

WRITE YOUR NAME ON ALL OF THE FOLLOWING HOMEWORK PAGES!

## *Homework Assignments - Unit 7 Geometry*

Standard	Description
7.G.A.1	Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.
7.G.A.3	Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.
7.G.B.4	Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.
7.G.B.6	Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

<b>Lesson 1</b>	I can relate geometry to real-world contexts. I can solve for the area and perimeter of a shape.	<b>Lesson 7</b>	I can practice skills relating to area, surface area and scale.
<b>Lesson 2</b>	I can determine scale factor and draw an image to scale.	<b>Lesson 8</b>	I can find the area of unconventional shapes.
<b>Lesson 3</b>	I can calculate the area of triangles and quadrilaterals.	<b>Lesson 9</b>	I can find the surface area of composite figures.
<b>Lesson 4</b>	I can solve the area of simple composite figures.	<b>Lesson 10</b>	I can find the volume of three-dimensional shapes.
<b>Lesson 5</b>	I can calculate the surface area of a rectangular prism.	<b>Lesson 11</b>	I can find the volume and surface area of a composite figure.
<b>Lesson 6</b>	I can solve mathematical problems involving the properties of circles.	<b>Lesson 12</b>	I can determine the 2-dimensional shape that results from slicing a 3-dimensional figure.
<b>Lesson 13:</b> I can problem solve and critical analyze a solution to a problem using mathematical skills and thinking.			

The skills and concepts that you learn in this packet will appear as your grade for the standards listed above.	
A = 4 EXCEEDS	All questions have been attempted and have justification that proves and explains their solution.
B = 3 MEETS	Most questions have been attempted and have justification that proves and explains their solution.
C = 2 DEVELOPING	Some or all questions are attempted, but does not contain a justification or explanation for the solution.
D = 1 WELL BELOW	Few or none of the questions are attempted, and does not contain a justification or explanation for the solution.

