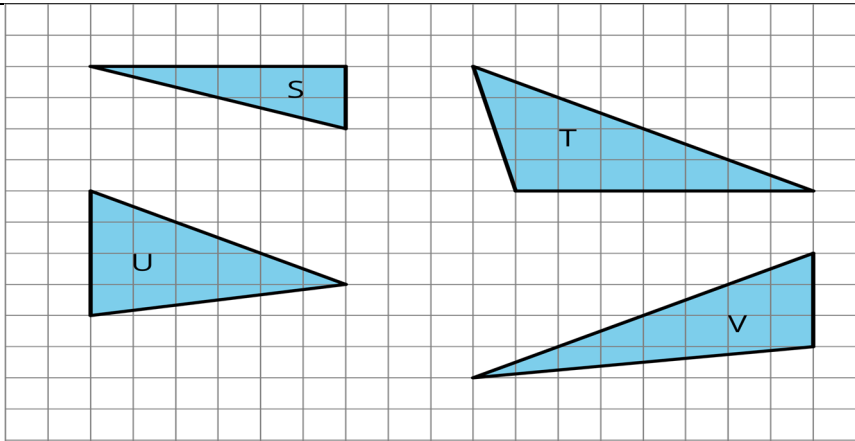
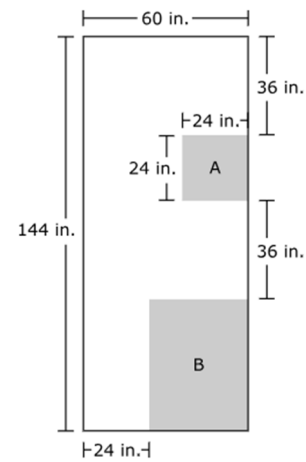


Let's Do Some Math Which Ones Doesn't Belong		
Standards Unpacking		
Key	Standard	Prerequisites/Vocabulary
Put a box around the <u>conceptual component</u> of the standard. Underline the <u>procedural/fluency component</u> of the standard. Put a cloud around the <u>application component</u> of the standard.	6.G.1- Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.	What prior knowledge should my students have?
		What vocabulary/ notation should students know for this standard?
	6.G.2- Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = lwh$ and $V = Bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.	What prior knowledge should my students have?
		What vocabulary/ notation should students know for this standard?
	6.G.4- Represent three-dimensional figures (e.g., pyramid, triangular prism, rectangular prism) using nets made up of rectangles and triangles and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.	What prior knowledge should my students have?
		What vocabulary/ notation should students know for this standard?

A metal shop is cutting a rectangular piece of sheet metal with a width of 60 inches and a length of 144 inches. The shaded parts of the diagram represent two rectangular sections, A and B, that will be cut and removed.



Part A

What are the dimensions of section B?

Part B

What will be the area in square inches, of the piece of sheet metal after both sections are cut and removed?

S	Study the Problem Underline the question. This problem is asking me to find
O	Organize the Facts Identify the facts. Eliminate the unnecessary facts. List the necessary facts.
L	Line up a Plan Write in words what your plan of action will be. Choose an operation or operations.
V	Verify Your Plan with Action Estimate your answer. Carry out your plan.
E	Examine Your Results Does your answer make sense? (Compare your answer to the question.) Is your answer reasonable? (Compare your answer to the estimate.) Is your answer accurate? (Check your work.) Write your answer in a complete sentence.

LESSON 30: Surface Area

Directions: Complete the following SOLVE problem with your teacher. You will only complete the S step.

Jack is covering a box with brown paper to mail to his grandmother. He is sending her a picture frame with his school picture in it. The box is 10 inches wide, 12 inches long, and 2 inches tall. What is the least amount of brown paper he will need to cover the box?

S Underline the question.

This problem is asking me to find _____.

Directions: Complete this page with your teacher and partner.

1. Use cubes to create a rectangular prism whose base is a 4 by 3 rectangle. Make your prism 2 layers tall.
2. How many faces does your prism have? _____
3. Draw and label the bottom face (base) of your prism on the graph paper on S372. With your teacher, draw each of the other faces as if you were unfolding the prism. Label each face. What you have just drawn is called a net.
4. Find the area of each of the rectangles you drew.

Top: _____ Front: _____ Right Side: _____

Bottom: _____ Back: _____ Left Side: _____

5. What is the combined area of the faces of the rectangular prism? _____

6. What do you notice about the areas of the different faces? _____

7. Write a definition for Surface Area: _____

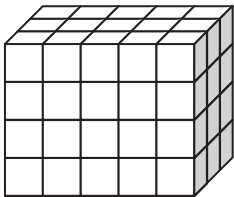
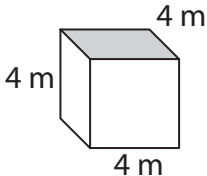
LESSON 30: Surface Area

Directions: Complete this page with your teacher and partner.

