6-2016

6th Grade Math: Toro Dream House

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UNDERSTANDING BY DESIGN

Unit Cover Page

Unit Title: Toro Dream House

Grade Level: 6th Grade

Subject/Topic Area(s): Math

Designed By: Claudia Cárdenas

Time Frame: 8 days

School District: SAISD

School: Tafolla Middle School

School Address and Phone: 1303 W César E Chávez Blvd, San Antonio, TX 78207

Brief Summary of Unit

This unit's focus is on area and volume (specifically TEKS 6.8B, 6.8C, and 6.8D). Students will be building on their prior knowledge of areas of rectangles and squares by including trapezoids and triangles. Students will also be introduced to the beginnings of 3-dimensional objects and how the volume formulas come to be. Students will continue to practice with the volumes of rectangular prisms which are centered on multiplying length by width by height. They will also begin to discover that if the area of the base is known then height is what makes these shapes three-dimensional. Thus, students will be introduced to $V=Bh$. This unit will culminate in a performance assessment where students will draw their own dream house floor plans. Once they have determined the square footage of individual rooms and their overall home, students will then build a 3D model of what was designed on the floor plan. In this way, students will have the discussion about what it means to live in an urban society and how cities deal with expansion. Students will also discuss how financial and physical space constraints affect where individuals decide to live.

6th Grade Math: *Toro Dream House* (8 days)

Stage 1 – Desired Results

Established Goals (e.g., standards)

TEKS:

6.8B: Model area formulas for parallelograms, trapezoids, and triangles by decomposing and rearranging parts of these shapes.

6.8C: Write equations that represent problems related to the area of rectangles, parallelograms, trapezoids, and triangles and volume of right rectangular prisms where dimensions are positive rational numbers.

6.8D: Determine solutions for problems involving the area of rectangles, parallelograms, trapezoids, and triangles and volume of right rectangular prisms where dimensions are positive rational numbers.

Transfer

Students will independently use their learning to…

Understand urbanization and growth and how a civilization expands in both a developed and underdeveloped area.

How to work with financial and physical constraints.

Meaning

Understandings

Students will understand that….

- Area and volume have a critical impact on the development of a community.
- Known measurements can be manipulated to determine what is unknown.
- Math is an efficient language that is used to effectively communicate spatial information.

Essential Questions

- What roles do area and volume play in everyday life?
- How does area and volume affect a developing community/city?
- How can you use what you know to find out what is unknown?
- What is the relationship between area and volume?
- How can we use math to communicate to others?

Acquisition

Knowledge

Students will know…

1. The area formulas for parallelograms, trapezoids, and triangles:
   $A = bh$
   $A = ½\ h(b_1 + b_2)$
   $A = ½\ bh$
2. The volume formula for right rectangular prisms:
   $V = lwh$
3. How and why the volume formula for right rectangular prisms will now be referred to as:
   $V = Bh$
4. How to determine what they know from a problem and use that to solve for what they do not know
5. Understand that volume and area play a significant role in everyday life
6. Cost and physical space affect where you can live

Skills

Students will be able to…

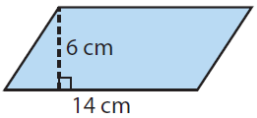
1. use area and volume equations to solve real-world problems.
2. find the area of parallelograms, triangles, and trapezoids.
3. use equations to solve problems about area of rectangles, parallelograms, trapezoids, and triangles.
4. write equations to solve problems involving volume of right rectangular prisms.
5. use equations to solve problems involving area and volume.
6. determine the importance of order of operations when solving area formulas.
7. manipulate squares and rectangles to determine formulas for parallelograms/triangles.
8. understand the foundation of volume formulas when looking at the area of a base of a prism.
9. determine the cost per square foot of rooms and an overall home.

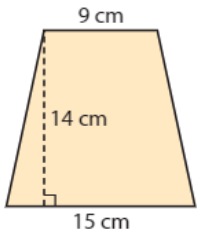
Stage 2 – Evidence

CODE (M or T)	Evaluative Criteria (for rubric)	
T	3D Model	Performance Task(s) *Students will demonstrate meaning-making and transfer by…*
T	Floor Plan	Creating a 3D model of their dream home from a drawn floor plan using area and volume equations. Students will determine the total square footage of their homes and use that to determine the total volume of their 3D model.
M/T	Math Proofs	Extension: Pre-AP students will be given constraints such as a specific cost or square footage that their house would have to remain under, in order to add an additional challenge.
M	In-Class Work	Constraint 1: You have a \$90,000 loan to purchase a home. How big can your dream home be if it costs about \$40/ft^2 (dollars per square foot)? Constraint 2: You have \$120,000 loan to purchase a home. How big can your dream home be if it costs about \$100/ft^2 (dollars per square foot)? Constraint 3: The plot of land you're building on is 500 ft^2. How can you follow the space requirements of your property and still build your dream house? Constraint 4: The plot of land you're building on is 1000 ft^2. How can you follow the space requirements of your property and still build your dream house? --- Other Evidence (e.g., formative)
M		Do-Nows (Warm-Ups)
M		Exit Tickets
M		Weekly Homework

Stage 3 – Learning Plan

CODE (A, M, T)		
	Pre-Assessment *How will you check students' prior knowledge, skill levels, and potential misconceptions?*	
A	Students have gone over area of squares and rectangles in 5th grade. Students will now be transitioning from *Area = length x width* to *Area = base x height*. Students will also need to evaluate rational number operations in their formulas. The main form of pre-assessment throughout the unit is through the Do-Nows. Do-Nows will contain problems that were taught in the previous lesson. Daily language will be using *base* and *height*, so that students become used to the new variables *b* and *h*. Potential misconceptions will be addressed through progress monitoring, including: Do Nows, Checks for Understanding, Exit Tickets, and Homework Assignments. Students will also be given a Mini-Quiz as a pre-assessment to assess student strengths on multiplying and dividing rational numbers, as well as solving one-step equations when solving for a variable or when given a variable and substituting it into the equation to solve. Results of this pre-assessment will be used to determine the students that may need additional support, as well as students that need enrichment activities prepared for them.	
	Learning Activities <u>Day 1 – TEKS focus: 6.8B</u> Area of Quadrilaterals -square, rectangle, parallelogram	Progress Monitoring (e.g., formative data)
T	**Do Now: (5 min)** Find the area of a rectangle with length 3.25 ft. and width of 2.5 ft.	Check Do Now
	Introduce Essential Question: *What role does area play in everyday life?*	
A	**Discussion: (5 min)** What do we know about area? Where do we see it in	

