

## Table of Contents

UNIT/MODULE/MISSION SYNOPSIS.....	2
CONTENT STANDARDS .....	6
ROADMAP .....	7
UNPACKED STANDARDS.....	18
VERTICAL STANDARDS .....	23

## How to Use This Addenda

Make sure you're ready to teach by noting the **Necessary Materials and Pre-Lesson Prep** you will need to gather or complete prior to the lesson

Find high-leverage instructional moves in the **Lesson Look Fors**. This is what leaders should see when observing your instruction

Note how your lesson objective ties to your state **Standards**

Plan purposeful questioning and responses using **Opportunities to CFU**

Use the **Mathematical Goal of the Lesson** to keep you focused on the appropriate student outcome

Plan to stress **Important Vocabulary** in the lesson. New vocab for the unit is indicated in bold

Plan instruction around what students need to Know & Do to be successful on the **Exit Ticket** using the identified **Student Criteria for Success**

Note exemplar pacing in the **Lesson Agenda**

Find recommended lesson modifications, content knowledge boosters, and/or high-leverage instructional moves that may not be in your Teacher Edition located in **Other Notes to Inform Your Planning**

Lesson 9: Find related multiplication facts by adding and subtracting equal groups in array models		Date: _____														
Standard(s) <b>3.4K</b> solve one-step and two-step problems involving multiplication and division within 100 using strategies based on objects; pictorial models, including arrays, area models, and equal groups; properties of operations; or recall of facts	Notes for Intellectual Preparation & Lesson Planning <b>Necessary Materials and Pre-Lesson Prep</b> <ul style="list-style-type: none"> <li>(S) Multiply by 2 (1–5) Pattern Sheet</li> <li>(S) Personal white board</li> <li>(S) Three's array no fill template</li> <li>(S) Blank paper</li> </ul>	Lesson Look Fors Look for teachers to... <input type="checkbox"/> Have established a signaling routine for choral response or work show during the respective fluency activities <input type="checkbox"/> Use a think aloud to describe why they shade what portions of the array, or use a different symbol in the array <input type="checkbox"/> Make the focus of the lesson understanding the visual representations														
Important Vocabulary <ul style="list-style-type: none"> <li>array</li> <li><b>bracket</b></li> <li>columns</li> <li>rows</li> <li>unit(s)</li> </ul> <p><i>In this lesson, students are NOT responsible for the vocabulary distributive property. Please withhold as it will come up in later lessons.</i></p>	<b>Lesson Agenda</b> <table border="1"> <thead> <tr> <th></th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>I. Do Now (source: fluency #1)</td> <td>5 min</td> </tr> <tr> <td>II. Fluency*</td> <td>8 min</td> </tr> <tr> <td>III. Concept Development</td> <td>25 min</td> </tr> <tr> <td>IV. Student Practice</td> <td>15 min</td> </tr> <tr> <td>V. Student Debrief</td> <td>7 min</td> </tr> <tr> <td>VI. Exit Ticket*</td> <td>5 min</td> </tr> </tbody> </table> <p><b>Mathematical Goal of this Lesson</b> Students learn they can use decomposition to break one larger number into two smaller numbers as a strategy for multiplication. The goal of this lesson is simply for student to understand how to interpret and create an array that demonstrates such decomposition. Students will build on this understanding in subsequent lessons. This lesson also supports the goal of student thinking in terms of counting units, an overarching goal for academy math.</p> <p><b>Opportunities to CFU</b></p> <ul style="list-style-type: none"> <li>✓ Concept Development, by way of eliciting student responses</li> <li>✓ Problems Set problems: #2, #3</li> </ul> <p><b>Other Notes to Inform Your Planning</b> For <b>Do Now</b>: Use the Multiply by 2 (1–5) Pattern Sheet for your Do Now. 3 minutes for completion, 2 minutes whole group classwork check. For <b>Fluency</b>: Complete the Group Counting activity (notice the inclusion of 4s in preparation for upcoming lessons) and Forms of Multiplication activity. For <b>Concept Development</b>: Consider prepping personal whiteboard in advance. Spend no more than 12 minutes for CD Problem 1 and 13 minutes for CD Prob 2. For <b>Student Practice</b>: consider creating an extra set of Qs like 1-3 in case students struggle with entry-level understanding. If they don't, move on to Qs 4 and above. For <b>Student Debrief</b>: consider using the Eureka assigned Exit Ticket for whole group debrief exercise; Suggested strategy – guided discourse. For <b>Exit Ticket</b>: Use <b>Homework</b> problems 2 &amp; 3 for this lesson's Exit Ticket.</p> <p><b>Other Notes to Inform Your Planning</b> Though not formally discussed yet, this is a foundation to understanding of distributive property. Students visually see multiplying the sum of two or more addends by a number will give the same result as multiplying each addend individually by the number and then adding the products together.</p>		Time	I. Do Now (source: fluency #1)	5 min	II. Fluency*	8 min	III. Concept Development	25 min	IV. Student Practice	15 min	V. Student Debrief	7 min	VI. Exit Ticket*	5 min	Look for students to... <input type="checkbox"/> Explain what they see in the array and how it relates to a given number sentence.
	Time															
I. Do Now (source: fluency #1)	5 min															
II. Fluency*	8 min															
III. Concept Development	25 min															
IV. Student Practice	15 min															
V. Student Debrief	7 min															
VI. Exit Ticket*	5 min															
	<p>7 threes = 5 threes + 2 threes</p> <p><math>7 \times 3 = 5 \times 3 + 2 \times 3</math></p> <p><math>21 = 15 + 6</math></p>	Student Criteria for Success Shading, brackets, and/or dotted lines on an array will have mathematical significance -brackets can identify parts or wholes -dotted lines and shading represent decompositions We count units; In an array, counting rows is the same as counting units. Addition/subtraction and multiplication math facts (up to 4) Interpret an array -identify decompositions within an array -Relate an annotated or labeled array to one or more number sentences Addition/subtraction (+/- up to 4) Multiplication (2, 3, and 4)														

## UNIT SYNOPSIS

In Unit 7, students extend their understanding of two-dimensional geometry by building on measurement and geometry concepts from elementary and 6th grade. The unit begins with angle relationships, where students identify complementary, supplementary, and vertical angles, then apply algebraic reasoning to solve for missing measures. They learn to substitute values back into expressions, ensuring they distinguish between solving for a variable and finding an angle's measure. Teachers use discourse and guided modeling to help students draw conjectures, such as the triangle sum theorem and the quadrilateral sum theorem, reinforcing the idea that interior angles always sum to  $180^\circ$  or  $360^\circ$ .

Students then progress to area and perimeter of rectangles, triangles, parallelograms, and trapezoids, consistently using the STAAR Math Reference Chart to support formula fluency. Instruction emphasizes that bases and heights must be perpendicular, with imaginary altitudes provided when sides are not. Students connect the area of triangles and parallelograms to rectangles, discovering that the triangle's area is always half of a rectangle's. They deepen their conceptual reasoning by explaining why trapezoid area requires averaging two bases before multiplying by height. Teachers model and stamp these connections while students use algebraic equations to solve for missing side lengths.

The unit then turns to circles, where students derive formulas through hands-on exploration. Using string and pre-cut circles, they uncover pi as the ratio of circumference to diameter. They then watch and replicate models that decompose a circle into sectors resembling a parallelogram to discover the area formula  $A = \pi r^2$ . Instruction stresses the difference between exact values in terms of pi and approximations using 3.14, and students annotate their STAAR Reference Charts to solidify this understanding. Finally, students apply their learning to composite figures that combine rectangles, triangles, trapezoids, parallelograms, and circles. Teachers model how to partition irregular figures into smaller, more familiar shapes, while students decide whether to add or subtract areas when solving for shaded or unshaded regions. Real-world problems provide context, requiring students to interpret dimensions, justify procedures, and communicate reasoning.

