GEOMETRY
UNIT PLAN

Table of Contents

How to Use This Addenda

UNIT SYNOPSIS

In this unit, students deepen their understanding of geometry by classifying, analyzing, and applying properties of triangles, quadrilaterals, and three-dimensional figures. The work begins with classifying triangles by their sides and angles, emphasizing congruence notation and relationships between side lengths and opposite angles. Students use visual models, such as pencils under the document camera, to see that larger angles are always opposite longer sides. This connects to their prior work in elementary grades identifying shapes and builds readiness for using triangle properties in later courses.

Students then move into the Triangle Inequality Theorem, where they physically manipulate strips of paper to test which side lengths can form a triangle. Through exploration, they discover the condition that the sum of two shorter sides must be greater than the third side. This hands-on strategy develops reasoning skills and prepares students to apply the theorem abstractly on assessments.

In the next lesson, students use protractors to measure angles and discover the Triangle Angle Sum Theorem. They practice setting up and solving equations to find missing angles, reinforcing skills from earlier algebra units while also reasoning through isosceles triangle properties. The strategy of combining measurement, equation writing, and reasoning builds a bridge between numerical and algebraic thinking.

After mastering triangle properties, the unit transitions to area. Students revisit rectangles and then connect this to triangles, discovering that the area of any triangle is half the area of a rectangle with the same base and height. They explore this with both right and non-right triangles, stamping the importance of base and height being perpendicular. In the following lesson, students extend this reasoning to derive and use the formulas for trapezoids and parallelograms, aided by GeoGebra applets that allow them to visually rearrange and reason about shapes.

The unit concludes with the volume of rectangular prisms. Students connect the elementary formula l × w × h to the generalized formula V = Bh, where B represents the area of the base. This shift in perspective prepares them to calculate volumes of prisms of all types in future grades. Teachers use strategies such as cube counting, nets, and visual decomposition to help students make sense of volume as filling three-dimensional space.

Throughout the unit, strategies and models include:
- Using visual and physical models such as pencils, paper strips, and protractors to explore triangle properties.
- Input-output reasoning when linking side lengths to angle measures.
- Real-world connections such as interpreting when side lengths can or cannot form a triangle.
- Area models to show that all triangles are half rectangles and that trapezoid formulas come from combining or decomposing parallelograms.
- Technology-based discovery with GeoGebra to visualize formulas.
- Cube and prism models to bridge concrete counting with abstract volume formulas.

The sequence of lessons ensures that students build geometric reasoning step by step. They begin with classification and properties, then use those properties to establish theorems, and finally extend their knowledge to area and volume. By the end of Unit 9, students are equipped with a set of geometric tools that will support them in 7th grade work on surface area, more complex polygons, and algebraic applications of geometry.

This unit features 2 topics.

Lesson 1 re-introduces students to triangle classification, something they most likely saw in 4th and 5th grade; additionally, it introduces the relationship between angles and sides. Lesson 2 introduces students to the Triangle Inequality Theorem by allowing them to explore different lengths to see if they can or cannot form a triangle. Lesson 3 introduces students to the Triangle Inequality Theorem, and since they have already had practice solving equations, they get to use this skill to find missing values.

Lesson 1

equilateral	isosceles	scalene
3 equal sides	2 equal sides	NO equal sides
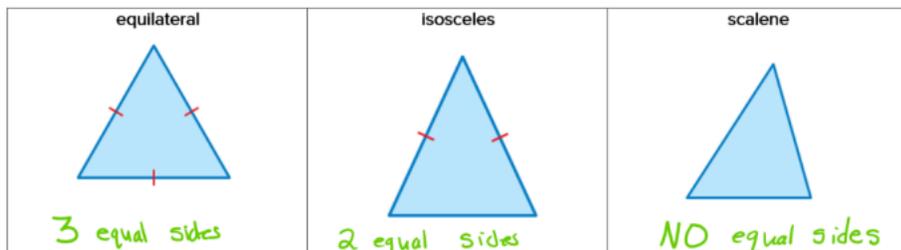
① Triangles can be classified by their largest angle.

obtuse	right	acute	equiangular*
1 obtuse angle	1 right angle	all acute angles	all = acute
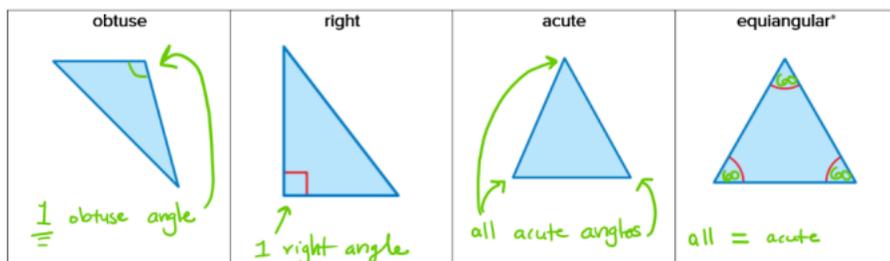
Lesson 2