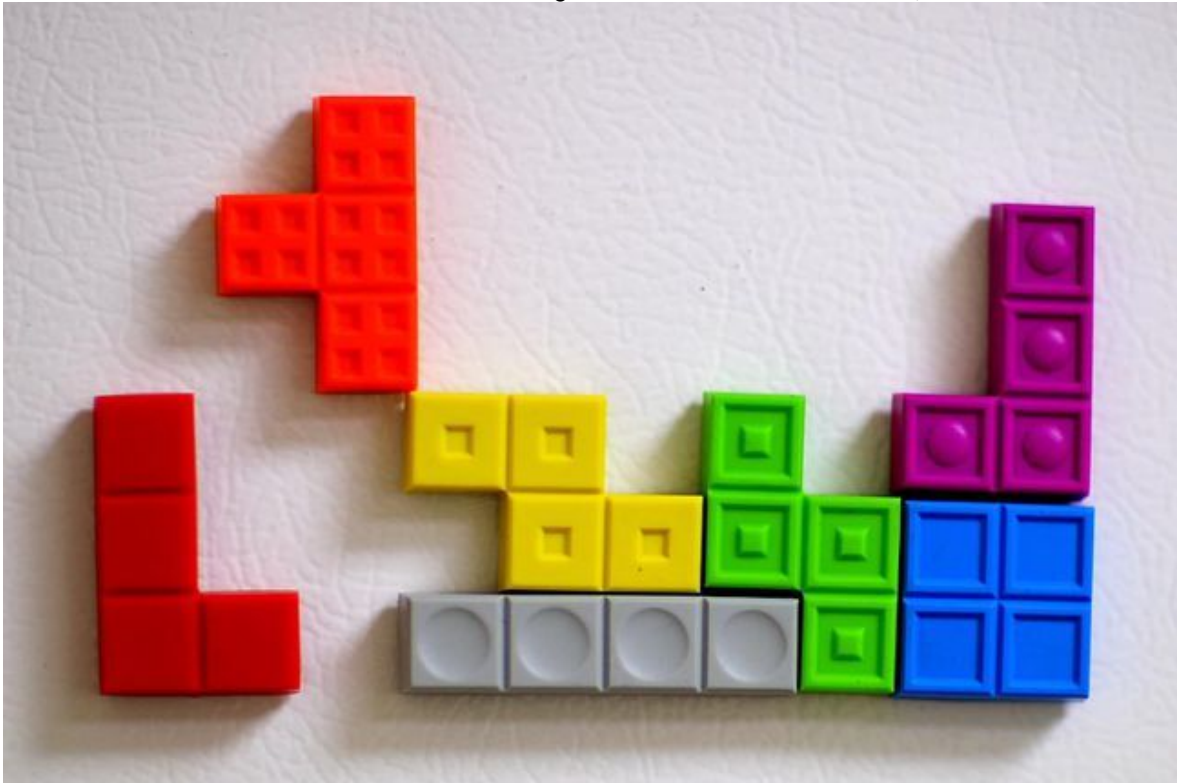
Dear Students,

I know that math homework can be a **DAUNTING** task and sometimes it's hard to find the time to complete it. Please know that these assignments have been designed to help support your mathematical *thinking* - my goal is not to give you busy work. We will use homework to have conversations and practice in class the following day so it is really **important** that you try to complete it each night. If you need help, email me!

Use our class website too! [www.7mathscience.weebly.com](http://www.7mathscience.weebly.com)

**Lesson 7.1 Practice: Tetris and Geometry**

Instructions: Read and annotate the following article and then solve the problem that follows!



*Tetris—a seemingly simple game based on arrangements of four-block shapes called tetraminoes, duplicated in 3D above—is the single best-selling computer game of all time.*

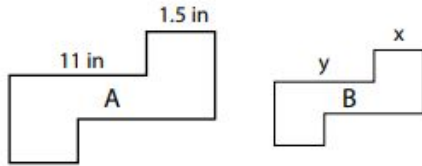
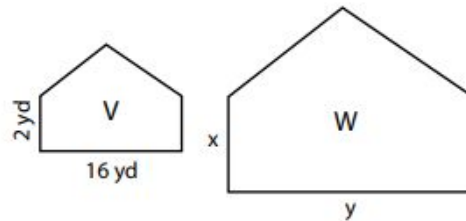
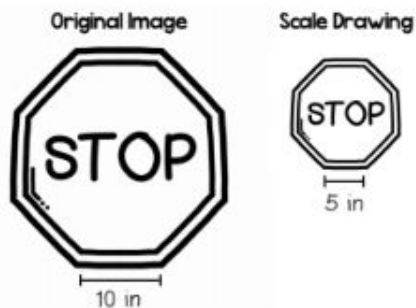
On June 6, 1984, Russian computer engineer Alexei Pajitnov released his popular computer game, Tetris.

Pajitnov was working as a research-and-development computer scientist in his hometown of Moscow, Russia, when he invented Tetris. He based his innovative computer game on one of his favorite (three-dimensional) games, polyominoes. Dominoes are the most familiar type of polyomino. Dominoes have two square blocks. All the shapes used in Tetris have different arrangements of four square blocks. In fact, Pajitnov named his game in part after the shapes: *tetra* means “four” in Greek.

Tetris is a seemingly simple game—create straight lines with the differently shaped polyominoes dropped with increasing speed from above. The game proved incredibly challenging, and immediately popular. “Tetris, in two weeks, was in every single computer in Moscow!” Pajitnov remembers.

Tetris quickly migrated out of what was then the Soviet Union to Europe, Japan, and North America. Tetris remains the single best-selling computer game of all time, with more than 140 million games sold as computer software, with video-game consoles, or apps.