This unit is significant because it blends algebraic reasoning with geometry, requiring students to write and solve equations tied to geometric relationships. Key instructional strategies include using balance and substitution in algebraic reasoning, guided discovery for formulas, explicit modeling with real-world examples, consistent use and annotation of the STAAR Math Reference Chart, and decomposition of composite figures. Together, these approaches ensure students build fluency and conceptual understanding that will support future work with geometry, surface area, and volume in Grade 8 and beyond.

## Topic A Overview: Angle Relationships and Algebraic Equations

In Topic A, students are introduced to complementary angles, supplementary angles, and vertical angles. In Lesson 1, students learn to name angles that have a given relationship using the two end points and the vertex. Students build an understanding that complementary and supplementary angles can be adjacent and share a side and vertex or could be non-adjacent angles and not share a side or vertex. In Lesson 2, students set up a simple equation to find the missing angles. Once students find the value of a missing angle, they should check their answers by substituting their answers back into the equation. Students will then find the value of a variable when an expression is given as an angle measure. Students should understand that the value of the variable is not the same as the measure of the angle. Once students have the value of the variable, they should be able to use it to find the measure of the angles. In Lesson 3, students use what they learned in the previous lesson, to discover the sum of the interior angles of a triangle. Teach them how to find the value of a variable in an expression representing an angle measure and to find the measure of that angle once they have the value of the variable. Students often think once they have found the value of the variable, that is the same as finding the measure of the angle. It is important that they understand that they must substitute the value of the variable back into the expression to find the measure of the angle.

### LESSON 1

	<p>7 What is the relationship between the two angles? Complementary &amp; adjacent</p> <p>What is the value of <math>x</math>?  <math display="block">\begin{array}{r} x + 37 = 90 \\ -37 \quad -37 \\ \hline x = 53 \end{array}</math></p>
	<p>8 What is the relationship between <math>\angle ABD</math> and <math>\angle DBC</math>? Supplementary &amp; adjacent.</p> <p>What is the <math>m\angle ABD</math>?  <math display="block">\begin{array}{r} 121 + x = 180 \\ -121 \quad -121 \\ \hline x = 59 \end{array}</math> <math>\angle ABD = 59^\circ</math></p>

### LESSON 2

<p>1</p> <p>Handwritten work:  <math display="block">\begin{array}{r} 3x + 27 = 90 \\ -27 \quad -27 \\ \hline 3x = 63 \\ \frac{3x}{3} = \frac{63}{3} \\ x = 21 \end{array}</math></p>	<p>1 What is the relationship between <math>\angle ABD</math> and <math>\angle DBC</math>? Complementary</p> <p>2 What does that tell us about the two angles? They add to <math>90^\circ</math></p> <p>3 What equation can we write to represent this pair of angles? <math>3x + 27 = 90</math></p> <p>4 What is the value of <math>x</math>? <math>21^\circ</math></p> <p>5 What is the <math>m\angle ABD</math>? <math>63^\circ</math></p>
---	---

<p>2</p> <p>Handwritten work:  <math display="block">\begin{array}{r} 108 + 4x = 180 \\ -108 \quad -108 \\ \hline 4x = 72 \\ \frac{4x}{4} = \frac{72}{4} \\ x = 18 \end{array}</math></p>	<p>2 What is the relationship between <math>\angle ABD</math> and <math>\angle DBC</math>? Supplementary</p> <p>3 What does that tell us about the two angles? They add to <math>180^\circ</math></p> <p>4 What equation can we write to represent this pair of angles? <math>108 + 4x = 180</math></p> <p>5 What is the value of <math>x</math>? <math>18^\circ</math></p> <p>6 What is the <math>m\angle DBC</math>? <math>72^\circ</math></p>
---	--

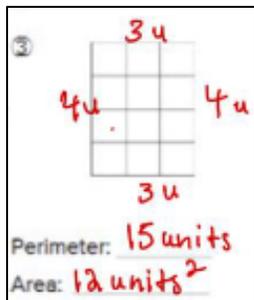
### LESSON 3

	<p>"I know that the three interior angles of the triangle have a sum of 180 degrees. <math>82 + 55 + 5x + 3 = 180</math>. I can simplify this to: <math>140 + 5x = 180</math>. Once I solve for <math>x</math>, I can use that to find the measure of the angle."</p>
--	---

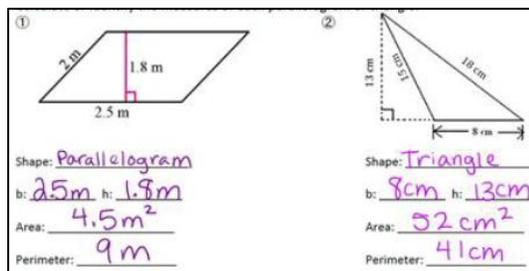
## Topic B Overview –Area and Perimeter of 2-D Figures

In Topic B, Lesson 4 starts by reviewing the area and perimeter of rectangles to build students' understanding of the meaning of area as the number of square units inside a figure. It also exposes students to situations where they are given the area and have to find a missing side length. Lesson 5 builds students' understanding of the area and perimeter of a triangle as half the area of a rectangle w/the same base and height. Students must understand that the base and height of a triangle will always be perpendicular. Students will also build an understanding of the area of a parallelogram in this lesson. Again, they should understand that the base and height of the parallelogram will always be perpendicular, and an imaginary line (often dotted) will be given when two of the sides of the shape are not perpendicular. Lesson 6 builds students' understanding of the area and perimeter of a trapezoid. Students should understand that because the two bases of a trapezoid are not the same length, it is necessary to average the two bases, then multiply the average by the perpendicular height. Students often think that height must be vertical. It is important that they understand that this is not true. Students should understand that the height is identified by finding the length that is perpendicular to the base. In Lesson 7, students learn that circumference is found by multiplying the diameter by pi. Then, in Lesson 8, they learn to find the area of a circle. Next, in Lesson 9, students learn about composite figures which includes rectangles, triangles, parallelograms, trapezoids, circles, semi-circles and quarter-circles. Students will decompose composite figure into shapes that they can find the area of, then add the areas together. Students will also learn to find missing side lengths using opposite sides. This lesson includes finding the area of the shaded region of a figure. It starts with basic composite figures composed of rectangles. Then moves into more complex figures consisting of the other shapes.

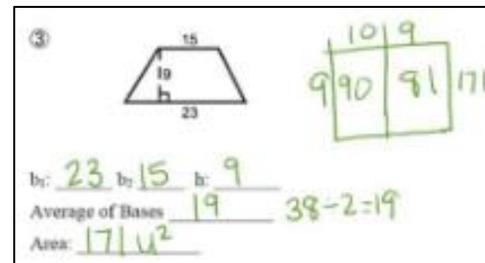
### LESSON 4



### LESSON 5



### LESSON 6



## Topic C Overview – Area and Circumference of Circles and Area of Composite Figures

In Topic C, it is critical to build students' understanding of surface area and volume of prisms and pyramids. In Lesson 7, students learn that circumference is found by multiplying the diameter by pi. Then, in Lesson 8, they learn to find the area of a circle. Next, in Lesson 9, students learn about composite figures which includes rectangles, triangles, parallelograms, trapezoids, circles, semi-circles and quarter-circles. Students will decompose composite figure into shapes that they can find the area of, then add the areas together. Students will also learn to find missing side lengths using opposite sides. This lesson includes finding the area of the shaded region of a figure. It starts with basic composite figures composed of rectangles. Then moves into more complex figures consisting of the other shapes.