	our everyday life? What purpose does area have in our lives? Why do we think area is important? Pass out *Toro Dream House Assignment Sheet*. Go over the upcoming unit.	Check for Understanding
A	**Investigative Strategy: (25 min)** Students will be in pairs and given a parallelogram cutout. Teacher will show a parallelogram example on the Promethean board (if smartboard is not available, doc cam can also be used with a physical parallelogram cutout). Teacher will ask about the student's knowledge regarding the shape in front of them. Teacher will then show on their own example how to cut a triangular piece from the edge of the parallelogram. Partners will carefully cut out the same piece on their own parallelogram. Teacher will ask how they can manipulate this shape to create another popular shape. Students will determine that this triangular piece can be moved to create a whole rectangle/square.	
M	Using the *Area of Squares, Rectangles, and Parallelograms Notes* half sheet, the class will discuss how to find the area of a square and rectangle. Through the visual example on the half sheet, students will determine that if a parallelogram can be manipulated to create a rectangle or square, then its area formula must also be the same.	Check for Understanding
	Ending Essential Question: *How can you use known measurements to find out an unknown?* Will begin to be addressed in exit ticket.	
T	**Exit Ticket: (5 min)** *How did we use what we know about squares and rectangles to determine the area formula for a parallelogram?* Students will turn in their response on a half sheet of paper.	Check Exit Ticket
T	**Homework:** *Weekly Math Homework 1* will be handed out. This double sided page includes spiraled problems from previous lessons as well as upcoming topics that will be covered throughout the week.	Check HW on Friday
	<u>Day 2: TEKS Focus – 6.8B & 6.8D</u> Area of Quadrilaterals -trapezoids Students will be given *Area of Trapezoids Lesson page* as they walk in to class.	
T	**Do Now: (5 min)** Find the area of the given parallelogram. 	Check Do Now
	Introduction Question: *Why does order of operations matter when solving area formulas?* This question will be introduced as something to think about throughout the lesson. It will finally be addressed in the exit ticket.	
A	**Lesson: (25 min)** We Do (15 min) – Teacher goes through the formula for a trapezoid. Teacher will give two examples on how to solve for area of trapezoids.	Check for Understanding
M/T	I Do (10 min) – Students will work on four problems independently. Two out of the four problems have the steps written out so students can solve each part of the problem in the correct order.	Check I Do
T	**Exit Ticket: (5 min)** Students will reflect on the importance of order of operations that has been discussed throughout the year. Students will answer with their partner on whether or not it is important to solve the area formula in the specific order given. They will give support to their answer.	Check Exit Ticket
T	**Homework:** Students continue to work on *Weekly Math Homework 1.*	Check HW on Friday

	Day 3: TEKS Focus – 6.8B & 6.8D Area of Triangles Students will be given *Area of Triangles Lesson page* as they walk into class.	
T	**Do Now: (5 min)** Find the area of the trapezoid:  **Essential Question:** *How can you use what is known to find out what is unknown? How do we use what we know about squares and rectangles to determine the area formula for triangles?*	Check Do Now
A	**Lesson: (31 min)** Begin lesson with a video **(~6 min)**, the narrator goes through the meaning of squared units and focuses on how to find the area of triangles. **START TIME: 4:17** (Teacher discretion on watching the entire 10:26 video, which includes finding the area of squares and rectangles.)http://mathantics.com/index.php/section/lesson/Area	
A	We Do: (15 min) Teacher leads class through two examples. Teacher shows students how to rewrite formula and substitute known measurements into the formula and solve.	Check for Understanding
M/T	I Do: (10 min) Students then work independently on four problems involving area of triangles. Two out of four problems break down the problems into steps so students can practice the order to solve area of triangles.	Check I Do
T	**Exit Ticket: (5 min)** *What are some similarities and differences in finding the area of squares, rectangles, and triangles?* Students will answer their exit ticket with their partner.	Check Exit Ticket
T	**Homework:** Students will continue to work on their *Weekly Math Homework 1*.	Check HW on Friday
	Day 4: TEKS Focus – 6.8C & 6.8D Solving Area Equations	
T	**Do Now: (5 min)** Find the area of the triangle given a height of 4 cm. and a base of 7 cm. **Essential Question**: *How can we use known measurements to find out what is unknown?* Introduce this question to the class as something to keep in mind as the lesson is going on. This will be readdressed in the Exit Ticket.	Check Do Now
A/M	**Lesson: (35 min)** Teacher leads through problems 1 & 2 on *Solving Area Equations* page (10 min). Students will then work on problems 3 – 5, checking with their partner prior to asking questions of the teacher (15 min). Student volunteers will then work through each problem on the promethean board (or on a paper under the doc cam) so students can check their work (10 min).	Check for Understanding Address Questions
T	**Exit Ticket: (5 min)** Students will address the beginning Essential Question in the Exit Ticket. *How did we use what we knew in each problem to find out what we didn't know?* Students will answer this with their partner before turning it in.	Check Exit Ticket
T	**Homework:** Students will continue to work on their *Weekly Math Homework 1.*	Check HW on Friday

	<u>Day 5: TEKS Focus – 6.8C & 6.8D</u> Solving Volume Equations	
T	**Do Now: (5 min)** The area of a parallelogram is 240 m^2. If the height is 10 m, what is the length of the base?	Check Do Now
	Essential Question: *How do we use what we know to determine what we don't know? What roles does volume play in everyday life?* Will be addressed through the introduction.	
A/M	**Lesson: (35 min)** Teacher will show students a sheet of copy paper. Teacher will lead class through discussion. What have we learned about this shape? How do we find its area? Once it has been determined that it is a 2D rectangle, take out a stack of copy paper. Put it all on a desk in the front. Lead class through investigative strategy. What have we done now to the sheet of paper? We still know how to find the area of the top and the bottom of the stack, but what is different? HEIGHT! The topic of today is determining the volume of 3D rectangular prisms. Discussion of the role volume has on everyday life. Why is it important to know a volume of a structure? What about buildings in a city?(5 min). Teacher will work through problems 1 & 2 on *Solving Volume Equations* page (10 min). Students will then work through problems 3 – 5, checking with their partners before asking the teacher questions (15 min). Student volunteers will then show their work on the promethean board (or on a physical copy under the doc cam) so that students can check their work (5 min).	Check for Understanding Address Questions
T	**Exit Ticket: (5 min)** *How did we use area to discover the formula for volume?* Students will answer the exit ticket and turn it in.	Check Exit Ticket
T	**Homework:** Students will turn in *Weekly Math Homework 1*.	Grade HW
	<u>Day 6: TEKS Focus – 6.8C & 6.8D</u> *Toro Dream House* Floor Plan	
T	**Do Now: (5 min)** Find the volume of a rectangular prism, given the height is 12.5 ft., the width is 3.2 ft., and the length is 5.7 ft.	Check Do Now
	Essential Question: *How does area affect a developing community/city?*	
M/T	**Lesson: (10 min)** Discussion (5 min) What happens if you want a really big house in the middle of downtown? Is it likely? Why or why not? What if you want to build a house in the suburbs of town? What are some pros/cons? After the discussion, teacher will introduce the assignment. Pass out *Toro Dream House Floor Plan Activity Sheet and Rubric.* "For the next three days, we are going to be architects. Who knows what an architect does? Look at your packet, what do we think an architect does? Designs buildings, such as homes. Since this is a three day long project, it will be taken as a test grade. The first thing we are going to do is draw out our floor plan. Here in a minute, I am going to show you two videos that have real floor plans that architects create before they begin construction. This will be your own floor plan of your "dream" house. You will have specific rooms that you are required to have in your floor plan, such as: kitchen, dining room, bathroom, etc. Depending on your own creativity, you are free to include more elaborate/unique rooms like a game room, a library, or pool. It can be designed any way your heart desires as long as it fits on the provided grid paper.(http://print-graph-paper.com/)Make sure you include your measurements of length and width of each room because you will be writing the square footage (area that has feet as units) of each room. Then once that is completed, we will be building 3D models of these floor plans using foam (card) board and	