**Each Tetris square in the photo above measures 1.2 cm by 1.2 cm. What is the area of all of the Tetris blocks in the photo? (Hint: Count the blocks first!)**

**Lesson 7.2 Practice**Scale factor of A to B is  $1 : \frac{1}{5}$  $x = \underline{\hspace{2cm}} ; y = \underline{\hspace{2cm}}$ Scale factor of W to V is  $4 : 1$  $x = \underline{\hspace{2cm}} ; y = \underline{\hspace{2cm}}$ Scale Factor =  $\frac{\boxed{\hspace{1cm}}}{\boxed{\hspace{1cm}}}$ Scale Factor = 

A model of a skyscraper is made so that 1 inch represents 75 feet. What is the height of the actual building if the height of the model is  $18\frac{3}{5}$  inches?

The city of St. Louis is creating a welcome sign on a billboard for visitors to see as they enter the city. The following picture needs to be enlarged so that  $\frac{1}{2}$  inch represents 7 feet on the actual billboard. Will it fit on a billboard that measures 14 feet in height?



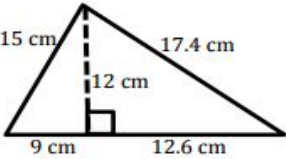
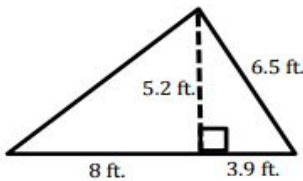
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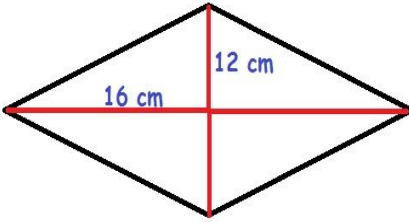
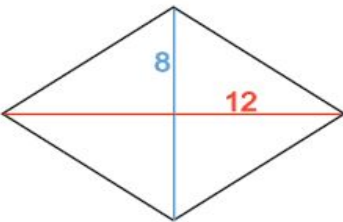
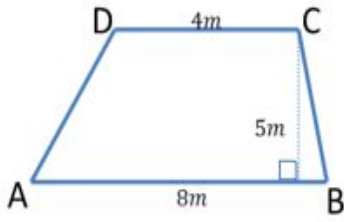
Score: \_\_/4

**Lesson 7.3 Practice**

Determine if the area formula  $A = \frac{1}{2}bh$  is always correct by first calculating the area of two right triangles and then calculating the area of the entire triangle.

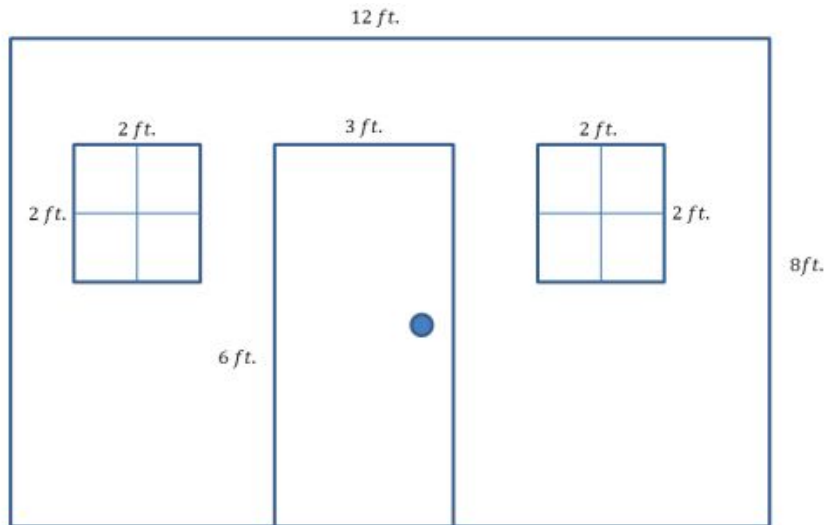
	Area of Two Right Triangles	Area of Entire Triangle
		
		