### LESSON 7

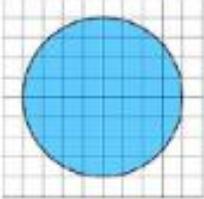
①



Circumference:  
 $\approx 50.24\text{cm}$   
 $16 \times 3.14$

	3	0.1	0.04
10	30	1	0.4
6	18	0.6	0.24
	48	1.6	0.64

### LESSON 8



r:  $4u$  d:  $8u$   
 Area:  $\frac{16\pi u^2}{\text{Exact}}$  or  $\frac{50.24u^2}{\text{Approximate}}$   
 Circumference:  $\frac{8\pi u}{\text{Exact}}$  or  $\frac{25.12u}{\text{Approximate}}$

### LESSON 9

Example 3: Find the area of the shaded region:



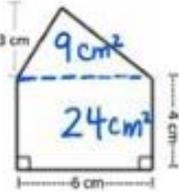
$13 \times 7.5$

7	10	3
0.5	70	21
	5	1.5
		97.5

$97.5 - 22.5 = 75.0$

$75\text{m}^2$

Find the area:



$24 + 9 = 33\text{cm}^2$

## CONTENT STANDARDS

Below are the standards addressed in this unit.

Readiness Standards	Supporting Standards
<p><b>7.9(C)</b> determine the area of composite figures containing combinations of rectangles, squares, parallelograms, trapezoids, triangles, semicircles, and quarter circles</p> <p><b>7.9(B)</b> determine the circumference and area of circles</p>	<p><b>7.11(C)</b> write and solve equations using geometry concepts, including the sum of the angles in a triangle, and angle relationships</p> <p><b>7.5(B)</b> describe <math>\pi</math> as the ratio of the circumference of a circle to its diameter</p>

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

# ROADMAP

AT A GLANCE: Unit 7 – 2-D Geometry				
Topic	Day	Date	Lesson	Lesson Title
<b>Topic A</b> Angle Relationships and Algebraic Equations	1		1	Angle Relationships
	2		2	Algebraic Equations and Angle Relationships
	3		3	Interior Angles
<b>Topic B</b> Area and Perimeter of 2-D Figures	4		4	Algebraic Expressions and Perimeter and Area
	5		5	Area and Perimeter of Triangles and Parallelograms
	6		6	Area and Perimeter of Trapezoids
<b>Topic B</b> Area and Circumference of Circles and Area of Composite Figures	7		7	Circumference and Circles
	8		8	Area of Circles
	9		9	Area of Composite Figures
	10			Review
	11			Unit Exam

Lesson 1: Angle Relationships		Date: _____											
Standard(s)	Notes for Intellectual Preparation & Lesson Planning												
<p>◆ <b>7.11(C)</b> write and solve equations using geometry concepts, including the sum of the angles in a triangle, and angle relationships</p>	<p><b>Necessary Materials and Pre-Lesson Prep</b></p> <ul style="list-style-type: none"> <li>▪ Document Camera</li> <li>▪ Projector</li> <li>▪ Unit 7 Workbook</li> </ul>												
	<p><b>Lesson Agenda</b></p> <table border="1"> <thead> <tr> <th></th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>I. Do Now</td> <td>5 min</td> </tr> <tr> <td>II. INM/Concept Development</td> <td>40 min</td> </tr> <tr> <td>III. Student Practice</td> <td>15 min</td> </tr> <tr> <td>IV. Student Debrief</td> <td>3 min</td> </tr> <tr> <td>V. Exit Ticket</td> <td>7 min</td> </tr> </tbody> </table>			Time	I. Do Now	5 min	II. INM/Concept Development	40 min	III. Student Practice	15 min	IV. Student Debrief	3 min	V. Exit Ticket
	Time												
I. Do Now	5 min												
II. INM/Concept Development	40 min												
III. Student Practice	15 min												
IV. Student Debrief	3 min												
V. Exit Ticket	7 min												
Important Vocabulary	<p><b>Mathematical Goal of this Lesson</b></p> <p>The primary goal of this lesson is for students to define and identify adjacent/non-adjacent complementary/supplementary angles, and vertical angles. Students will then apply these understandings to set up a one-step equation and solve to find the missing angle measure.</p> <p><b>Opportunities to CFU</b></p> <ul style="list-style-type: none"> <li>✓ INM: #3,6,7</li> <li>✓ Student Practice: #4, 7, 8c-d</li> </ul> <p><b>Other Notes to Inform Your Planning</b></p> <p>For <b>INM</b>: Although adjacent and non-adjacent aren't apart of the unit vocabulary. It will be important stamp the meaning of these words and make sticky for students so that they are able to access the material in this lesson. Consider creating an anchor chart to support student understanding of adjacent/non-adjacent complementary/supplementary angles.</p>												
<ul style="list-style-type: none"> <li>▪ Adjacent Angles</li> <li>▪ Non-adjacent angles</li> <li>▪ Complementary angles</li> <li>▪ Supplementary angles</li> <li>▪ Vertical angles</li> </ul>	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p style="background-color: yellow; margin: 0;"><b>Focus on Disciplinary Literacy</b></p>  <p><b>Do Now: #a-c</b> <b>INM: #9, 10</b> <b>Student Debrief</b></p> </div>												
Lesson Look Fors		<p><b>Look for teachers to...</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Use discourse to prompt students to think and communicate about angle relationships.</li> <li><input type="checkbox"/> Define and name adjacent/non-adjacent for students.</li> <li><input type="checkbox"/> Stamp that <b>C</b>omplementary Angles are = 90 degrees and <b>S</b>upplementary angles = 180 degrees. "<b>C</b> because before <b>S</b>, 90 comes before 180"</li> </ul> <p><b>Look for students to...</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Identify adjacent and non-adjacent angles as Complementary or Supplementary</li> <li><input type="checkbox"/> Determine the missing angle measurement of adjacent and non-adjacent Complementary and Supplementary angles</li> <li><input type="checkbox"/> Use what they learned about setting up and solving algebraic equations to find a missing angle measurement.</li> </ul>											
Student Criteria for Success		<ul style="list-style-type: none"> <li> Complementary angles will sum to 90 degrees and may be adjacent or non-adjacent</li> <li> Supplementary angles will sum to 180 degrees and may be adjacent or non-adjacent.</li> <li> Vertical angles are congruent</li> <li> Name angles and identify the relationship between two or more angles using their angle measures or a visual model.</li> <li> Find the missing angle measurement when given the angle relationship and other angles' measure</li> </ul>											