	toothpicks! We have rulers, colored pencils, crayons, and markers that you can use for your floor plan. Do we have any question on our assignment for today?" *Pre-AP: Students will be given 1 out of 4 Constraint Cards dealing with financial or physical space constraints that they have to keep in mind when building their dream homes. Requirements are still the same; they also have this additional challenge to incorporate into their homes. * Show two YouTube videos: Video 1: https://www.youtube.com/watch?v=OzLESnqNhVU Time: 2:14 Video 2: https://www.youtube.com/watch?v=lmG6MymEKyM Time: 4:19 Students can then ask clarifying questions and begin work on their floor plans (20 min). At the end of the class, students will turn in their floor plan.	Check for Understanding
T	**Exit Ticket: (5 min)** Explain why you chose to design your dream home the way you did. Did the grid paper's size affect how many creative rooms you could put in your dream home? Students will answer these questions at the end of their *Toro Dream House Floor Plan Activity* sheet.	Check Exit Ticket
T	**Homework:** *Weekly Math Homework 2* will be passed out.	Check HW on Friday
	<u>Day 7: TEKS Focus – 6.8C & 6.8D</u> *Toro Dream House* 3D Model Work Day 1 **Essential Question:** *How does volume affect a developing community/city? How can we use math to communicate to others?*	
T	**Lesson: (10 min)** Discussion of Essential Question. If we are in the middle of downtown and we want to add room to a building, how would we do it? What about the difference in volumes from inner city buildings and suburbs outside of a city? Why is drawing a floor plan important in the way architects communicate to their construction workers? Teacher will then return floor plans to students. If their floor plans have been cleared for building, students will begin to make their 3D model of their floor plan. (Students that are not cleared will be given 10 minutes to finish before moving on to building.) Teacher will pass out *Toro Dream House 3D Model Activity*. Materials (depending on budget): -Foam Board/Cardboard -Toothpicks -Bamboo skewers -Hot glue -Clay (to put on ends of toothpicks) -Markers, Crayons, Colored Pencils -Rulers Building: (30 min) Students will be advised to work on their model from the inside out, meaning the walls of the interior rooms will be built before building the exterior wall of their house. Any multi-story home will be done on individual foundation boards, labeled with specific floors. There is also the potential to place floors on top of each other AFTER teacher has noted the completion of the required rooms in the 3D Model.	Check for Understanding
T	**Exit Ticket: (5 min)** Show students pictures of a neighborhood in San Francisco and a suburb neighborhood outside of San Antonio. Students will write about the differences they see and how the area affects the volume of the houses that are built in each location. Where would they rather live? In a hustling, bustling city or a quiet, secluded neighborhood? Explain reasoning.	Check Exit Ticket

T	 vs.  <u>Day 8: TEKS Focus – 6.8C & 6.8D</u> *Toro Dream House* 3D Model Work Day 2 Students will continue to work on their models. Teacher will pass out *Toro Dream House Checklist.* Student will use this to double check that they have turned in all of the requirements for the final grade. The checklist, rubric, floor plan, floor plan activity sheet, and volume activity sheet will all be stapled and turned in when final project is completed. **Exit Ticket: (10 min)** Final discussion of completed project. Students will answer the final question at the bottom of their *Toro Dream House* 3D Model Activity sheet. Why did they choose to build their model that way? Are there any adjustments/improvements that would be done if you did this project again? Once everyone has had time to write a response, student volunteers will show their model and explain the answers to these questions. Students will turn in their assignment packet, including: 3D model activity sheet, floor plan activity sheet, floor plan, and their in-class notes (if they haven't already).	Check Exit Ticket Grade Projects

Day 1

Toro Dream House Assignment Sheet

Greetings, fellow architects! For the next 8 days, you will be learning what it truly takes to be an architect of your own dream home. The upcoming unit that will aid you in your journey involves area and volume! I know that you have learned a bit about area and volume in 5th grade, but you are going to be building on these skills by including even cooler shapes, such as: trapezoids and triangles! The goal as you learn these new and important skills is to master them so that you can actually draw your own dream house floor plan. You won't stop there! After your floor plan has been drawn, you will then be tasked to build a 3D model of your dream house! How cool is that?!

Here is an overview of what the schedule will be for this unit. In this way, you can keep track of what topic we are covering on each day, as well as what you miss in case you are absent.

Day 1: Area of Quadrilaterals → Squares, Rectangles, and Parallelograms

Day 2: Area of Quadrilaterals → Trapezoids

Day 3: Area of Triangles

Day 4: Solving Area Equations

Day 5: Solving Volume Equations

Day 6: *Toro Dream House* Floor Plan Drawing Day

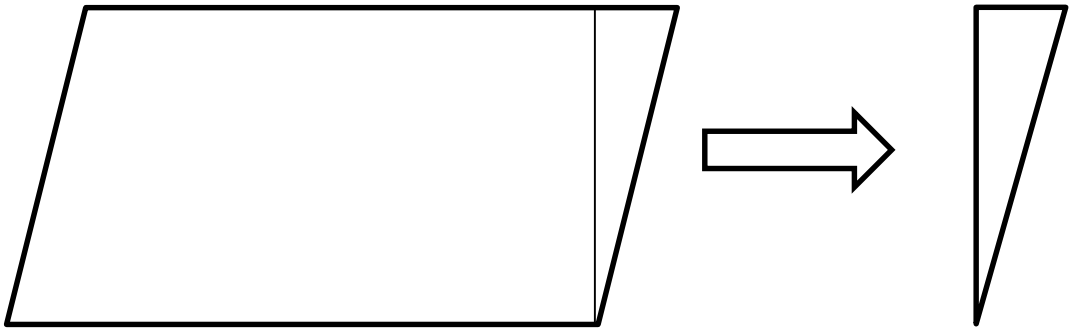
Day 7: *Toro Dream House* 3D Model Building Day 1

Day 8: *Toro Dream House* 3D Model Building Day 2

Make sure you are taking notes along the way because these assignments will be turned in for your final grade! I will also be giving you a rubric of the final project that shows you exactly how to get a perfect score (100!) on this assignment! There are even opportunities to get 10 extra credit points! If you find yourself overwhelmed or if you have any questions, you can always come and see me before and after class too!