2. Find the area of the following shapes:

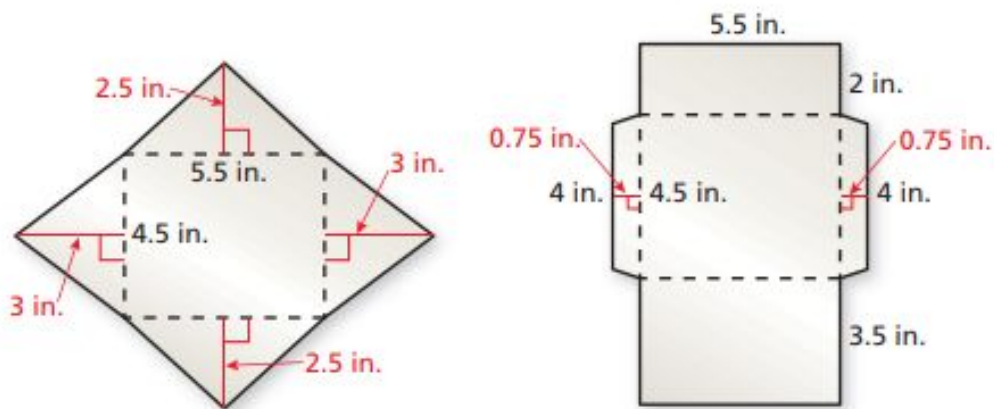
		
Area:	Area:	Area:

**Lesson 7.4 Practice**

Ms. Tanner really wants to paint her house this weekend! She wants to get JUST enough paint for the front wall of her house. How many square feet of paint does she need?

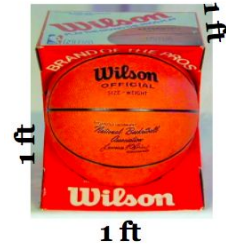
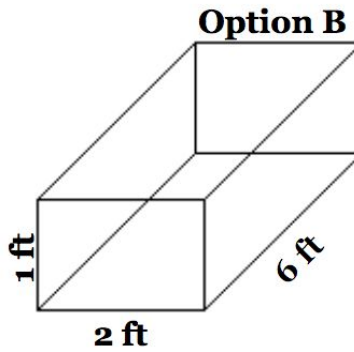
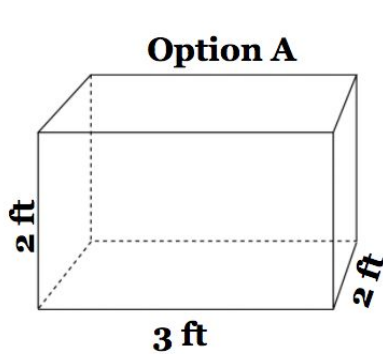


You are deciding on two different designs for envelopes. Both envelopes cost the same amount of money. Which design has the best unit rate (cost per square inch)?



**Lesson 7.5 Practice**

Wilson packages its basketballs in cubic boxes with 1-foot edges. To ship the basketballs, the company packs 12 of these cubic boxes into larger rectangular shipping boxes. Below you'll find the dimensions for two possible shipping boxes.



1. Calculate the surface area of each box.

Option A	Option 2

2. If Wilson wants to use the shipping box that requires the least amount of material, which of the two shipping boxes would they select to use.

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Date: \_\_\_\_\_

Score: \_\_/4

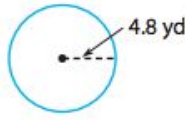
**Lesson 7.6 Practice** - For all calculations, use  $\pi = 3.14$ Explain using words and pictures how pi ( $\pi$ ) is derived.

For problem #1-3, find the radius, diameter, circumference, and area of each circle with the info provided.

