$$

# U6L2 – Surface Areas of Prisms and Cylinders

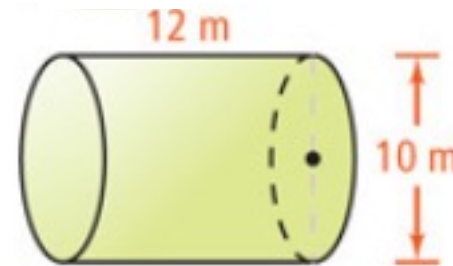


## Prisms and Cylinders

Shape	Lateral Area	Surface Area
Cylinder	$LA = 2\pi rh$	$SA = 2\pi rh + 2\pi r^2$



Find the LA and SA for the following cylinder (in terms of  $\pi$ ):



$$LA = 120\pi m^2$$

$$SA = 120\pi m^2 + 2\pi r^2$$

$$SA = 120\pi m^2 + 2\pi(5m)^2$$

$$SA = 120\pi m^2 + 50\pi m^2$$

$$SA = 170\pi m^2$$

# Questions?

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- Check the Message Board first
- Send a WebMail
- You can also make an appointment at <https://elizondo.youcanbook.me>
- You can also call me at (559) 549-3244. If I'm not available to answer your call, please leave a voicemail with your full name and phone number.