Now, let's start designing!

Teacher Example on board or through doc cam:

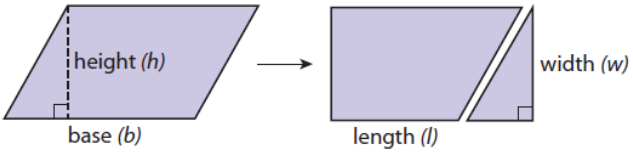


Name: _____ Date: _____ Period: _____

Area of Squares, Rectangles, and Parallelograms Notes

Area of a Square Formula: _____

Area of a Rectangle Formula: _____



What figure have you formed? _____

Does this figure have the same area as the parallelogram? _____

base of parallelogram = _____ of rectangle

height of parallelogram = _____ of rectangle

area of parallelogram = _____ of rectangle

KEY:

A = lw → A = bh

A = lw → A = bh

Rectangle

Yes

Length

Width

Area

A = bh

Area of a Parallelogram Formula: The area *A* of a parallelogram is the product of its base *b* and height *h*.

_____

Week of 2/29/2016 ~ Due to Ms. Cárdenas by Friday ~ YOU CAN DO IT!

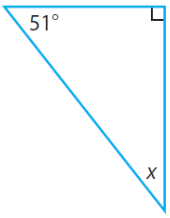
Weekly Math Homework 1

Name: _____ Period:_____

❖ **Find the missing angle measure in each triangle:**

1)

2)



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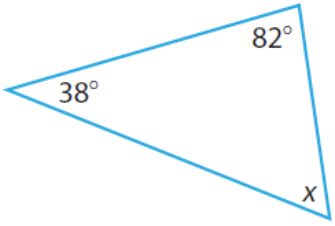
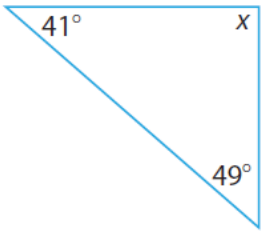


4)



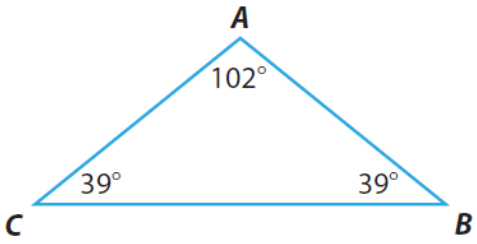
❖ **Tell whether a triangle can have sides with the given lengths:**

1. 5 in., 12 in., 13 in. _____ **2.** 4.5 ft, 5.5 ft, 11 ft _____

❖ **Match each side length with its correct measure:**

1)

The side lengths of triangle *ABC* are 6.4 ft, 10 ft, and 6.4 ft.



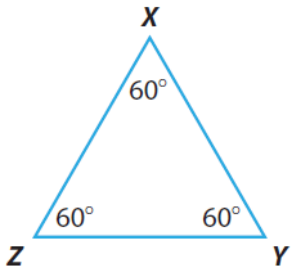
AB = _____

BC = _____

AC = _____

2)

The side length of *ZX* is 17 cm.



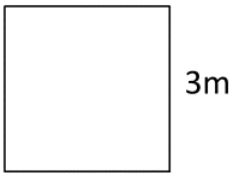
XY = _____

YZ = _____

_____

AREA	
Triangle	$A = \frac{1}{2}bh$
Rectangle or parallelogram	$A = bh$
Trapezoid	$A = \frac{1}{2}(b_1 + b_2)h$

❖ **Find the area of each figure:**



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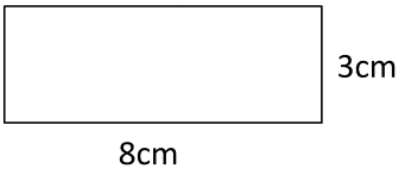

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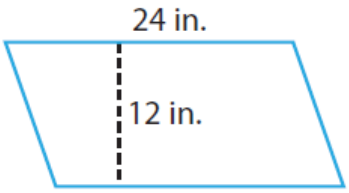

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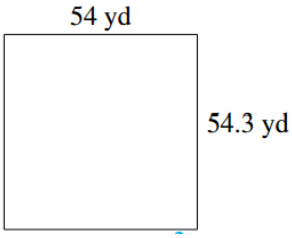

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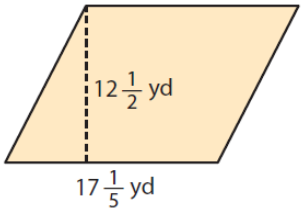

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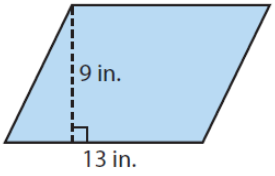

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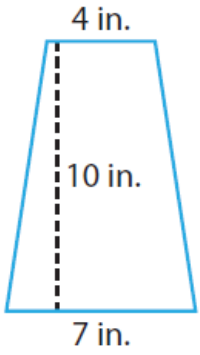
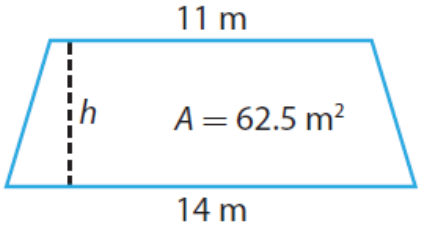


Area =_____



Area =_____

Day 2

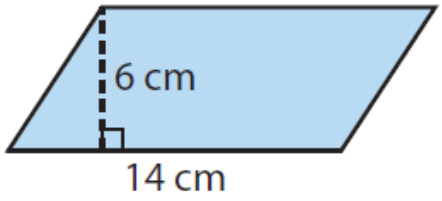
Name:_____ **Period:**_____

TEKS 6.8B, 6.8D – Area of Trapezoids

Show all your work. YOU CAN DO IT**!**

DO NOW (5 minutes)- VOICE LEVEL 0- TRY BY YOURSELF

1) Find the area of the parallelogram:



Area:_____

My work space:

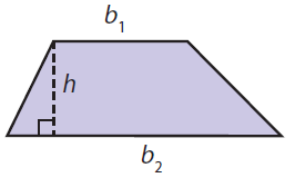
WE DO (15 minutes)-VOICE LEVEL 1- PARTICIPATE IN DISCUSSION

Area Formula

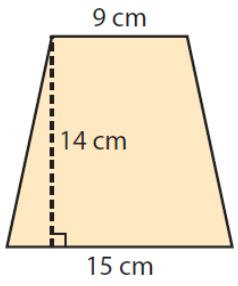
Area of a Trapezoid

The area of a trapezoid is half its height multiplied by the sum of the lengths of its two bases.

$$A = \frac{1}{2}h(b_1 + b_2)$$



Example 1: Find the area of the trapezoid.

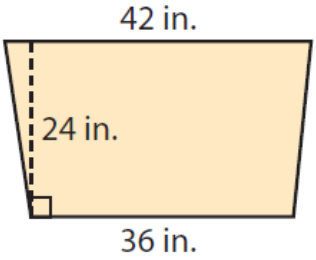


$$A = \frac{1}{2}h(b_1 + b_2)$$

$$= \frac{1}{2}\left(\square\right)\left(\square + \square\right)$$

$$= \_\_\_\_\_ \text{ cm}^2$$

Example 2: Find the area of the trapezoid.



$$A = \frac{1}{2}h(b_1 + b_2)$$

$$= \frac{1}{2}\left(\square\right)\left(\square + \square\right)$$

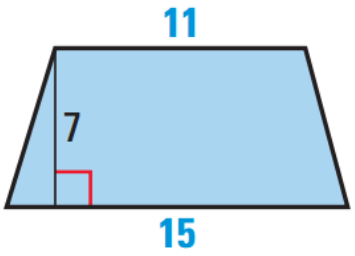
$$= \_\_\_\_\_ \text{ cm}^2$$

TEKS 6.8B, 6.8D – Area of Trapezoids

Show all your work. YOU CAN DO IT!

I DO (10 minutes)- VOICE LEVEL 0- WORK BY YOURSELF

1) Find the area of the trapezoid.



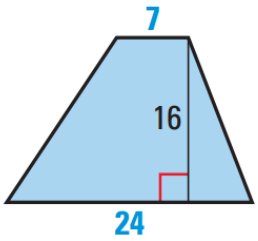
Step 1: base 1 + base 2

Step 2: then multiply the height

Step 3: then divide by 2

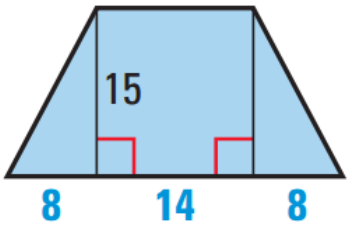
Area = _____

2) Find the area of the trapezoid.



Area = _____

3) Find the area of the trapezoid.



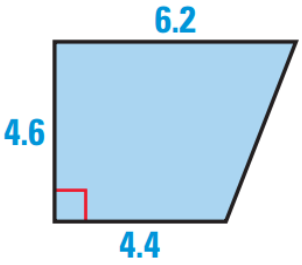
Step 1: base 1 + base 2

Step 2: then multiply the height

Step 3: then divide by 2

Area = _____

4) Find the area of the trapezoid.



Area = _____

EXIT TICKET (5 minutes)- VOICE LEVEL 1- WORK WITH YOUR PARTNER

When looking at the trapezoid's area formula, $A = \frac{1}{2} h(b_1 + b_2)$, is it important to solve the formula the same way every time? In other words, do we have to add the bases first, multiply by height second, and then divide by 2?

Why or why not?

Day 3

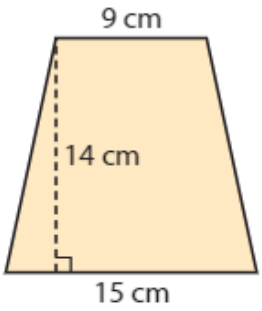
Name:_____ **Period:**_____

TEKS 6.8B, 6.8D – Area of Triangles

Show all your work. YOU CAN DO IT**!**

DO NOW (5 minutes)- VOICE LEVEL 0- TRY BY YOURSELF

Find the area of the trapezoid:



My work space:

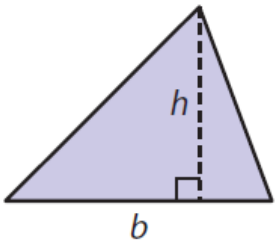
Area:_____

WE DO (15 minutes)-VOICE LEVEL 1- PARTICIPATE IN DISCUSSION

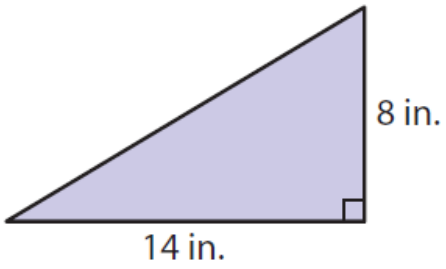
Area of a Triangle

The area A of a triangle is half the product of its base b and its height h.

$$A = \frac{1}{2}bh$$



Example 1: Find the area of the triangle.

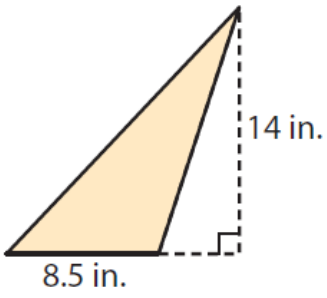


$$A = \frac{1}{2}bh$$

$$= \frac{1}{2}(\_\_\_\_\_)(\_\_\_\_\_)$$

$$= \_\_\_\_\_ \text{ in}^2$$

Example 2: Find the area of the triangle.



$$A = \frac{1}{2}bh$$

$$= \frac{1}{2}(\_\_\_\_\_)(\_\_\_\_\_)$$

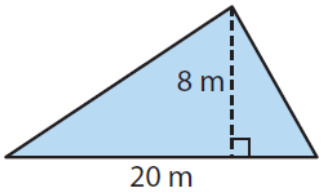
$$= \_\_\_\_\_ \text{ in}^2$$

TEKS 6.8B, 6.8D – Area of Triangles

Show all your work. YOU CAN DO IT!