① Strips: A, B, C	① Strips: A, D, L	① Strips: B, G, J	① Strips: D, L, H
Lengths: 1, 1.5, 2	Lengths: 1, 2.5, 6.5	Lengths: 1.5, 4, 55	Lengths: 25, 6.5, 4.5
Make a triangle?	Make a triangle?	Make a triangle?	Make a triangle?
☑ Yes ☐ No	☐ Yes ☑ No	☐ Yes ☑ No	☑ Yes ☐ No

Make a conjecture: When do three side lengths form a triangle?

If the two shorter sides add up to be more than the longest side, the 3 sides CAN make a triangle. 😊

Lesson 3

Triangle	Angle A (degrees)	Angle B (degrees)	Angle C (degrees)	A+B+C
ⓐ	60°	60°	60°	180°
ⓑ	90°	45°	45°	180°
ⓒ	120°	30°	30°	180°

In Lesson 4, students recall what they already know about area and perimeter of rectangles from elementary. This lesson builds on students' prior knowledge and helps them figure out why there is a 12 in the formula for area of a triangle. Like Lesson 4, Lesson 5 builds on students' understanding of area of a rectangle to demonstrate why the area of a parallelogram can also be found using $A=bh$ (because a parallelogram can be decomposed into parts and rearranged to form a triangle). Additionally, Lesson 5 helps students understand why there is a 12 in the formula for area of a trapezoid (because it is half of a parallelogram, whose area formula is $A=bh$). In elementary, students learned about volume as $V=l \times w \times h$. This worked because students only worked with cubes and rectangular prisms. In 7th and beyond, students will be working with various prisms, pyramids, and cones, so in 6th grade, students transition to learning about volume as $V=Bh$, where B is the AREA of the prism's base. Lesson 6 introduces students to the idea of "big B Base."

Lesson 4

6 units

4 units

ⓐ How could we find the perimeter of the rectangle? What is it?

$$6+4+6+4 = 20 \text{ units}$$

ⓑ How could we find the area of the rectangle? What is it?

$$24 \text{ units}^2 = 6 \times 4$$

12 units

7 units

ⓐ What is the area of the entire rectangle?

$$12 \cdot 7 = 84 \text{ units}^2$$

ⓑ What shapes are formed when the rectangle is cut diagonally?

Two right triangles!

ⓒ When you cut a rectangle diagonally, what is the area of each of the new shapes that were formed?

$$84 \div 2 = \boxed{42 \text{ units}^2} \text{ each}$$

Lesson 5

perpendicular

④ The base and the height of any shape must always be _____, which means they must form a ___ right angle ___ when they intersect.

base 2

height

base 1

Lesson 6

① Formula for Volume of a Prism: ___ $V = Bh$ ___

For ALL prisms

B = area of base 😊

$$V = l \cdot w \cdot h$$

$$(V = (length \cdot width \cdot height))$$

OLD – just for rectangular prisms

AREA

VOLUME
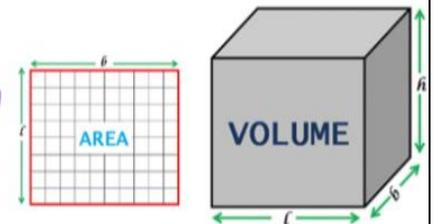
CONTENT STANDARDS

Below are the standards addressed in this unit.

Readiness Standards	Supporting Standards
6.8D Determine solutions for problems related to area of rectangles, parallelograms, trapezoids, and triangles	**6.8A** Extend previous knowledge of triangles and their properties to include the sum of angles of a triangle, the relationship between the lengths of sides and measures of angles in a triangle, and determining when three lengths form a triangle **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 area of rectangles, parallelograms, trapezoids, and triangles and volume of right rectangular prisms where dimensions are positive rational numbers

Focus on Disciplinary Literacy	
	Mathematical Process Standard (F) – analyze mathematical relationships to connect and communicate mathematical ideas
	Mathematical Process Standard (G) – display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication

ROADMAP

Topic	Day	Date	Lesson	Lesson Title
AT A GLANCE: Unit 9 – Geometry				
Topic A Properties of Triangles	1		1	Classify Triangles
	2		2	Triangle Inequality Theorem
	3		3	Triangle Angle Sum Theorem
	4			Flex Day | Topic Quiz 9
Topic B Area and Volume	5		4	Area and Perimeter of Rectangles and Triangles
	6		5	Area and Perimeter of Parallelograms and Trapezoids
	7		6	Volume of Rectangular Prisms
	8			Review
	9			Unit Exam 9