Lesson 2: Algebraic Equations and Angle Relationships		Date: _____											
Standard(s)	Notes for Intellectual Preparation & Lesson Planning												
<p>◆ <b>7.11(C)</b> write and solve equations using geometry concepts, including the sum of the angles in a triangle, and angle relationships</p>	<p><b>Necessary Materials and Pre-Lesson Prep</b></p> <ul style="list-style-type: none"> <li>▪ Document Camera</li> <li>▪ Projector</li> <li>▪ Unit 7 Student Workbook</li> </ul>												
	<p><b>Lesson Agenda</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 80%;"></th> <th style="width: 20%; text-align: center;">Time</th> </tr> </thead> <tbody> <tr> <td>I. Do Now</td> <td style="text-align: center;">5 min</td> </tr> <tr> <td>II. INM/Concept Development</td> <td style="text-align: center;">40 min</td> </tr> <tr> <td>III. Student Practice</td> <td style="text-align: center;">23 min</td> </tr> <tr> <td>IV. Student Debrief</td> <td style="text-align: center;">5 min</td> </tr> <tr> <td>V. Exit Ticket</td> <td style="text-align: center;">7 min</td> </tr> </tbody> </table>			Time	I. Do Now	5 min	II. INM/Concept Development	40 min	III. Student Practice	23 min	IV. Student Debrief	5 min	V. Exit Ticket
	Time												
I. Do Now	5 min												
II. INM/Concept Development	40 min												
III. Student Practice	23 min												
IV. Student Debrief	5 min												
V. Exit Ticket	7 min												
Important Vocabulary	<p><b>Mathematical Goal of this Lesson</b></p> <p>The primary goal of this lesson is to write and solve algebraic expressions/equations within angle relationships. Students solve for the variable or the angle measure. For this lesson, it is important that students can define and identify complementary, supplementary, and vertical angles and apply these definitions to finding missing angle measures by solving for a variable or the angle measure.</p> <p><b>Opportunities to CFU</b></p> <ul style="list-style-type: none"> <li>✓ INM: Q3, 4, 7 and 8</li> <li>✓ Student Practice: Q1, 2, 4</li> </ul>												
<ul style="list-style-type: none"> <li>▪ Complementary Angles</li> <li>▪ Supplementary Angles</li> <li>▪ Vertical Angles</li> </ul>	<p><b>Other Notes to Inform Your Planning</b></p> <p><b>INM/Student Practice:</b> Take this as an opportunity to build understanding for students that did not master two-step equations. Be precise in your use of vocabulary to reinforce a conceptual understanding of solving equations. It will be important to note that students <b>must</b> determine whether they will need to find the value of the variable or measure of an angle. Questions 7 and 8 will be complex, students will need to be prepared to answer these questions. Consider adding scaffolding questions during internalization to support student understanding (i.e., What are we looking for, the value of the variable or the measure of the angle? What do we know about these two angles? Do they form a right angle? Two angles that form a right angle are probably what (<i>complementary or supplementary</i>)?) There may be misconceptions around questions 1 and 2 in the student practice because students will need to <b>only</b> find the value of the variable.</p>												
	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <p style="background-color: yellow; margin: 0;"><b>Focus on Disciplinary Literacy</b></p>  <p style="margin: 0;"><b>INM: #1-3, 8</b> <b>SP: #3,4</b> <b>Student Debrief</b></p> </div>												
Lesson Look Fors		<p>Look for teachers to...</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Stamp for students through modeling that in some scenarios, it will be necessary to only find the value of the variable within an expression in an angle measurement</li> <li><input type="checkbox"/> Use discourse to prompt students to think and communicate about angle relationships.</li> </ul> <p>Look for students to...</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Setup and solve algebraic expressions to find the value of a variable and/or measurement of an angle within complementary and supplementary angles</li> </ul>											
Student Criteria for Success		<p> Complementary angles will sum to 90 degrees and may be adjacent or non-adjacent</p> <p> Supplementary angles will sum to 180 degrees and may be adjacent or non-adjacent.</p> <p> Vertical angles are congruent</p> <p> Name angles and identify the relationship between two or more angles using their angle measures or a visual model</p> <p> Find the missing angle measurement when given the angle relationship and other angles' measure.</p> <p> Find the value of a variable in an expression within complementary/supplementary angle representations.</p>											

Lesson 3: Interior Angles		Date: _____												
Standard(s)	Notes for Intellectual Preparation & Lesson Planning	Lesson Look Fors												
<p>◆ <b>7.11(C)</b> write and solve equations using geometry concepts, including the sum of the angles in a triangle, and angle relationships</p>	<p><b>Necessary Materials and Pre-Lesson Prep</b></p> <ul style="list-style-type: none"> <li>▪ Pre-cut Triangles</li> <li>▪ Ruler</li> <li>▪ Protractor</li> <li>▪ Document Camera</li> <li>▪ Unit 7 Student Book</li> <li>▪ Projector</li> </ul> <p><b>Lesson Agenda</b></p> <table border="1"> <thead> <tr> <th></th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>I. Do Now</td> <td>5 min</td> </tr> <tr> <td>II. INM/Concept Development</td> <td>43 min</td> </tr> <tr> <td>III. Student Practice</td> <td>15 min</td> </tr> <tr> <td>IV. Student Debrief</td> <td>2 min</td> </tr> <tr> <td>V. Exit Ticket</td> <td>5 min</td> </tr> </tbody> </table> <p><b>Mathematical Goal of this Lesson</b> The primary goal of this lesson is for students to write and solve algebraic expressions to find the interior angles of polygons (triangles and quadrilaterals). This is an exploration lesson as the teacher will model what happens when the angles of a triangle and quadrilaterals are removed and put together.</p> <p><b>Opportunities to CFU</b></p> <ul style="list-style-type: none"> <li>✓ INM: <i>Part B</i> Examples 4-8</li> <li>✓ Student Practice: Q3-5</li> </ul> <p><b>Other Notes to Inform Your Planning</b> For <b>INM</b>: It will be important to allow students to come to their own conjecture about what happens when the three angles of a triangle and the four angles of a trapezoid are removed and put together. The teacher should model and have the students describe what is happening and come up with their own conclusion. This lesson provides another opportunity for students to practice solving algebraic equations.</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p><b>Focus on Disciplinary Literacy</b></p>  <p><b>INM: Part A, #1-2 Student Debrief</b></p> </div>		Time	I. Do Now	5 min	II. INM/Concept Development	43 min	III. Student Practice	15 min	IV. Student Debrief	2 min	V. Exit Ticket	5 min	<p><b>Look for teachers to...</b></p> <ul style="list-style-type: none"> <li>☐ Disassemble polygons to model for students and lead them to an understanding of the sum of angle measures in polygons</li> </ul> <p><b>Look for students to...</b></p> <ul style="list-style-type: none"> <li>☐ Come to their own conjecture regarding the interior angles of the shapes modeled by the teacher</li> </ul> <p><b>Ask:</b> “How did you discover that the sum of the angles in a triangle is always 180 degrees?”</p>
	Time													
I. Do Now	5 min													
II. INM/Concept Development	43 min													
III. Student Practice	15 min													
IV. Student Debrief	2 min													
V. Exit Ticket	5 min													
<p><b>Important Vocabulary</b></p> <ul style="list-style-type: none"> <li>▪ Coefficient</li> <li>▪ Combining Like Terms</li> <li>▪ Constant</li> <li>▪ Quadrilateral Sum Theorem</li> <li>▪ Triangle Sum Theorem</li> </ul>		<p><b>Student Criteria for Success</b></p> <ul style="list-style-type: none"> <li> The three interior angles of a triangle always sum to 180 degrees</li> <li> The four interior angles of a quadrilateral will always sum to 360 degrees</li> <li> The value of the variable is not the same as the measure of the angle in a polygon</li> <li> Find the value of a variable used in an algebraic expression to represent the measure of an interior angle of a triangle or quadrilateral</li> <li> Use the value they calculate for a variable to find the measure of an interior angle in a triangle or quadrilateral</li> </ul>												

**Standard(s)**  
 ◆ 7.9(C) determine the area of composite figures containing combinations of rectangles, squares, parallelograms, trapezoids, triangles, semicircles, and quarter circles

**Notes for Intellectual Preparation & Lesson Planning**  
**Necessary Materials and Pre-Lesson Prep**  
 ▪ Unit 7 Student Workbook                      ▪ Projector  
 ▪ STAAR Math Reference Material  
 ▪ Document Camera

**Lesson Agenda**

	Time
I. Do Now	5 min
II. INM/Concept Development	30 min
III. Student Practice	23 min
IV. Student Debrief	5 min
V. Exit Ticket	5 min

**Mathematical Goal of this Lesson**  
 The goal of this lesson is for students to apply their understanding of concepts of area and perimeter to answer questions involving missing quantities. This lesson starts with reviewing the area of rectangles to build understanding of the meaning of the area as the number of square units inside a figure. Students then learn to set up equation to find missing dimensions of a rectangle given the perimeter or area of a rectangle.