This image shows a full page of blank graph paper. It features a consistent grid of small squares formed by thin black lines. The grid covers the entire area of the page, providing a structured space for drawing or writing. There are no margins, text, or other markings present.

LESSON 30: Surface Area

Directions: Complete this page with your teacher and partner.

Prism	Net	Surface Area
Example 1: 		
Example 2: 		
Example 3: Tamara wants to cover her sofa cushions with new material. The cushions are 14 inches by 8 inches by 2 inches. How much material is needed to cover one cushion?		

LESSON 30: Surface Area

Directions: Complete the following SOLVE problem with your teacher. You will only complete the S step.

Tina is working on her geometry project. One of the three-dimensional figures she is working with is a triangular prism. The bases of the triangular prism are right triangles that have a base of 5 inches, a perpendicular height of 12 inches, and a hypotenuse of 13 inches. The prism has a height of 8 inches. What is the surface area of the triangular prism?

S Underline the question.

This problem is asking me to find _____.

Directions: Complete this page with your teacher and partner.

1. Look at Figure 1 on Copy Master page T719. Discuss with your partner how this shape is different from the rectangular prism on S372.	
Have students cut out Figure 1 and tape the sides to create the geometric figure so that the squares are facing out.	
2. What figure have you created? Explain your answer.	
3. Discuss with your partner strategies for finding the surface area of the figure.	
4. What is the area of Rectangle 1?	
5. What do you notice about Rectangle 2 and 3?	
6. What is the area of Rectangle 2? What is the area of Rectangle 3?	
7. Discuss the challenge of determining the area of Triangle 4 and 5 with your partner.	
8. What strategy could you use to find the area of each triangle? How would this help you?	
9. Determine the area of each triangle and add the two areas together.	
10. What is the total surface area of the triangular prism? Explain your answer.	

LESSON 30: Surface Area

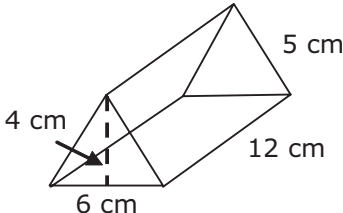
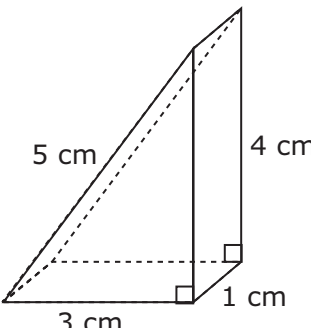
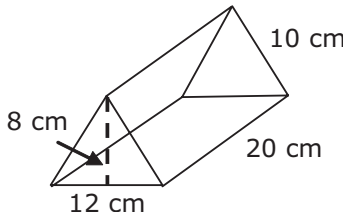
Directions: Complete this page with your teacher and partner.

1. Look at Figure 2 on Copy Master page T719. Discuss with your partner how this shape is different from the rectangular prism on S372.	
Have students cut out Figure 2 and tape the sides to create the geometric figure so that the squares are facing out.	
2. What figure have you created? Explain your answer. How is this shape different from the first?	
3. Discuss with your partner strategies for finding the surface area of the figure.	
4. What is the area of Rectangle 1?	
5. What do you notice about Rectangles 2 and 3?	
6. What is the area of Rectangle 2? What is the area of Rectangle 3?	
7. Discuss the challenge of determining the area of Triangles 4 and 5 with your partner.	
8. What strategy could you use to find the area of each triangle? How would this help you?	
9. Determine the area of each triangle and add the two areas together.	
10. What is the total surface area of the triangular prism? Explain your answer.	

Challenge: Work with your partner and analyze the two figures. Determine why one figure has two faces that are congruent and one figures has three different-sized faces.

LESSON 30: Surface Area

Directions: Complete this page with your partner.

Prism	Net	Surface Area
Example 1: 		
Example 2: 		
Example 3: 		

LESSON 29: Volume

Directions: Complete the following SOLVE problem with your teacher. You will only complete the S step.

Tia has a math problem on volume for homework. She must determine the volume of a box that has edges of $\frac{1}{3}$ inch, $\frac{2}{3}$ inch, and $1\frac{1}{3}$ inches. What is the volume of the box?

S Underline the question.