Lesson 1: Classifying Triangles		Date: _____
Standard(s)	Notes for Intellectual Preparation & Lesson Planning	Lesson Look Fors

Standard(s)

◆ **6.8(A)** extend previous knowledge of triangles and their properties to include ~~the sum of angles of a triangle,~~ the relationship between the lengths of sides and measures of angles in a triangle~~, and determining when three lengths form a triangle~~

Important Vocabulary

- Acute Triangle
- Congruent
- Equilateral Triangle
- Isosceles Triangle
- Obtuse Triangle
- Right Triangle
- Scalene Triangle

Notes for Intellectual Preparation & Lesson Planning

Necessary Materials and Pre-Lesson Prep
- Document Camera
- Projector
- Unit 9 Student Workbook
- Debrief Slide

Lesson Agenda

		Time
I.	Do Now	5 min
II.	INM/Concept Development	30 min
III.	Student Practice	10 min
IV.	Student Debrief	5 min
V.	Exit Ticket	10 min

Mathematical Goal of this Lesson
The primary goal of this lesson is for students to classify triangles by their side lengths and angle measures. They will also be introduced to the process of naming angles and side lengths.

Opportunities to CFU
✓ INM: #2 Equilateral and Isosceles Triangles, #3a-e
✓ Student Practice: #2, 6, 7, 11, 12

Other Notes to Inform Your Planning
For **Do Now**: The Do Now provides a great opportunity to assess prior knowledge and spiral in practice from a previous unit on equations and is a Must Do.
For **INM/Student Practice**: Provide students with an anchor chart that provides an example of triangles named by side and by angle. You may also note symbols such as the tick mark, angle curve and the congruent symbol to support student understanding. Include a model of each type of triangle named by angle/side (i.e., Acute Equilateral = Equal Sides/All Acute Angles, Right Isosceles = Two legs (2 s's in the word for two legs)/One right angle, Obtuse Scalene = No equal sides/One Obtuse Angle). Use the angle curve/tic marks to note congruent angles/sides in each model. This will support students as they work through the INM and Student Practice.

Focus on Disciplinary Literacy
INM: #3-9 Student Debrief

Lesson Look Fors

Look for teachers to…
☐ Use precise mathematical notation, like marking isosceles triangles with hash marks to show two sides and angles are congruent.
☐ Model INM 5a using two writing utensils to show how side length changes when angle measure changes.

Look for students to…
☐ Accurately classify triangles by sides and by angles
☐ Name a triangle based on its angles and side lengths
☐ Determine the largest angle and longest side of a triangle

Student Know/Do Chart

Know — All triangles can be classified by their angle measures and side lengths.

Know — A triangle's side length impacts the size of the angle opposite the side length

Know — The longest side of a triangle will always be opposite the largest angle.

Know — Isosceles triangles have two congruent sides; consequently, the angles opposite those sides are congruent

Do — Classify/Name triangles by angle and side

Lesson 2: Triangle Inequality Theorem		Date: _____
Standard(s)	Notes for Intellectual Preparation & Lesson Planning	Lesson Look Fors
◆ **6.8(A)** extend previous knowledge of triangles and their properties to include the sum of angles of a triangle, the relationship between the lengths of sides and measures of angles in a triangle, and determining when three lengths form a triangle	**Necessary Materials and Pre-Lesson Prep** • Document Camera • Class Set of Scissors • Projector • Unit 9 Student Workbook • Debrief Slide **Lesson Agenda** **Time** <table><tr><td>I.</td><td>Do Now</td><td>5 min</td></tr><tr><td>II.</td><td>INM/Concept Development</td><td>20 min</td></tr><tr><td>III.</td><td>Student Practice</td><td>20 min</td></tr><tr><td>IV.</td><td>Student Debrief</td><td>5 min</td></tr><tr><td>V.</td><td>Exit Ticket</td><td>10 min</td></tr></table> **Mathematical Goal of this Lesson** The primary goal of this lesson is for students to discover the triangle inequality theorem and apply it to application questions. This is an inquiry-based lesson. Students start off by trying to build triangles using 3 different sized side lengths. They will then discover that to make a triangle, the sum of the two shorter sides must be greater than the third side. **Opportunities to CFU** ✓ INM: #1, 2, 3, 8; Conjecture ✓ Student Practice: #1c, d, f. #3, 4	Look for teachers to... ❑ Give clear and concise expectations for the exploratory lesson. ❑ Allow students to make a generalization about when three lengths can and cannot form a triangle, coaching students to arrive at the generalization if they cannot verbalize it themselves Look for students to... ❑ Explore with different sets of strips ❑ Explain how to tell if three sides will form a triangle ❑ find the range of side lengths for a missing side when given two other sides
		Student Know/Do Chart
Important Vocabulary	**Other Notes to Inform Your Planning**	
• Inequality • Side Lengths • Triangle • Triangle Inequality Theorem	For **Do Now**: It will be important to urge students to be neat but also efficient when cutting. Support students who may be slower to cut or encourage neat, fast cutters to help those who are slower to cut. For **INM**: Consider adding expectations/timer for the activity in a Power Point to share with students prior to the INM. This will help with handling of materials, transitions, pacing and compliance as students engage in the activity. Watch this 5 minute video to learn about the Triangle Inequality Theorem if you find it necessary.	**Focus on Disciplinary Literacy** INM: #1-3 SP: #8-9