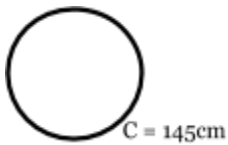
1.  $r =$  \_\_\_\_\_  
 $d =$  \_\_\_\_\_  
 $C =$  \_\_\_\_\_  
 $A =$  \_\_\_\_\_



2.  $r =$  \_\_\_\_\_  
 $d =$  \_\_\_\_\_  
 $C =$  \_\_\_\_\_  
 $A =$  \_\_\_\_\_



3.  $r =$  \_\_\_\_\_  
 $d =$  \_\_\_\_\_  
 $C =$  \_\_\_\_\_  
 $A =$  \_\_\_\_\_



4. Norah knows that the diameter of a circle is 13 meters. Describe how you would tell her to find the circumference of the circle.

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5. A round swimming pool has a circumference of 66 feet. Carlos wants to buy a rope to put across the diameter of the pool. The rope costs \$0.45 per foot.

a. How much rope must Carlos buy? \_\_\_\_\_

b. How much will Carlos pay for the rope? \_\_\_\_\_

6. A museum groundskeeper is creating a circular statuary garden with a diameter of 30 feet. There will be a fence around the garden. The fencing costs \$9.25 per foot.

a. What is the circumference of the garden? \_\_\_\_\_

b. If the groundskeeper pays for the fencing with \$1000 in cash, how much change will she receive in return? \_\_\_\_\_

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Score: \_\_/4

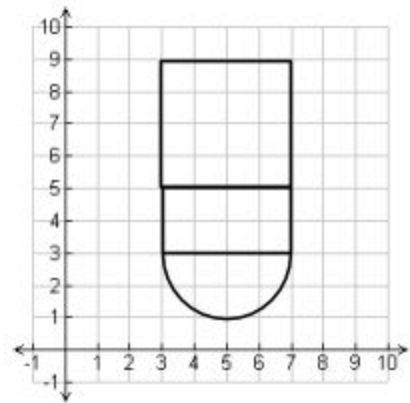
### Lesson 7.7 Practice

1. Determine three scale factors that are equivalent to 1 foot : 6 inches.
2. Joanna created a triangular shaped vegetable garden and needs to put down fertilizer to cover the space. If the garden has a base of 1.4 m and a height of 2.6 m, how much fertilizer will she need?
3. Mariah is a sunflower farmer. He uses a plot of land that is 3 km by 4.3 km. How much land does he use for his sunflowers?
4. Samira bought brownies. The length of each brownie is 7cm and the width is 5cm. Find the area of each brownie.
5. If the height of the Eiffel Tower is 1000 feet and Ethan's keychain of the Eiffel Tower is 5 inches, what is the scale factor?



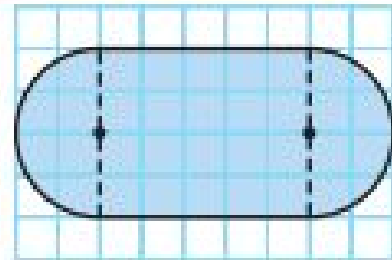
**Lesson 7.8 Practice**

Find the area of composite figure below.



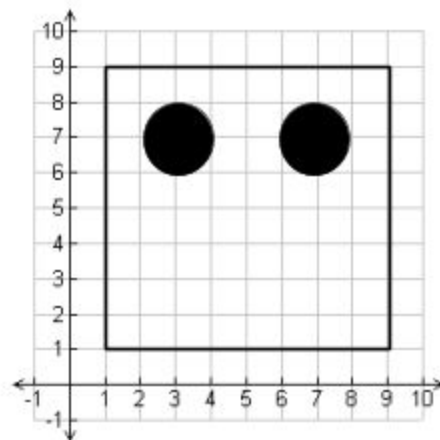
A portion of a window is being replaced with tinted glass. The areas of the window being replaced are the two semi circles on the ends. The plan at the right shows the design of the window. Each unit length represents 1 foot. The glass costs \$28 per square foot

What is the area of the part of the window being replaced?



How much will it cost to replace the glass? Use 3.14 for  $\pi$ .