I DO (10 minutes)- VOICE LEVEL 0- WORK BY YOURSELF

1) Find the area of the triangle.

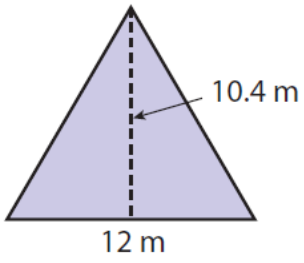


Step 1: base multiply height

Step 2: then divide by 2

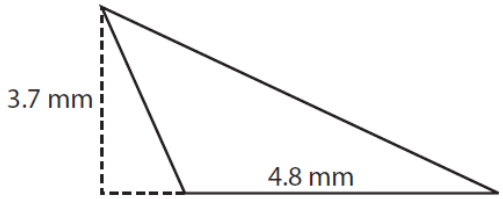
Area = _____

2) Find the area of the triangle.



Area = _____

3) Find the area of the triangle.

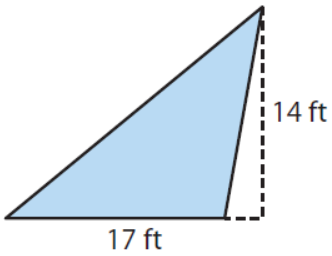


Step 1: base multiply height

Step 2: then divide by 2

Area = _____

4) Find the area of the triangle.



Area = _____

EXIT TICKET (5 minutes)- VOICE LEVEL 1- WORK WITH YOUR PARTNER

What are some similarities and differences in finding the area of squares, rectangles, and triangles?

Similarities

Differences

Day 4

Name: _____ **Date:** _____ **Period:** _____

TEKS: 6.8C: Solving Area Equations

AREA	
Triangle	$A = \frac{1}{2}bh$
Rectangle or parallelogram	$A = bh$
Trapezoid	$A = \frac{1}{2}(b_1 + b_2)h$

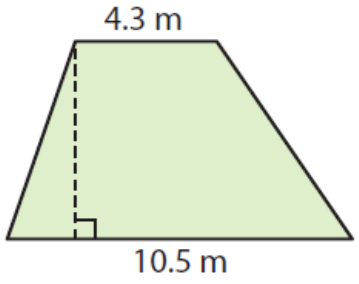
1)

A window shaped like a parallelogram has an area of $18\frac{1}{3}$ square feet. The height of the window is $3\frac{1}{3}$ feet. How long is the base of the window?

- **Step 1: Write the formula**
- **Step 2: Substitute the variables with the given values**
- **Step 3: Solve for the unknown variable**

2)

A garden in the shape of a trapezoid has an area of 44.4 square meters. One base is 4.3 meters and the other base is 10.5 meters long. The height of the trapezoid is the width of the garden. How wide is the garden?



- **Step 1: Write the formula**
- **Step 2: Substitute the variables with the given values**
- **Step 3: Solve for the unknown variable**

3) A triangular sail has a base length of 2.5 meters. The area of the sail is 3.75 square meters. How tall is the sail?

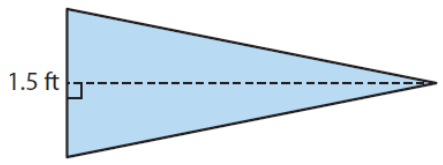
- **Step 1: Write the formula**
- **Step 2: Substitute the variables with the given values**
- **Step 3: Solve for the unknown variable**

4) The cross section of a water bin is shaped like a trapezoid. The bases of the trapezoid are 18 feet and 8 feet long. It has an area of 52 square feet. What is the height of the cross section?

- **Step 1: Write the formula**
- **Step 2: Substitute the variables with the given values**
- **Step 3: Solve for the unknown variable**

5) The Hudson High School wrestling team just won the state tournament and has been awarded a triangular pennant to hang on the wall in the school gymnasium. The base of the pennant is 1.5 feet long. It has an area of 2.25 square feet. What is the height of the pennant?

- **Step 1: Write the formula**

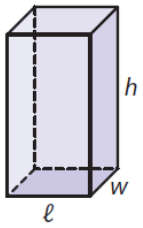


- **Step 2: Substitute the variables with the given values**
- **Step 3: Solve for the unknown variable**

Day 5

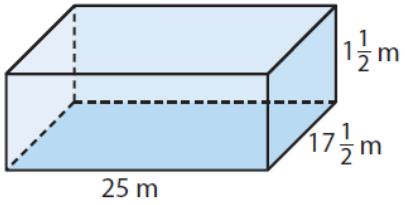
Name: _____ **Date:** _____ **Period:** _____

TEKS: 6.8C, 6.8D: Solving Volume Equations



VOLUME		
Rectangular prism	$V = \ell wh$	$V = Bh$

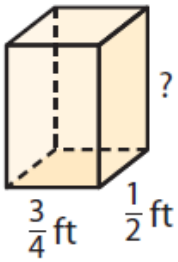
1) Find the volume of this rectangular prism.



- **Step 1: Write the formula**
- **Step 2: Substitute the variables with the given values**
- **Step 3: Solve for the unknown variable**

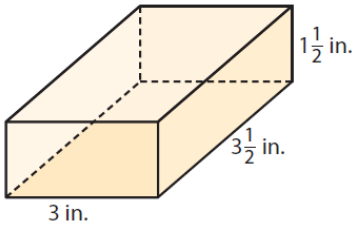
2)

Find the height of this shape, which has a volume of $\frac{15}{16}$ cubic feet.



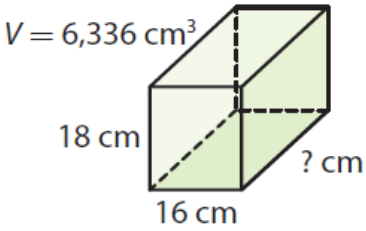
- **Step 1: Write the formula**
- **Step 2: Substitute the variables with the given values**
- **Step 3: Solve for the unknown variable**

3) Find the volume of this rectangular prism.



- **Step 1: Write the formula**
- **Step 2: Substitute the variables with the given values**
- **Step 3: Solve for the unknown variable**

4) Find the width of the rectangular prism.



- **Step 1: Write the formula**
- **Step 2: Substitute the variables with the given values**
- **Step 3: Solve for the unknown variable**

5) An aquarium holds 33.75 gallons of water. It has a length of 2 feet and a height of 1.5 feet. What is the volume of the aquarium? What is the width of the aquarium?