**Lesson Look Fors**  
**Look for teachers to...**  
 Model finding the side length (s) to find perimeter when given the area.  
 Stamp for students that perimeter is a one-dimensional measurement while area is a 2-dimensional area  
 Expose students to the formula on the STAAR Math Reference Material

**Look for students to...**  
 Explain how to use the area formula to find missing side lengths  
 Reference STAAR Math Reference Material for formulas

**Important Vocabulary**

- Area
- Perimeter

**Opportunities to CFU**  
 ✓ INM: Part A #7,8 Part B #3,4 Part C #3,4  
 ✓ Student Practice: #4-7

**Other Notes to Inform Your Planning**  
**For Do Now:** The Do Now is intended to activate prior knowledge. This is a great opportunity to determine the amount of understanding students have of the concept of area and perimeter  
**For INM/Student Practice:** It will be important to stamp for students that perimeter is represented in units and area is represented in square units.  
 Students will then develop an understanding of finding the area, given the perimeter and the perimeter given the area. Students who struggle with basic computation would benefit from having a multiplication table provided for them. STAAR Math Reference Chart should be used consistently throughout the unit so that students won't think that they have to memorize the formulas. Students should become comfortable using and annotating the STAAR Reference Chart to support them in finding area and perimeter all figures.

**Focus on Disciplinary Literacy**



**Do Now: #1-3**  
**SP: #4, 5**  
**Student Debrief**

**Student Criteria for Success**

 Area measures the amount of 2-dimensional space inside of a 2-dimensional figure and is measured in square units

 Opposite side lengths in a rectangle are always congruent

 Perimeter measures the linear distance around a figure

 Calculate the area and perimeter of a rectangle

 Find a missing side length(s) when given the area or perimeter of a rectangle

 Set up and solve an algebraic equation to find a missing measure in a rectangle

**Standard(s)**  
 ◆ 7.9(C) determine the area of composite figures containing combinations of rectangles, squares, parallelograms, trapezoids, triangles, semicircles, and quarter circles.

**Notes for Intellectual Preparation & Lesson Planning**

**Necessary Materials and Pre-Lesson Prep**

- Document Camera
- Projector
- STAAR Math Reference Material
- Unit 7 Student Workbook

**Lesson Agenda**

	Time
I. Do Now	5 min
II. INM/Concept Development	35 min
III. Student Practice	20 min
IV. Student Debrief	5 min
V. Exit Ticket	5 min

**Mathematical Goal of this Lesson**  
 The primary goal of this lesson is for students to find the area and perimeter of parallelograms and triangles. They will build an understanding that a rectangle and parallelogram with the same length base and height will have same area. They will also build an understanding that a triangle with the same length(base) and height as a rectangle will have half of its area.

**Opportunities to CFU**

- ✓ INM: **Parallelograms: #3-6**
- Triangles: #1-3** (Last portion of the INM where students have to determine the base, height and area)
- ✓ Student Practice: #1, 3, 6

**Other Notes to Inform Your Planning**  
**INM/Student Practice:** Emphasize that the base and height/altitude of a triangle and parallelogram are perpendicular which means that together, they form a right angle. Also emphasize that the ‘imaginary height’ must be given in a parallelogram without right angles. Consider using an anchor chart for students to reference during the INM and Student Practice. During this time students should be using their annotated STAAR Math Reference Material so that they don’t feel that it is necessary to memorize the formulas.

**Important Vocabulary**

- Area
- Base
- Height/Altitude
- Perimeter

**Focus on Disciplinary Literacy**



**Do Now: #1 Student Debrief**

**Lesson Look Fors**

**Look for teachers to...**

- Model/Stamp for students that the reason it is necessary to divide by 2 when find the area of a triangle is because a triangle is half of a rectangle or parallelogram.
- Connect students’ understanding of area of a rectangle to ill concept of area of a triangle and parallelogram

**Look for students to...**

- Derive the formula for the area of a triangle and area of a parallelogram using their understanding of the area of a rectangle.
- Use STAAR Math Reference Material to reference formulas

**Student Criteria for Success**

-  The area of a triangle is always half of the area of a rectangle with the same base and height measures
-  The base and height/altitude of a polygon is always perpendicular
-  An imaginary height measure may be included in a visual model of a triangle or parallelogram if none of the exterior sides are perpendicular
-  Calculate the area of a triangle and a parallelogram and correctly label the units
-  Calculate a missing side length when given the area and one side measure

Standard(s)	Notes for Intellectual Preparation & Lesson Planning	Lesson Look Fors																		
<p>◆ 7.9(C) determine the area of composite figures containing combinations of rectangles, squares, parallelograms, trapezoids, triangles, semicircles, and quarter circles.</p>	<p><b>Necessary Materials and Pre-Lesson Prep</b></p> <ul style="list-style-type: none"> <li>▪ Document Camera</li> <li>▪ Projector</li> <li>▪ Unit 7 Student Workbook</li> <li>▪ STAAR Math Reference Material</li> </ul> <p><b>Lesson Agenda</b></p> <table border="1" data-bbox="478 342 1060 524"> <thead> <tr> <th></th> <th>Lesson Agenda</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>I.</td> <td>Do Now</td> <td>5 min</td> </tr> <tr> <td>II.</td> <td>INM/Concept Development</td> <td>40 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>7 min</td> </tr> </tbody> </table> <p><b>Mathematical Goal of this Lesson</b> The primary goal of this lesson is to calculate the area and perimeter of a trapezoid and answer application questions involving these measures. Students will build an understanding of calculating the area of a trapezoid by connecting to what they already know about finding the area of rectangles and parallelograms.</p> <p><b>Opportunities to CFU</b></p> <ul style="list-style-type: none"> <li>✓ INM: Part A #3-6; Part B #1, #4-7</li> <li>✓ Student Practice: #3, 4</li> </ul> <p><b>Other Notes to Inform Your Planning</b> <b>INM/Student Practice:</b> The biggest take aways from the day’s lesson is that a trapezoid has different length bases, so they must be averaged when finding the area of a trapezoid, and that the bases and the height of a trapezoid are always perpendicular. Students who struggle with multiplication facts or simple computation may struggle with this lesson. Consider providing them with a calculator <b>only</b> to check their answers. During this lesson and all lessons with area and volume, students should have access to the annotated STAAR Math Reference chart so that they are able to reference formulas.</p> <div data-bbox="989 1008 1444 1230" style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p style="text-align: center; background-color: #FFD700; margin: 0;"><b>Focus on Disciplinary Literacy</b></p> <div style="display: flex; align-items: center; justify-content: center;">  <p style="margin: 0;"> <b>INM:</b> Reflect, Stop and Jot  <b>SP:</b> #5  <b>Student Debrief</b> </p> </div> </div>		Lesson Agenda	Time	I.	Do Now	5 min	II.	INM/Concept Development	40 min	III.	Student Practice	20 min	IV.	Student Debrief	5 min	V.	Exit Ticket	7 min	<p><b>Look for teachers to...</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Stamp that to find the area of a trapezoid it is necessary to find the ‘average of the two bases’</li> <li><input type="checkbox"/> Connect students’ understanding of area of a rectangle to the concept of area of a trapezoid</li> </ul> <p><b>Look for students to...</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Explain why the formula for a trapezoid exists rather than just plugging in numbers</li> </ul> <p><b>Ask:</b> “How is calculating the area of a trapezoid different from calculating the area of a rectangle?”</p>
	Lesson Agenda	Time																		
I.	Do Now	5 min																		
II.	INM/Concept Development	40 min																		
III.	Student Practice	20 min																		
IV.	Student Debrief	5 min																		
V.	Exit Ticket	7 min																		
<p><b>Important Vocabulary</b></p> <ul style="list-style-type: none"> <li>▪ Area</li> <li>▪ Bases of a Trapezoid</li> <li>▪ Height/Altitude</li> <li>▪ Perimeter</li> <li>▪ Perpendicular</li> </ul>		<p><b>Student Criteria for Success</b></p> <ul style="list-style-type: none"> <li> Because the bases of a trapezoid are different lengths, it is necessary to find the average length of the bases before multiplying by the height/altitude to calculate its area.</li> <li> The base and height or altitude of a geometric figure will always be perpendicular.</li> <li> Area is measured in square units. Calculate the area of a trapezoid</li> <li> When given the area of a trapezoid, calculate a missing base or height measure</li> </ul>																		