Focus on Disciplinary Literacy

INM: #1-3
SP: #8-9

Do determine whether three side lengths can form a triangle

Do determine possible side lengths for a triangle when two are given and one is missing

Lesson 3: Triangle Angle Sum Theorem		Date: _____
Standard(s)	**Notes for Intellectual Preparation & Lesson Planning**	**Lesson Look Fors**

Standard(s)	Notes for Intellectual Preparation & Lesson Planning	Lesson Look Fors
◆ **6.8(A)** extend previous knowledge of triangles and their properties to include the sum of angles of a triangle, the relationship between the lengths of sides and measures of angles in a triangle, and determining when three lengths form a triangle	**Necessary Materials and Pre-Lesson Prep** ■ Document Camera　■ Unit 9 Student Workbook ■ Projector　■ Debrief Slide ■ Class set of protractors **Lesson Agenda**　　　　　　　　　**Time** <table><tr><td>I.</td><td>Do Now</td><td>5 min</td></tr><tr><td>II.</td><td>INM/Concept Development</td><td>20 min</td></tr><tr><td>III.</td><td>Student Practice</td><td>20 min</td></tr><tr><td>IV.</td><td>Student Debrief</td><td>5 min</td></tr><tr><td>V.</td><td>Exit Ticket</td><td>10 min</td></tr></table> **Mathematical Goal of this Lesson** The primary goal of this lesson is for students to apply their knowledge of triangle properties to find missing angles in triangles. This lesson starts off with students using a protractor to measure the angles in a triangle. Once students have discovered the Triangle Angle Sum Theorem, they will set up an equation to solve for missing angles. **Opportunities to CFU** ✓ INM: #1a-c, #3b, #5a-c ✓ Student Practice: #3, 5, 7, 8, 9, 10	**Look for teachers to...** ❑ Model how to use a protractor. ❑ Model setting up and solving equations to find missing angles rather than just subtracting known values from 180. ❑ Stamp in INM4 that with isosceles triangles, if you know one angle, you can know ALL of them. **Look for students to...** ❑ Measure angles with protractors ❑ Set up and solve equations to find missing angles ❑ Be able to state how many degrees are in a triangle

Important Vocabulary		Student Know/Do Chart
■ Angle Measure ■ Degrees ■ Isosceles ■ Protractor ■ Sum ■ Triangle	**Other Notes to Inform Your Planning** For **Do Now**: For **INM/Student Practice:** Watch this 90-second video and consider showing it to students at some point during class. Just as in the previous lesson, stamp the expectations for students as they are using the protractor to engage in the lesson. If an anchor chart was created in the previous lesson allow students to use it for this lesson so that they can reference the isosceles triangle where if they are given only one angle measurement, they can find the measure of the other two. If students struggled with the solving equations, they will struggle in this lesson. Plan to pull a small group and offer access to an answer key after the first 9 minutes of the Student Practice for students to reference. Use of a timer would make this process more efficient. ┌─────────────────────────┐ │ **Focus on Disciplinary Literacy** │ │ INM: #4, 5c │ │ SP: #8-9 │ │ Student Debrief │ └─────────────────────────┘	**Know** The sum of the three angles in a triangle will always be 180 degrees. **Know** Because isosceles triangles have two congruent angles, you can find the measure of the other two angles in the triangle if you are given just one angle. **Do** Set up and solve an equation to find a missing angle in a triangle **Do** Out of a set of 3 angle measures, determine which of the 3 add up to 180 degrees, the total measurement of all angles in a triangle.