- **Step 1: Write the formula**
- **Step 2: Substitute the variables with the given values**
- **Step 3: Solve for the unknown variable**

Day 6

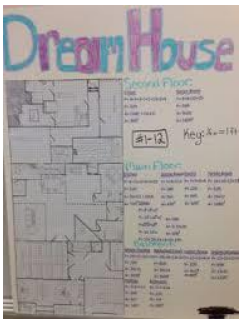
Toro Dream House Rubric

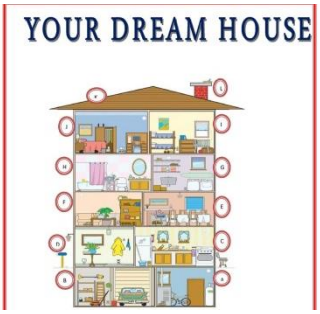
Grading Criteria	Not Present or Little Information	Limited Information	Complete & Total Information	Detailed, Extra Information	Points Earned* *potentially 10 extra credit points
Scale Model ***-mirrored from floor plan*** ***-deals with Constraint Card***	**(0-7)** Scale model does not mirror what was drawn on the floor plan, either because it has barely been started or because it does not follow the floor plan.	**(8-15)** Scale model partially mirrors what was drawn on floor plan, either because it has not been finished or because it does not follow the floor plan.	**(16-25)** Scale model completely mirrors what was drawn on the floor plan.	**(26)** Scale model completely mirrors what was drawn on the floor plan. Plus, the model includes additional components, such as: furniture, color, décor.	**/25 points**
Floor Plan ***-kitchen*** ***-dining room*** ***-bathroom*** ***-bedroom*** ***-living room*** ***-garage*** ***-backyard*** ***-creative rooms*** ***-deals with Constraint Card***	Floor plan has not been completed at all. Rooms may be individually drawn, but are missing length and width measurements and individual room areas.	Floor plan has been partially completed, missing some length and width measurements in each room. Rooms may not have been completely labeled, or may have missed the areas of each room.	Floor plan has been completed, including length and width measurements of each room. Rooms have been labeled, including the area of each room.	Floor plan has been completed, including length and width measurements of each room. Rooms have been labeled, including the area of each room. The floor plan has also been colored and decorated, possibly including furniture.	**/25 points**
Mathematical Proofs ***-Areas of each room*** ***-Volumes of each room***	(0-5) None of the activity sheets have been turned in. One activity sheet was turned in, but mostly incomplete.	(6-10) One of the Activity sheets is turned in. Both activity sheets have been turned in, but they are halfway completed with areas and volumes of individual rooms.	(11-15) Both the *Toro Dream House Floor Plan Activity* and the *Toro Dream House 3D Model Activity* has been turned in with completed areas and volumes of individual rooms.	(16) Both the *Toro Dream House Floor Plan Activity* and the *Toro Dream House 3D Model Activity* has been turned in including the areas and volumes of their additional rooms.	**/25 points**
In-Class Work ***-Daily notes*** ***-Do Nows*** ***-Exit Tickets***	Student has turned in none or 1-2/5 of the in-class notes, including Do Nows and Exit Tickets.	Student has turned in 3-4/5 of the in-class notes, including Do Nows and Exit Tickets.	Student has turned in 5/5 of the in-class notes, including Do Nows and attempted the Exit Tickets.	Student has turned in 5/5 of the in-class notes, including Do Nows and had well thought out Exit Ticket responses.	**/25 points**
				Project is Turned in On Time	**/6 points**
				Total Points Earned (out of 100 points):	

Name:_____ Score:_____ Period:_____

TORO DREAM HOUSE FLOOR PLAN ACTIVITY

Title:_____





After drawing your dream house floor plan, determine the area of each room using the area formulas on your STAAR Chart:

1) Write the shape of the room. 2) Write the formula. 3) Plug in measurements to solve.

Area of living room: 1) What is the shape of the room? _____

2) _____= 3) _____ ft^2.

Area of dining room: 1) What is the shape of the room? _____

2) _____= 3) _____ ft^2.

Area of kitchen: 1) What is the shape of the room? _____

2) _____= 3) _____ ft^2.

Area of bedroom: 1) What is the shape of the room? _____

2) _____= 3) _____ ft^2.

Area of bathroom: 1) What is the shape of the room? _____

2) _____= 3) _____ ft^2.

Area of garage: 1) What is the shape of the room? _____

2) _____= 3) _____ ft^2.

Area of backyard: 1) What is the shape of the room? _____

2) _____= 3) _____ ft^2.

Additional rooms in your dream house can be written here:

1) Write the shape of the room. 2) Write the formula. 3) Plug in measurements to solve.

Area of _____: 1) What is the shape of the room? _____

2) _____= 3) _____ ft^2.

Area of _____: 1) What is the shape of the room? _____

2) _____= 3) _____ ft^2.

Area of _____: 1) What is the shape of the room? _____

2) _____= 3) _____ ft^2.

Area of _____: 1) What is the shape of the room? _____

2) _____= 3) _____ ft^2.

Area of _____: 1) What is the shape of the room? _____

2) _____= 3) _____ ft^2.

Area of _____: 1) What is the shape of the room? _____

2) _____= 3) _____ ft^2.

Area of _____: 1) What is the shape of the room? _____

2) _____= 3) _____ ft^2.

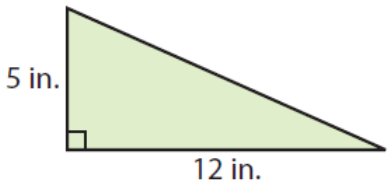
Explain why you chose to design your dream home the way you did. Did the grid paper's size affect how many creative rooms you could put in your dream home?

Week of 3/7/2016 ~ Due to Ms. Cárdenas by Friday ~ YOU CAN DO IT!
Weekly Math Homework 2

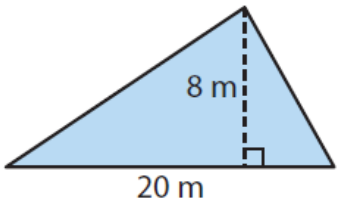
Name: _____ Period:_____

AREA	
Triangle	$A = \frac{1}{2}bh$
Rectangle or parallelogram	$A = bh$
Trapezoid	$A = \frac{1}{2}(b_1 + b_2)h$
VOLUME	
Rectangular prism	$V = Bh$