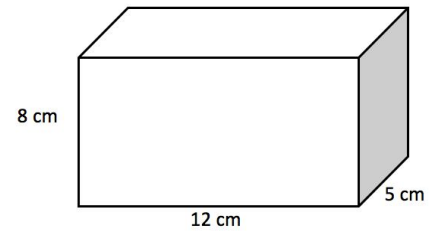
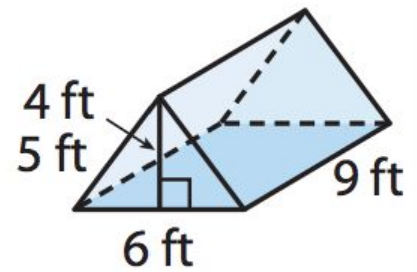
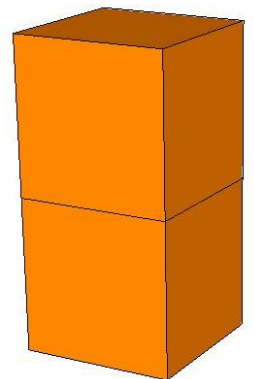
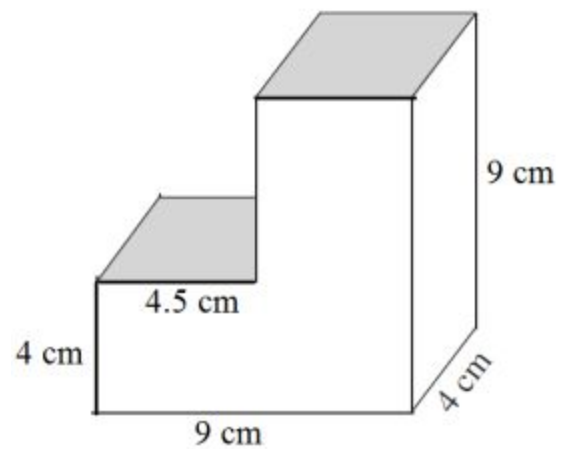
Find unshaded region of composite figure  
(1 Unit Radius Circles have been cut out of shape)



Name: \_\_\_\_\_

Date: \_\_\_\_\_

Score: \_\_/4

**Lesson 7.9 Practice****Find Surface Area of the figure below.****Find Surface Area of figure below****Find Surface Area (2 Identical Cubes with 4 inch sides on top of each other)****Find Surface Area of composite figure below**

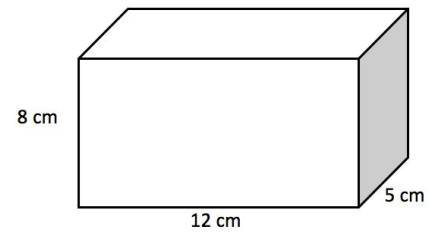
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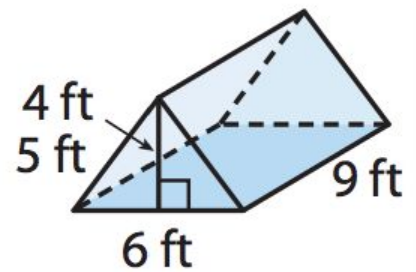
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### Lesson 7.10 Practice

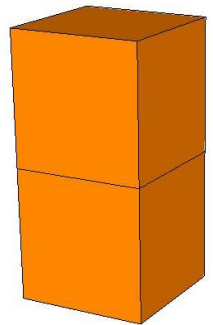
Find the volume of the figure below.