Lesson 4: Area of Rectangles and Triangles		Date: _____
Standard(s)	Notes for Intellectual Preparation & Lesson Planning	Lesson Look Fors

Standard(s)	Notes for Intellectual Preparation & Lesson Planning	Lesson Look Fors
◆ **6.8(B)** Model area formulas for ~~parallelograms, trapezoids, and~~ triangles by decomposing and rearranging parts of these shapes ◆ **6.8(C)** Write equations that represent problems related to area of rectangles, ~~parallelograms, trapezoids, and~~ triangles ~~and volume of right rectangular prisms where dimensions are positive rational numbers~~ ◆ **6.8(D)** Determine solutions for problems related to area of rectangles, ~~parallelograms, trapezoids,~~ and triangles	**Necessary Materials and Pre-Lesson Prep** ▪ Document Camera ▪ Projector ▪ Unit 9 Student Workbook ▪ 6th Grade STAAR Reference Material (Class Set) ▪ Debrief Slide **Lesson Agenda** — **Time** | I.	Do Now	5 min
II.	INM/Concept Development	20 min
III.	Student Practice	20 min
IV.	Student Debrief	5 min
V.	Exit Ticket	10 min | **Mathematical Goal of this Lesson** The primary goal of this lesson is for students to find the area of rectangles and triangles and explain the parts of the area formula for each shape. Students will build a deep conceptual understanding of area as the number of square units that cover a 2-D figure. They will then explore what happens when half of the area of a rectangle is taken. **Opportunities to CFU** ✓ INM: Part I: #2-6 Part II: #4c-f ✓ Student Practice: #1, 2, 4	**Look for teachers to…** ❑ Allow students to share what they remember about perimeter and area ❑ Emphasize that area is how much flat space an object takes up in square units. ❑ Emphasize that area is how much flat space an object takes up in square units. **Look for students to…** ❑ Explain the difference between perimeter and area ❑ Explain why there is a ½ in the formula for area of a triangle ❑ Find the area of triangles and rectangles

Important Vocabulary		
▪ Area ▪ Base ▪ Height ▪ Perimeter ▪ Perpendicular ▪ Rectangle ▪ Right Angle ▪ Triangle ▪ Square Units	**Other Notes to Inform Your Planning** For **Do Now**: The Do Now provides a great opportunity to determine which students remember the difference between perimeter and area. Gently remind students who may have forgotten. For **INM/Student Practice**: Allow students to use the STAAR Reference Materials to access the formulas for area of a triangle and rectangle *during* the Student Practice but **not** before. Share with them that they **do not** need to memorize the formulas because the reference material will be given to them when they take STAAR 2.0. Rather than students memorizing the formulas stamp the conceptual understanding and have the STAAR Reference Material available in the case they need to see the formulas. To support their understanding you may also take a moment to have them annotate it; see this example. **Focus on Disciplinary Literacy** **INM:** Part I #1-5 **SP:** ALL **Student Debrief**	**Student Know/Do Chart** **Know** Area measures the space inside of a 2-D shape and is measured in square units **Know** To find the area of a triangle, you multiply the base and height, then divide by two. **Do** Find the area of a rectangle and/or a triangle

Lesson 5: Area of Trapezoids and Parallelograms	Date: _____

Standard(s)	Notes for Intellectual Preparation & Lesson Planning	Lesson Look Fors

Standard(s)

- ◆ **6.8(B)** Model area formulas for parallelograms, trapezoids, and triangles by decomposing and rearranging parts of these shapes
- ◆ **6.8(C)** Write equations that represent problems related to area of rectangles, parallelograms, trapezoids, and triangles ~~and volume of right rectangular prisms where dimensions are positive rational numbers~~
- ◆ **6.8(D)** ~~Determine solutions for problems related to area of rectangles,~~ parallelograms, trapezoids, and ~~triangles~~

Important Vocabulary

- ▪ Area
- ▪ Base
- ▪ Height
- ▪ Parallelogram
- ▪ Perpendicular
- ▪ Right Angle
- ▪ Trapezoid
- ▪ Square Units

Notes for Intellectual Preparation & Lesson Planning

Necessary Materials and Pre-Lesson Prep
- ▪ Document Camera
- ▪ Projector
- ▪ Unit 9 Student Workbook
- ▪ 6th Grade STAAR Reference Material (Class Set)
- ▪ Debrief Slide

Lesson Agenda		Time
I.	Do Now	5 min
II.	INM/Concept Development	20 min
III.	Student Practice	20 min
IV.	Student Debrief	5 min
V.	Exit Ticket	10 min

Mathematical Goal of this Lesson
The primary goal of this lesson is for students to find the area of trapezoids and parallelograms and explain the parts of the area formula for each shape. The goal is for students try to come up with area formulas on their own and make sense of them.