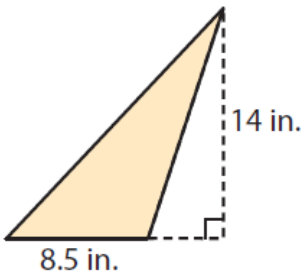
❖ **Find the area of each triangle:**



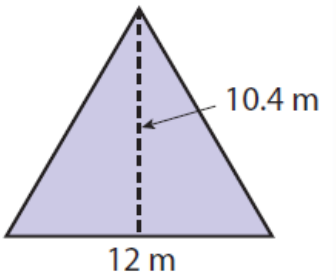
Area =_____



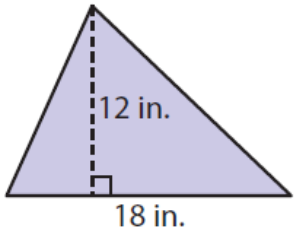
Area =_____



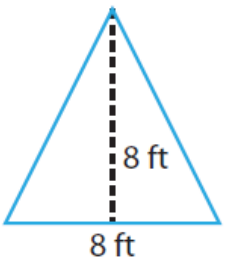
Area =_____



Area =_____

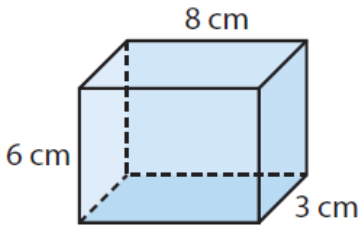


Area =_____

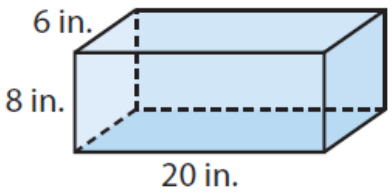


Area =_____

❖ **Find the volume of each figure:**

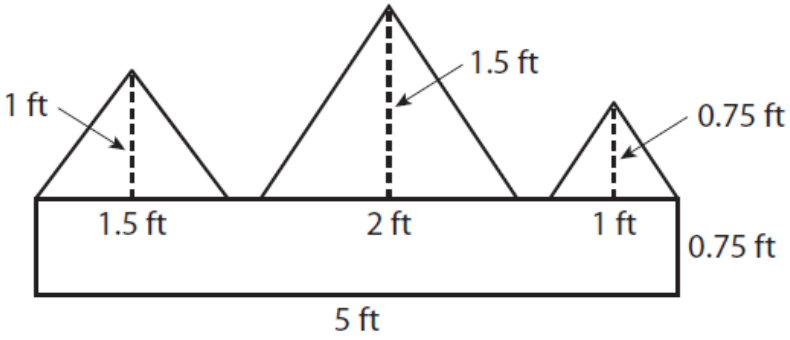


Volume =_____



Volume =_____

CAREERS IN MATH **Theater Set Construction** Ahmed and Karina are building scenery of the Egyptian pyramids out of plywood for a community play. The pyramids are represented by triangles on a rectangular base. The diagram shows the measurements of the piece of scenery.



a. They have one sheet of plywood, 3 ft by 6 ft. Will they be able to make the piece using this one sheet? Explain.

_____

_____

_____

b. How many square feet of plywood is in the completed piece? Show your work.

_____

_____

My work space:

Day 7

Name:_____ **Score:**_____ **Period:**_____

TORO DREAM HOUSE 3D MODEL ACTIVITY

Title:_____

After building your 3D model, determine the volume of each room using what you know about area of the base to find volume.

1) Square footage = Area of Base 2) Multiplied by the height 3) Final Volume

Volume of living room: 1) What is the square footage of the room? _____ ft^2

2) What is the height of the room?_____ft. 3) Volume = _____ft^3.

Volume of dining room: 1) What is the square footage of the room? _____ ft^2.

2) What is the height of the room?_____ft. 3) Volume = _____ft^3.

Volume of kitchen: 1) What is the square footage of the room? _____ ft^2

2) What is the height of the room?_____ft. 3) Volume = _____ft^3.

Volume of bedroom: 1) What is the square footage of the room? _____ ft^2

2) What is the height of the room?_____ft. 3) Volume = _____ft^3.

Volume of bathroom: 1) What is the square footage of the room? _____ ft^2

2) What is the height of the room?_____ft. 3) Volume = _____ft^3.

Volume of garage: 1) What is the square footage of the room? _____ ft^2

2) What is the height of the room?_____ft. 3) Volume = _____ft^3.

Volume of backyard: 1) What is the square footage of the room? _____ ft^2

2) What is the height of the room?_____ft. 3) Volume = _____ft^3.

Additional rooms in your 3D model can be written here:

1) Square footage = Area of Base 2) Multiplied by the height 3) Final Volume

Volume of_____________: 1) What is the square footage of the room? ______________ ft^2

2) What is the height of the room?________________ft. 3) Volume = ______________ft^3.

Volume of_____________: 1) What is the square footage of the room? ______________ ft^2

2) What is the height of the room?________________ft. 3) Volume = ______________ft^3.

Volume of_____________: 1) What is the square footage of the room? ______________ ft^2

2) What is the height of the room?________________ft. 3) Volume = ______________ft^3.

Volume of_____________: 1) What is the square footage of the room? ______________ ft^2

2) What is the height of the room?________________ft. 3) Volume = ______________ft^3.

Volume of_____________: 1) What is the square footage of the room? ______________ ft^2

2) What is the height of the room?________________ft. 3) Volume = ______________ft^3.

Volume of_____________: 1) What is the square footage of the room? ______________ ft^2

2) What is the height of the room?________________ft. 3) Volume = ______________ft^3.

Volume of_____________: 1) What is the square footage of the room? ______________ ft^2

2) What is the height of the room?________________ft. 3) Volume = ______________ft^3.

After building your 3D model, are there any adjustments/improvements that you would make if you could do this project again?

What was the easiest part about this project?

What was the most challenging part about this project?

Day 8

Name: _____ Date: _____ Period: _____

***Toro Dream House* Checklist**

Assignment/Activity:	Place check if turned in:
1. Day 1 Notes	_____
a. Including: Do Now, Notes, & Exit Ticket	
2. Day 2 Notes	_____
a. Including: Do Now, Notes, & Exit Ticket	
3. Day 3 Notes	_____
a. Including: Do Now, Notes, & Exit Ticket	
4. Day 4 Notes	_____
a. Including: Do Now, Notes, & Exit Ticket	
5. Day 5 Notes	_____
a. Including: Do Now, Notes, & Exit Ticket	
6. *Toro Dream House* Floor Plan	_____
a. Labeled in each room: name, length & width, and square footage	
b. Living Room	_____
c. Dining Room	_____
d. Kitchen	_____
e. Bedroom	_____
f. Bathroom	_____
g. Garage	_____
h. Backyard	_____
i. Extra Rooms	_____
7. *Toro Dream House Floor Plan Activity* Sheet	_____
a. All blanks are completed.	
8. *Toro Dream House* 3D Model	_____
a. A model reflecting what is drawn on the floor plan	
9. *Toro Dream House 3D Model Activity* Sheet	_____
a. All blanks are completed.	
10. *Toro Dream House* Rubric	_____