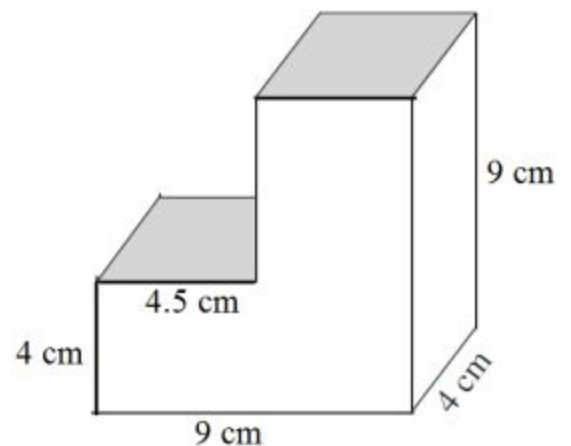
Find the volume of the figure below.



Find the volume (2 Identical Cubes with 4 inch sides on top of each other).

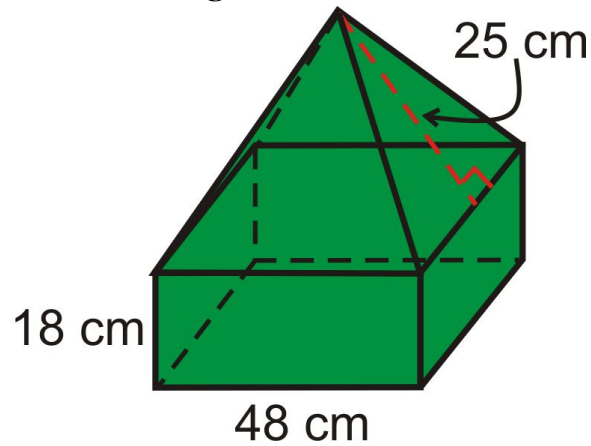


Find the volume of composite figure below.



**Lesson 7.11 Practice**

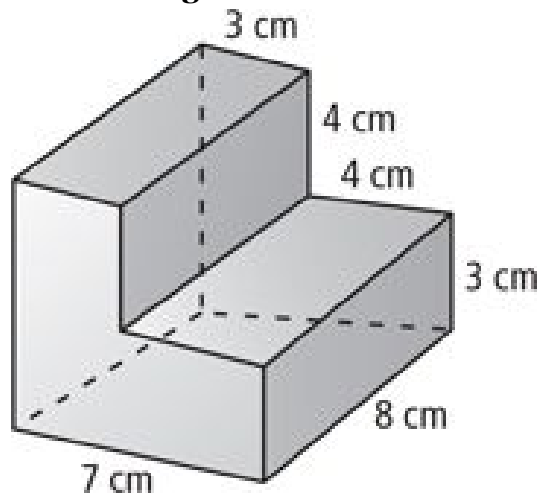
Find the surface area and volume to the figure below.



Surface Area: \_\_\_\_\_

Volume: \_\_\_\_\_

Find the surface area and volume to the figure below.



Surface Area: \_\_\_\_\_

Volume: \_\_\_\_\_

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Score: \_\_/4

**Lesson 7.12 Practice**

**Directions:** Answer each question below. **Hint:** It may help to draw out the cross section after thinking about it in your mind!

**Question****Answer:**

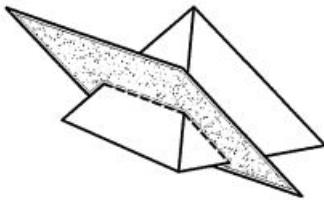
What 2D shape will result?

Find cross section parallel to the base.



Find the diagonal cross section indicate by cut below

A square pyramid is cut along the shaded plane shown below.



What shapes would give you this as a cross section perpendicular to base?



**Lesson 7.13 Practice**

A movie theater offers popcorn in three different containers for the same price.

- One container is a trapezoidal prism with a base area of 36 square inches and a height of 5 inches.
- The other container is a triangular prism with a base area of 32 square inches and a height of 6 inches.
- The third container is a rectangular prism. The rectangular prism is 5.5 inches in height and has a base that measures 4 inches wide and 3 inches long.



**Which container is the better deal if they all cost the same amount of money? Explain.**

**Work Space:** *Show your work. Include your units!*

Explanation:

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