Opportunities to CFU
- ✓ INM: Part I: #1, Part II: #4-5
- ✓ Student Practice: #1, 4, 5, 7

Other Notes to Inform Your Planning
For **Do Now**: The Do Now is a Must Do because it provides an opportunity to quickly address misconceptions from the previous lesson on triangles.
For **Student Exit**: Students may struggle #1a-b because they will need to find the height of the figure. Remind students of what they learned about solving for a missing value with inequalities. Students should have The STAAR Reference Material so that they are able to access the formula for finding area of a parallelogram. Remind them of the process they used to set up an inequality and solve for a missing value. In this case it is the area is given and the height that is missing. Consider using one of the examples in the INM and asking, "What if the height was missing, what could we do to find the height if we know the area?" Allow students to annotate the trapezoid formula on the formula chart. See here for an example.

> **Focus on Disciplinary Literacy**
>
> **INM:** Part I, #2-4, Part II, #2-3, 5
> **Student Debrief**

Lesson Look Fors

Look for teachers to…
- ❑ Show how a parallelogram can be decomposed and rearranged to form a rectangle.
- ❑ Show how a trapezoid is half of a parallelogram
- ❑ Model how to identify the right area formula, write it out, plug in the right values, and solve.

Look for students to…
- ❑ Correctly write out the correct formula, plug in the correct values, and solve
- ❑ Pair their numeric answers with square units or units2.

Student Know/Do Chart

- **Know** Because a trapezoid has two different length bases, the average of the two bases is multiplied by the height to find the area
- **Know** The base and the height of a shape are always perpendicular
- **Do** Find the area of a trapezoid and parallelogram.
- **Do** Write out formulas to find the area or missing height of trapezoids and parallelograms

Lesson 6: Volume of Rectangular Prisms		Date: _____
Standard(s)	Notes for Intellectual Preparation & Lesson Planning	Lesson Look Fors

Standard(s)

◆ **6.8(C)** ~~Write equations that represent problems related to area of rectangles, parallelograms, trapezoids, and triangles and~~ volume of right rectangular prisms where dimensions are positive rational numbers

◆ **6.8(D)** Determine solutions for problems related to area of rectangles, ~~parallelograms, trapezoids, and triangles~~

Important Vocabulary

- Area
- Area of the Base
- B/base
- Height
- Prism
- Volume

Notes for Intellectual Preparation & Lesson Planning

Necessary Materials and Pre-Lesson Prep

- Document Camera
- Projector
- Unit 8 Student Workbook
- Debrief Slide

Lesson Agenda		Time
I.	Do Now	5 min
II.	INM/Concept Development	10 min
III.	Student Practice	30 min
IV.	Student Debrief	5 min
V.	Exit Ticket	10 min

Mathematical Goal of this Lesson

The primary goal of this lesson is for students to find the volume of a rectangular prism or missing dimension when given volume. Students will build a foundational understanding of volume. In this lesson, volume will be introduced as "Big B" Base multiplied by the perpendicular height of a prism.

Opportunities to CFU

✓ INM: #3
✓ Student Practice: #9-11

Other Notes to Inform Your Planning

For **INM**: Plan to have real-world examples of prisms in a PowerPoint to share with students in the case they can't come up with their own real-world examples.

For **Student Practice:** The student practice is 30 minutes, plan to pull students who struggle with the lesson in a small group and provide students who are working independently with access to an answer key with only the answers after about 10 minutes. Stamp for students that you are checking their process of solving (Labeling the dimensions in the figure, computation, clearly written formula with numbers plugged in etc.) to motivate them to show their work. It will be important to model and set expectations for students to show their work neatly/organized.   This will help with quickly seeing and addressing specific misconceptions in the moment. See this example.

Focus on Disciplinary Literacy

SP: #9a-b, 10, 11
Student Debrief

Lesson Look Fors

Look for teachers to…

❑ Get students to share what they already know about volume (in 5th they learned how to find the volume of cubes and rectangular prisms).
❑ Explain why we are transitioning from $V = lwh$ to $V = Bh$.
❑ Stamp that units should be written as units cubed, correcting students when they give answers without units.

Look for students to…

❑ Explain the difference between base and Base
❑ Use cubic units or units^3 in all of their answers for volume, or units^2 if finding the Base.