Lesson 7: Circumference of Circles		Date: _____												
<p><b>Standard(s)</b></p> <ul style="list-style-type: none"> <li>◆ 7.9(B) determine the circumference and area of circles</li> <li>◆ 7.5(B) describe pi as the ratio of the circumference of a circle to its diameter</li> </ul>	<p><b>Notes for Intellectual Preparation &amp; Lesson Planning</b></p> <p><b>Necessary Materials and Pre-Lesson Prep</b></p> <ul style="list-style-type: none"> <li>▪ Unit 7 Student Workbook</li> <li>▪ Document Camera</li> <li>▪ Projector</li> <li>▪ Yarn (20 in)</li> <li>▪ Calculators</li> <li>▪ Rulers</li> <li>▪ Pre-cut Circles</li> <li>▪ STAAR Math Reference Material</li> </ul> <p><b>Lesson Agenda</b></p> <table border="1"> <thead> <tr> <th></th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>I. Do Now</td> <td>5 min</td> </tr> <tr> <td>II. INM/Concept Development</td> <td>45 min</td> </tr> <tr> <td>III. Student Practice</td> <td>12 min</td> </tr> <tr> <td>IV. Student Debrief</td> <td>3 min</td> </tr> <tr> <td>V. Exit Ticket</td> <td>5 min</td> </tr> </tbody> </table> <p><b>Mathematical Goal of this Lesson</b> The primary goal of the lesson is for students to derive the formula for the circumference of a circle and discover the meaning of pi. In this lesson students discover that the distance around a circle (circumference) is always a little more than 3 times the distance across a circle (diameter). They then <b>discover</b> the formula for the circumference of a circle using what they learn about the ratio of pi.</p> <p><b>Opportunities to CFU</b></p> <ul style="list-style-type: none"> <li>✓ <b>INM: Part B:</b> #2,3, #4-6, <b>Part C:</b> A-D(Prioritize the first 5 and if time permits students can complete the rest) <b>Part D:</b> #3, 4</li> <li>✓ <b>Student Practice:</b> #2b,c</li> </ul> <p><b>Other Notes to Inform Your Planning</b> For <b>INM/Student Practice:</b> It will be important to stamp for students that the diameter is the distance from one edge to the other that passes <b>through the center</b> and the radius represents half that distance. Expect student misconceptions around students mistakenly multiplying pi times the radius instead of a diameter when finding circumference. An anchor chart with these models will support student understanding as they are working through the INM/Student Practice. Students should use the annotated STAAR Math Reference Material to reference the formula for circumference.</p>		Time	I. Do Now	5 min	II. INM/Concept Development	45 min	III. Student Practice	12 min	IV. Student Debrief	3 min	V. Exit Ticket	5 min	<p><b>Lesson Look Fors</b></p> <p><b>Look for teachers to...</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Allow students to uncover the understanding of pi and the formula for calculating the distance around the circle</li> <li><input type="checkbox"/> Monitor students as they complete Q3/4 in Part D of the INM where they will have to find circumference given the radius</li> </ul> <p><b>Look for students to...</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Discover that the distance around a circle is always a little more than 3 times the diameter of a circle.</li> </ul> <p><b>Ask:</b> “How can you easily estimate the measure of a circle’s circumference?” (Multiply the diameter by 3)</p>
	Time													
I. Do Now	5 min													
II. INM/Concept Development	45 min													
III. Student Practice	12 min													
IV. Student Debrief	3 min													
V. Exit Ticket	5 min													
<p><b>Important Vocabulary</b></p> <ul style="list-style-type: none"> <li>▪ Circle</li> <li>▪ Circumference</li> <li>▪ Diameter</li> <li>▪ Irrational number</li> <li>▪ Pi</li> <li>▪ Radius</li> </ul>	<p><b>Focus on Disciplinary Literacy</b></p> <div style="border: 1px solid black; padding: 5px; text-align: center;">  <p><b>Do Now:</b> #1-2, Part C #1-3 <b>SP:</b> #1c <b>Student Debrief</b></p> </div>	<p><b>Student Criteria for Success</b></p> <ul style="list-style-type: none"> <li> The circumference or distance around a circle is always a little more than three times the diameter of the circle.,</li> <li> The ratio of the circumference of a circle to the diameter of the circle is always about 3.14, this number is pi</li> <li> Calculate the circumference of a circle</li> <li> Calculate a missing diameter/radius when given the circumference of a circle</li> </ul>												