This problem is asking me to find _____.

Directions: Complete this page with your teacher and partner.

Review of Volume

1. Use cubes to create a rectangle that is 3 cubes long and 2 cubes wide.

Identify the length, width, area of the base, height of the prism, and the total number of cubes needed to create the prism.

Length	Width	Area of the Base	Height of the Prism	Total Number of Cubes

2. On top of your cubes, add another layer of cubes that is the exact same size.

Identify the length, width, area of the base, height of the prism, and the total number of cubes needed to create the prism.

Length	Width	Area of the Base	Height of the Prism	Total Number of Cubes

3. Make a prediction about the total number of cubes that you will need to make a prism with a height of 3 layers.

4. On top of your cubes, add another layer of cubes that is the exact same size.

Identify the length, width, area of the base, height of the prism, and the total number of cubes needed to create the prism.

Length	Width	Area of the Base	Height of the Prism	Total Number of Cubes

5. What pattern do you notice about the total number of cubes as another layer is added?

6. What does this mean about the volume the prism as we add each layer?

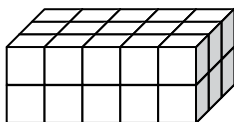
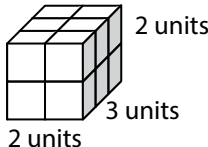
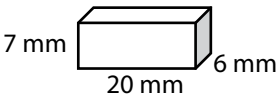
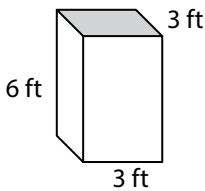
7. What is the formula for the volume of a prism?

8. Use what you know about the pattern of the cubes to make a prediction about the total number of cubes that you will need to make a prism with a height of 4 layers.

9. Confirm your prediction using the formula:

LESSON 29: Volume

Directions: Complete this page with your teacher and partner.

Right Rectangular Prism: A 3-D figure with six faces. All faces are rectangles.		
Example 1:  $V =$	Volume Formula: $V =$	5.  $V =$
Example 2:  $V =$	Volume Formula: $V =$	6.  $V =$
Example 3: A crayon box has a length of 7 cm, a height of 11 cm, and a width of 2 cm. What is its volume? $V =$	Volume Formula: $V =$	7. A rectangular prism has a length of 8 in., a width of 4 in., and a height of 3 in. What is the volume of the prism? $V =$
Example 4: A ring box has a base area of 50 mm², and a height of 60 mm. What is its volume? $V =$	Volume Formula: $V =$	8. A rectangular prism has a base area of 10 in.² and a height of 12 in. What is the volume of the prism? $V =$

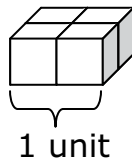
LESSON 29: Volume

Directions: Complete this page with your teacher and partner.

Volume of Prisms with Fractional Edge Lengths

Let's use the same cubes that we used to create the prism on page S358.

1. Use cubes to create a rectangle that is 2 cubes long and 2 cubes wide.
2. What is the area of the bottom of your rectangular prism? _____
3. What is the height of your rectangular prism? ____ the length? ____ the width? ____
4. How many cubes did it take to make your rectangular prism? _____
5. What is the volume of each section of the prism? _____
6. Let's look at the prism in a different way. Think about the rectangular base as having the measurements of 1 unit by 1 unit. This means that the length of ____ cubes would equal ____ unit. If the length of ____ cubes is equal to ____ unit then the length of 1 cube is equal to ____ of a unit.



7. What are the measurements of the prism now?

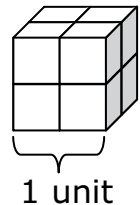
Width: _____ length: _____ height: _____

On top of your cubes, add another layer of cubes that is the exact same size.

8. What are the measurements of the prism now?

Width: _____ length: _____ height: _____

9. What is the total volume? _____



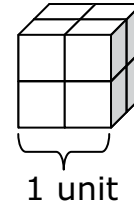
LESSON 29: Volume

Directions: Complete this page with your teacher and partner.

10. What is the width of one of the cubes? _____

What is the length of one of the cubes? _____

What is the height of one of the cubes? _____



11. Explain the relationship between the volume of the whole cube and each individual cube.

The volume of the whole cube is _____. There are _____ in the large cube. The volume of each smaller cube is ____ of the volume of the larger cube.