Student Know/Do Chart

Know	Know the difference between base and Base
Know	Know when to use units cubed for volume
Do	Find the volume of a rectangular prism
Do	If given volume, find the missing dimension

Recommended Success Day Materials and Resources

6.8D
Geometry

6.8D Practice - Area
6.8D Practice - Volume
Tech-enhance Practice -6.8D
Extra Practice SE
Extra Practice TE

<u>Notes to Inform Your Planning</u>
These resources can be used for either small-group or whole-group reteach.
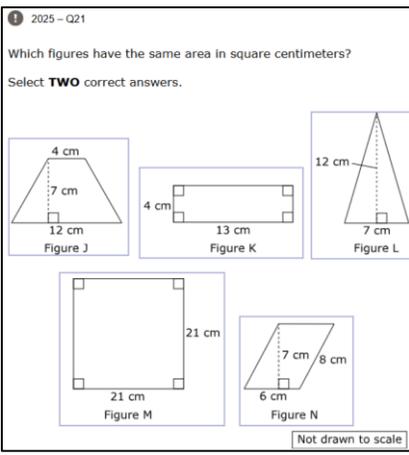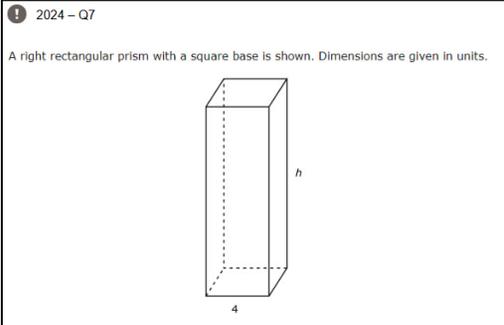
If student data indicates a pause point is not necessary, you can opt to move forward and reserve a Success Day to use at a later date.

Using exit ticket data can help you prioritize what to review. For example, if you remember that students did poorly on Lesson 5, pull problems from lesson 4, especially if they are problems students did not do before (for example, SP or INM problems you skipped during class). You can also take questions from the resources linked above.
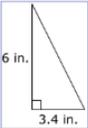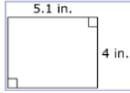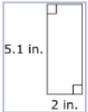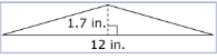
All unit exams should be given online to prepare students for STAAR online.

UNPACKED STANDARDS

Focus standards for this unit.

Standards Breakdown		
Standards	**Specificity**	**Notes/Explanations/Examples**
6.8(D) 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	**Concepts:** • Area • Volume • Parallelograms • Triangles • Rectangles • Trapezoids • Rectangular prisms • Rational number operations **Skill:** • Represent **Including but not limited to:** • Finding the volume when given rational number dimensions • Finding a missing dimension when given the area of a figure and a known dimension • Finding the area of a triangle, trapezoid, rectangle, or parallelogram when given necessary and unnecessary side lengths • Using a ruler to measure a figure's dimensions and find its area or volume **Vertical Alignment:** In 5th grade, students learned how to find the volume of a rectangular prism with whole number dimensions. They also learned how to find the perimeter of various polygons and the area of rectangles. In 6th grade, students must be able to find the area of triangles, parallelograms, and trapezoids in addition. In 6th grade, students learn about volume as $V = Bh$ (as opposed to $V = lwh$ from 5th grade) so that in 7th grade and beyond, students can find the volume of 3-D solids other than rectangular prisms. In later grades, students will have to find the lateral and total surface area (and volume) of various solids.	**2025 6G STAAR Q21** 2025 – Q21 Which figures have the same area in square centimeters? Select **TWO** correct answers. Figure J (4 cm, 7 cm, 12 cm), Figure K (4 cm, 13 cm), Figure L (12 cm, 7 cm), Figure M (21 cm, 21 cm), Figure N (7 cm, 8 cm, 6 cm) Not drawn to scale **2024 6G STAAR Q7** 2024 – Q7 A right rectangular prism with a square base is shown. Dimensions are given in units. (h, 4) The volume of the prism is 192 cubic units. What is the height, h, of the prism in units? Ⓐ 48 units Ⓑ 12 units Ⓒ 24 units Ⓓ 64 units

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		2024 – Q32 The dimensions of a rectangular prism are shown in meters. 1 m, 3 m, 5.5 m What is the volume of the rectangular prism in cubic meters? Enter your answer in the box. **2023 6G STAAR Q25** 2023 – Q25 The diagram shows the dimensions of five shapes in inches. Which shapes have equal areas? Select **THREE** correct answers. 6 in., 3.4 in. 5.1 in., 4 in. 5.1 in., 2 in. 7.4 in., 2 in. 1.7 in., 12 in.
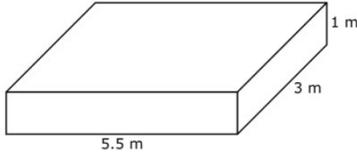
Standards Breakdown