Lesson 8: Area of Circles		Date: _____												
Standard(s)	Notes for Intellectual Preparation & Lesson Planning	Lesson Look Fors												
<p>◆ 7.9(B) determine the circumference and area of circles</p>	<p><b>Necessary Materials and Pre-Lesson Prep</b></p> <ul style="list-style-type: none"> <li>▪ Unit 7 Student Workbook</li> <li>▪ Document Camera</li> <li>▪ Projector</li> <li>▪ STAAR Math Reference Material</li> <li>▪ Ruler</li> <li>▪ Pre-Cut Circles</li> </ul> <p><b>Lesson Agenda</b></p> <table border="1"> <thead> <tr> <th></th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>I. Do Now</td> <td>5 min</td> </tr> <tr> <td>II. INM/Concept Development</td> <td>40 min</td> </tr> <tr> <td>III. Student Practice</td> <td>16 min</td> </tr> <tr> <td>IV. Student Debrief</td> <td>2 min</td> </tr> <tr> <td>V. Exit Ticket</td> <td>7 min</td> </tr> </tbody> </table> <p><b>Mathematical Goal of this Lesson</b> The primary goal of the lesson is for students to derive the formula for the area of a circle. Students will watch the teacher model converting a circle to a shape that resembles a parallelogram/rectangle. Students will connect their understanding of area of parallelogram/rectangle to circles. They will then derive the formula for area of a circle in terms of pi and calculate an approximation of the area by multiplying by 3.14.</p> <p><b>Opportunities to CFU</b></p> <ul style="list-style-type: none"> <li>✓ INM: (Fill in the Blank) and 'Area of a Circle' Part B #3-6</li> <li>✓ Student Practice: #2, #4-7</li> </ul> <p><b>Other Notes to Inform Your Planning</b> For INM/Student Practice: It will be important to watch this short video to gain an understanding of the modeling for the day's lesson. During planning create a circle that is pre-cut to save time during the lesson. Consider practicing doing the model <b>before</b> the lesson. Prepare for student misconceptions as some may first think that <math>r \times r</math> is the same as <math>2r</math>. It will be important to stamp <math>r^2 = r \times r</math>. Have students annotate this on their STAAR Math Reference Material next to the formula for area of a circle. Also, it is important that students can express the area and circumference in terms of pi. They will also need to know the difference between the approximation/exact answer and the answer expressed in terms of pi. <b>***Mistake***</b> The enduring understanding should say: When sectors of a circle are rearranged to make a rectangle, the length of the rectangle is half of the circumference, and the width is the radius. Therefore, the area of a circle <b>can be found using the formula: <math>A = \pi r^2</math></b></p>		Time	I. Do Now	5 min	II. INM/Concept Development	40 min	III. Student Practice	16 min	IV. Student Debrief	2 min	V. Exit Ticket	7 min	<p><b>Lesson Look Fors</b></p> <p><b>Look for teachers to...</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Model breaking a circle down into sectors and guide student to derive the formula for area of a circle</li> <li><input type="checkbox"/> Create an anchor chart to model how to express area and circumference in terms of pi.</li> </ul> <p><b>Look for students to...</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Derive the formula for area of a circle using their understanding of area of rectangles/parallelograms and the teacher's model.</li> <li><input type="checkbox"/> Explain the difference between the approximate/exact area/circumference and area/circumference in terms of pi.</li> <li><input type="checkbox"/> Annotate the STAAR Math Reference Chart (Area of a Circle <math>A = \pi r^2 \rightarrow \pi \cdot r \cdot r</math>)</li> </ul>
		Time												
I. Do Now	5 min													
II. INM/Concept Development	40 min													
III. Student Practice	16 min													
IV. Student Debrief	2 min													
V. Exit Ticket	7 min													
<p><b>Important Vocabulary</b></p> <ul style="list-style-type: none"> <li>▪ Circle</li> <li>▪ Circumference</li> <li>▪ Diameter</li> <li>▪ Irrational number</li> <li>▪ Pi</li> <li>▪ Radius</li> </ul>	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p><b>Focus on Disciplinary Literacy</b></p>  <p><b>INM: Part A</b> <b>SP: #7</b> <b>Student Debrief</b></p> </div>	<p><b>Student Criteria for Success</b></p> <ul style="list-style-type: none"> <li> The STAAR Math Reference Chart has the formula for area and circumference of a circle and can be used as a reference</li> <li> The radius is half of the diameter and the <math>r^2</math> is used to find <b>area of a circle</b></li> <li> Find the exact/approximate area of a circle</li> <li> Find the exact area given the area in terms of pi.</li> </ul>												

Lesson 9: Area of Composite Figures		Date: _____												
<p><b>Standard(s)</b></p> <p>◆ 7.9(C) determine the area of composite figures containing combinations of rectangles, squares, parallelograms, trapezoids, triangles, semicircles, and quarter circles.</p>	<p><b>Notes for Intellectual Preparation &amp; Lesson Planning</b></p> <p><b>Necessary Materials and Pre-Lesson Prep</b></p> <ul style="list-style-type: none"> <li>▪ Unit 7 Student Workbook</li> <li>▪ Document Camera</li> <li>▪ Projector</li> <li>▪ STAAR Math Reference Material</li> </ul> <p><b>Lesson Agenda</b></p> <table border="1" data-bbox="478 342 1060 526"> <thead> <tr> <th>Lesson Agenda</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>I. Do Now</td> <td>8 min</td> </tr> <tr> <td>II. INM/Concept Development</td> <td>24 min</td> </tr> <tr> <td>III. Student Practice</td> <td>28 min</td> </tr> <tr> <td>IV. Student Debrief</td> <td>5 min</td> </tr> <tr> <td>V. Exit Ticket</td> <td>5 min</td> </tr> </tbody> </table> <p><b>Mathematical Goal of this Lesson</b></p> <p>The primary goal of the lesson is for student to calculate the area of composite figures and shaded regions of a figure. In this lesson students will use what they learned in the past several lessons to develop a strategy to answer questions representing real-world situations. The focus is on the process of finding the total or selected area, and <b>not</b> on computation of numbers.</p> <p><b>Opportunities to CFU</b></p> <ul style="list-style-type: none"> <li>✓ INM: Part B #1, 3, 4, 5</li> <li>✓ Student Practice: #2, 5, 7, 9</li> </ul> <p><b>Other Notes to Inform Your Planning</b></p> <p><b>INM/Student Practice:</b> It will be important to watch for misconceptions around determining the dimensions of composite figures. In the INM Part B #1, some students will attempt to find the area using 10 yards by 15 yards. Show them that 15 yards represents the distance across the entire figure. It will be important to model how to partition a composite figure into smaller shapes using the document camera. Allow students who struggle to access this lesson with the use of a calculator or 12x12 chart. Some students may become confused about when they have to add/subtract to find the area. This is a critical understanding for them to have. Allow them to highlight <b>'shaded region'</b> for problems that ask for area of the shaded region. They will need to have the understanding that it is necessary to subtract when finding the area of only a portion of a figure such as a shaded or unshaded region. Students should use the annotated STAAR Math Reference Material to access formulas.</p> <div data-bbox="989 976 1442 1179" style="border: 1px solid black; padding: 5px; text-align: center;"> <p><b>Focus on Disciplinary Literacy</b></p>  <p>INM: Part A SP: #1 Student Debrief</p> </div>	Lesson Agenda	Time	I. Do Now	8 min	II. INM/Concept Development	24 min	III. Student Practice	28 min	IV. Student Debrief	5 min	V. Exit Ticket	5 min	<p><b>Lesson Look Fors</b></p> <p><u>Look for teachers to...</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Connect students' understanding of area of parallelograms, rectangles, trapezoids, circles, and triangles to the area of composite figures. Teachers should build understanding through prior knowledge.</li> <li><input type="checkbox"/> Use a document camera to model how to partition a composite figure into smaller shapes.</li> </ul> <p><u>Look for students to...</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Differentiate between finding the total area of a composite figure and finding only the shaded area of a figure, then define the procedure of calculating both</li> </ul> <p><u>Ask:</u></p> <p>Are you going to add the areas of those two shapes together or subtract them? How do you know which to do?</p>
Lesson Agenda	Time													
I. Do Now	8 min													
II. INM/Concept Development	24 min													
III. Student Practice	28 min													
IV. Student Debrief	5 min													
V. Exit Ticket	5 min													
<p><b>Important Vocabulary</b></p> <ul style="list-style-type: none"> <li>▪ Composite figure</li> </ul>		<p><b>Student Criteria for Success</b></p> <ul style="list-style-type: none"> <li> A composite figure can be decomposed into smaller shapes to find the area of the entire figure.</li> <li> Know the difference between when the areas of two shapes should be added together and when they should be subtracted</li> <li> A semicircle is half of a full circle which means it is necessary to divide by 2 after finding the area</li> <li> Find the total area of a composite figure</li> <li> Find the area of a shaded region <b>only</b></li> </ul>												

## Recommended Success Day Materials and Resources

### 2-D Geometry

Area and Perimeter of Composite Figures Practice  
Area and Perimeter of Composite Figures PP  
7.5C and 7.9C Tech-Enhanced Question Practice  
Unit 7 Extra Practice SE  
Unit 7 Extra Practice TE

### Notes to Inform Your Planning

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.*

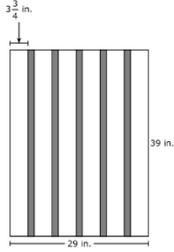
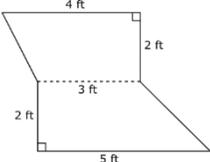
Using exit ticket data can help you prioritize what to review. For example, if you remember that students did poorly on Lesson 9, pull problems from lesson 6, especially if they are problems students did not do before (for example, SP or INM problems you skipped during class). You can also take questions 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.