12. Can we use the volume formula in this situation? ____ How do we determine the volume of an individual cube? _____

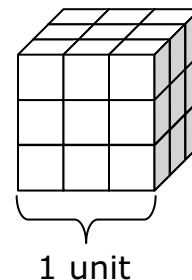
13. What is the volume of one of the cubes? _____

14. Let's look at another cube. Create a cube with three layers. Each layer should have a length of 3 small cubes and a width of 3 small cubes. Now let's look at the figure as having a length of 1 unit, a width of 1 unit, and a height of 1 unit.

What is the width of one of the cubes? _____

What is the length of one of the cubes? _____

What is the height of one of the cubes? _____

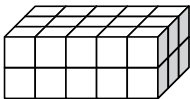
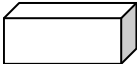
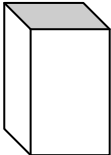


15. Explain the relationship between the volume of the whole cube and each individual cube. The volume of the whole cube is _____. There are _____ in the large cube. The volume of each smaller cube is ____ of the volume of the larger cube.

16. What is the volume of one of the cubes? _____

LESSON 29: Volume

Directions: Complete this page with your teacher and partner.

Example 1: Each cube has a side length of $\frac{1}{2}$ unit. $V =$ 	4. Each cube has a side length of $\frac{1}{2}$ unit. $V =$ 
Example 2: Dimensions: Length: $\frac{3}{4}$ meter Width: $\frac{1}{4}$ meter Height: $\frac{1}{4}$ meter $V =$ 	5. Dimensions: Length: $\frac{2}{8}$ foot Width: $\frac{3}{8}$ foot Height: $\frac{5}{8}$ foot $V =$ 
Example 3: A crayon box has a length of $2\frac{3}{4}$ inches, a height of $4\frac{1}{4}$ inches, and a width of $1\frac{1}{4}$ inches. What is its volume? $V =$	6. A rectangular prism has a length of $2\frac{1}{4}$ inches, a width of $1\frac{1}{4}$ inches, and a height of $\frac{3}{4}$ inches. What is the volume of the prism? $V =$

Conclusion: We can determine the volume of prisms with _____ using the same formula that we use with whole number edge lengths.

Understanding Modeling Questions

Use this sheet as a reflection tool to support the understanding of the evidence statement around the modeling questions. After you engage/learn about the questions, use the tool to make notes around your take aways and implementation ideas.

Current Unit Topics:

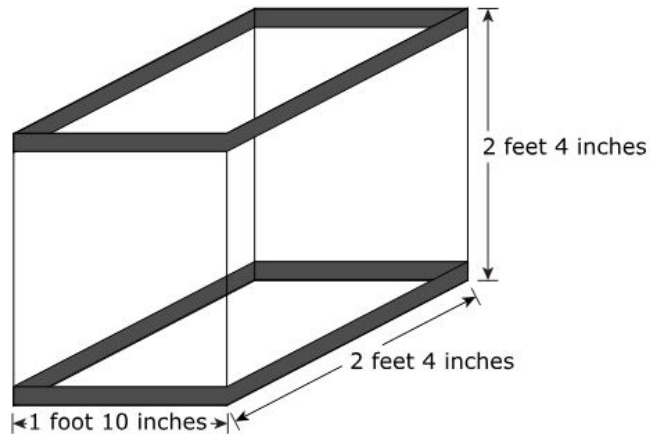
	Evidence Statement for Modeling
What Content Standards Are Addressed in This Evidence Statement from the Current Unit?	
Takeaways About the Statement – What Do Students Need to Be Able to Do	
What Should Be Evident in a Student Response	

Think Quantities!	Think Structure!	Think Repetition!
What can I count? What can I measure? How are the quantities related? How can I represent the quantities so I can see relationships?	How is this situation behaving? What kind of problem is this? Does the problem remind me of another I've solved? Will changing the form help? How can I chunk this expressions/number/visual?	Is there a process that keeps repeating? Am I counting /building/drawing in the same way each time? Do I keep repeating the same calculations? How can I use repetition to write a rule?

Modeling Question – 6.D.2

Used from: NJ Released Questions – 6.D.2- Measurement and Data- 2019- UIN-1298-M21432

Darren has a fish tank with the dimensions shown. He plans to purchase goldfish for his fish tank.



Part A

- Determine the dimensions, in inches, of the fish tank.
- Then find the volume, in cubic inches, of the fish tank.
- Show your work or explain your answers.

Part B

Darren researches information about goldfish. He finds the information shown. The recommended amount of space needed is 10 gallons for each goldfish. The volume of 1 gallon of water is 231 cubic inches.

- Determine the number of gallons that the fish tank can hold.
- Then determine the maximum number of goldfish that Darren can put in the fish tank.
- Show your work or explain your answers.