Standards	Specificity	Notes/Explanations/Examples
6.8(A) extend previous knowledge of triangles and their properties to include the sum of angles of a triangle, the relationship between the lengths of sides and measures of angles in a triangle, and determining when three lengths form a triangle	**Concepts:** • Triangle Angle Sum Theorem • Triangle Inequality Theorem • Classifying triangles by sides and by angles • Relationship between triangle angles and sides **Skills:** • extend **Including but not limited to:** • determining whether three angles could be the angle measures of a triangle • determining whether three line segments can form a triangle • find a triangle's missing angle when given the other two angles **Vertical Alignment:** In 4th grade, students learned how to identify acute, right, and obtuse triangles. In 6th, students also learn how to classify by sides (acute, isosceles, obtuse). In 6th, students also encounter the triangle angle sum theorem and the triangle inequality theorem. In later grades, students will set up and solve equations and inequalities to find missing side lengths and angles of a triangle and make informal arguments about exterior angles of triangles.	**2025 6G STAAR Q31** 2025 – Q31 Which set of measures could be the angle measures of a triangle? Ⓐ 25° 25° 90° Ⓑ 90° 90° 180° Ⓒ 45° 45° 45° Ⓓ 30° 50° 100° **2024 6G STAAR Q9** ❗ 2024 – Q9 In triangle QRT, angle Q measures 80° and angle T measures 35°. Which list shows the side lengths of the triangle in order from greatest to least? Ⓐ QT RT QR Ⓑ RT QT QR Ⓒ QT QR RT Ⓓ RT QR QT

Standards	Specificity	Notes/Explanations/Examples
		2023 6G STAAR Q24 2023 – Q24 Which group of three side lengths in centimeters can form a triangle when the side lengths are attached at the endpoints? Ⓐ 6, 8, 14 Ⓑ 7, 11, 5 Ⓒ 9, 9, 20 Ⓓ 10, 15, 4
6.8(C) 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	Concepts: • equations • area of rectangles, parallelograms, trapezoids, triangles • volume of rectangular prisms • positive rational number operations Skills: • write Including but not limited to: • determining whether a formula or equation can be used to find the area of a given figure • generating an equation from a table relating side length and area or volume • write an equation to represent a figure's missing dimension when given the area or volume. **Vertical Alignment:** In 5th grade, students learned how to find the volume of a rectangular prism with whole number dimensions. They also learned how to find the perimeter of various polygons and the area of rectangles. In 6th grade, they build on this knowledge to write equations to represent these problems, and in 7th and 8th, students will use formulas to explain the	**2025 6G STAAR Q15** 2025 – Q15 A parallelogram has an area of 33 square inches. The length of the base is b inches, and the height is h inches. Complete the equation that can be used to determine h, the height of the parallelogram in inches. Enter your answer in the box provided. $h =$ ⬜

Standards Breakdown		
Standards	Specificity	Notes/Explanations/Examples
	relationship between the volume of prisms and pyramids (and the relationship between cones and cylinders) with congruent bases and heights.	

VERTICAL STANDARDS

This section details the **progression** of key student expectations/standards** in the courses **before** and **after** this course. This will help you understand what **prior knowledge skills to build upon** and guide you in knowing what **skills you are preparing your students** for in the subsequent course.

5th grade	6th grade Mathematics	7th grade Pre-Algebra / 8th grade Algebra I
5.4(H) represent and solve problems related to perimeter and/or area and related to volume.	6.8(D) 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	7.9(D) solve problems involving the lateral and total surface area of a rectangular prism, rectangular pyramid, triangular prism, and triangular pyramid by determining the area of the shape's net. 8.7(B) use previous knowledge of surface area to make connections to the formulas for lateral and total surface area and determine solutions for problems involving rectangular prisms, triangular prisms, and cylinders.
4.6(C) apply knowledge of right angles to identify acute, right, and obtuse triangles	6.8(A) extend previous knowledge of triangles and their properties to include the sum of angles of a triangle, the relationship between the lengths of sides and measures of angles in a triangle, and determining when three lengths form a triangle	7.11(C) write and solve equations using geometry concepts, including the sum of the angles in a triangle, and angle relationships. 8.8(D) use informal arguments to establish facts about the angle sum and exterior angle of triangles, the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles.
5.4(G) use concrete objects and pictorial models to develop the formulas for the volume of a rectangular prism, including the special form for a cube ($V = l$ x w x h, $V = s$ x s x s, and $V = Bh$).	6.8(B) model area formulas for parallelograms, trapezoids, and triangles by decomposing and rearranging parts of these shapes	7.8(A) model the relationship between the volume of a rectangular prism and a rectangular pyramid having both congruent bases and heights and connect that relationship to the formulas 8.6(A) describe the volume formula $V = Bh$ of a cylinder in terms of its base area and its height.

5.4(H) represent and solve problems related to perimeter and/or area and related to volume.	**6.8(C)** 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	**7.8(B)** explain verbally and symbolically the relationship between the volume of a triangular prism and a triangular pyramid having both congruent bases and heights and connect that relationship to the formulas **8.6(B)** model the relationship between the volume of a cylinder and a cone having both congruent bases and heights and connect that relationship to the formulas.