## Standard Breakdown

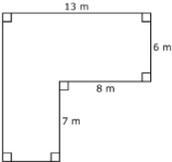
Standard	Specificity	STAAR Alignment																														
<p><b>7.9(C)</b> <u>determine the area of composite figures containing combinations of rectangles, squares, parallelograms, trapezoids, triangles, semicircles, and quarter circles</u></p>	<p><b>Concepts:</b></p> <ul style="list-style-type: none"> <li>- Area</li> <li>- Composite Figures</li> <li>- Rectangles</li> <li>- Squares</li> <li>- Parallelograms</li> <li>- Trapezoids</li> <li>- Triangles</li> <li>- Semicircles</li> <li>- Quarter Circles</li> </ul> <p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>- Determine</li> </ul> <p><b>Limitations:</b></p> <ul style="list-style-type: none"> <li>• Composite figures will be composed of circles, rectangles, trapezoids, parallelograms and triangles only.</li> <li>• Measurements limited to positive rational numbers</li> </ul>	<p><b>2023 Q26</b></p> <div data-bbox="1129 365 1669 863"> <p>2023 – Q26</p> <p>A cutting board is created with congruent light pieces and congruent dark pieces of wood, as shown in the figure. All angles are right angles.</p>  <p>What is the combined area of the dark pieces of wood in square inches?</p> <p>Ⓐ 399.75 in.<sup>2</sup></p> <p>Ⓑ 877.5 in.<sup>2</sup></p> <p>Ⓒ 478.5 in.<sup>2</sup></p> <p>Ⓓ 253.5 in.<sup>2</sup></p> </div> <p><b>2023 Q13</b></p> <div data-bbox="1129 966 1617 1464"> <p>2023 – Q13</p> <p>The figure is composed of two trapezoids. Measurements are given in feet.</p>  <p>What is the area of the figure in square feet?</p> <p>Enter your answer in the box.</p> <div data-bbox="1228 1274 1606 1461"> <input type="text"/> <table border="1"> <tr> <td>←</td> <td>→</td> <td>↶</td> <td>↷</td> <td>✖</td> </tr> <tr> <td>1</td> <td>2</td> <td>3</td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>5</td> <td>6</td> <td></td> <td></td> </tr> <tr> <td>7</td> <td>8</td> <td>9</td> <td></td> <td></td> </tr> <tr> <td></td> <td>0</td> <td></td> <td></td> <td></td> </tr> <tr> <td>.</td> <td>-</td> <td>⌵</td> <td></td> <td></td> </tr> </table> </div> </div>	←	→	↶	↷	✖	1	2	3			4	5	6			7	8	9				0				.	-	⌵		
←	→	↶	↷	✖																												
1	2	3																														
4	5	6																														
7	8	9																														
	0																															
.	-	⌵																														



2025 Q22

2025 – Q22

A composite figure is made up of two rectangles. The figure and its dimensions in meters are shown in the diagram



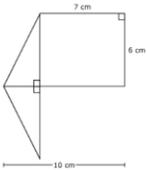
What is the area of the composite figure in square meters?

- Ⓐ 52 m<sup>2</sup>
- Ⓑ 113 m<sup>2</sup>
- Ⓒ 134 m<sup>2</sup>
- Ⓓ 143 m<sup>2</sup>

2025 Q12

2025 – Q12

A composite figure consists of 2 congruent right triangles and a rectangle. The figure and its dimensions in centimeters are shown.



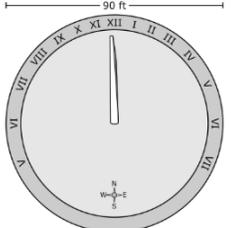
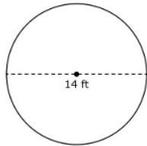
What is the area of the figure in square centimeters?

Enter your answer in the box provided.

cm<sup>2</sup>

1	2	3
4	5	6
7	8	9
0		
.	-	

Standard Breakdown

Standard	Specificity	STAAR Alignment
<p><b>7.9(B)</b> determine the circumference and area of circles</p>	<p><b>Concepts</b></p> <ul style="list-style-type: none"> <li>-Circles</li> <li>-Circumference</li> <li>-Area of Circles</li> </ul> <p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>- Determine</li> </ul> <p><b>Limitations:</b></p> <ul style="list-style-type: none"> <li>• TEKS 7.9(B) applies only to circles: students determine the <b>circumference</b> and <b>area</b> of circles.</li> <li>• Measurements are limited to positive rational numbers.</li> <li>• Use the provided formula chart consistently (<math>A = nr^2</math>, <math>C = 2nr</math> or <math>nd</math>).</li> <li>• No arcs, sectors, 3-D solids, or irregular figures.</li> <li>• Final answers limited to positive rational numbers or in terms of <math>n</math> when required.</li> </ul>	<p><b>2023 Q37</b></p> <p>2023 – Q37</p> <p>A circle has a radius of 4.5 centimeters. Which measurement is closest to the circumference of the circle in centimeters?</p> <p>Ⓐ 14.13 cm</p> <p>Ⓑ 28.26 cm</p> <p>Ⓒ 63.59 cm</p> <p>Ⓓ 56.52 cm</p> <p><b>2023 Q8</b></p> <p>2023 – Q8</p> <p>A sundial has a circular base with a diameter of 90 feet as shown in the diagram.</p>  <p>Which measurement is closest to the area of the circular base of the sundial in square feet?</p> <p>Ⓐ 3,627.5 ft<sup>2</sup></p> <p>Ⓑ 282.6 ft<sup>2</sup></p> <p>Ⓒ 141.3 ft<sup>2</sup></p> <p>Ⓓ 6,358.5 ft<sup>2</sup></p> <p><b>2024 Q25</b></p> <p>2024 – Q25</p> <p>A sprinkler rotates and sprays water onto a lawn. The part of the lawn watered by the sprinkler is in the shape of a circle with the diameter shown in feet.</p>  <p>Which measurement is closest to the area in square feet of the part of the lawn watered by the sprinkler?</p> <p>Ⓐ 1,231 ft<sup>2</sup></p> <p>Ⓑ 44 ft<sup>2</sup></p> <p>Ⓒ 615 ft<sup>2</sup></p> <p>Ⓓ 154 ft<sup>2</sup></p>

## 2024 Q14

! 2024 – Q14

A circle has an area of approximately 28.26 square centimeters. Which measurement is closest to the radius of the circle in centimeters?

A 3 cm

B 6 cm

C 5 cm

D 9 cm

## 2025 Q29

2025 – Q29

The circumference of the base of a cylinder is approximately 94.2 feet. Which measurement is closest to the diameter,  $d$ , of the cylinder in feet?

A 11 ft

B 30 ft

C 15 ft

D 60 ft

## 2025 Q8

! 2025 – Q8

A circular sign has a diameter of 20 inches. Determine the measurements that are closest to the area of the sign in square inches and the circumference of the sign in inches.

Move the correct answer to each box. Not all answers will be used.

31 63 126 314 628 1,256

Area of sign:  in.<sup>2</sup>

Circumference of sign:  in.

## 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.

5 <sup>th</sup> Grade	6 <sup>th</sup> Grade	8 <sup>th</sup> Grade	Geometry
<p><b>5.4(H)</b> represent and solve problems related to perimeter and/or area and related to volume <b>5.5(A)</b> classify two-dimensional figures in a hierarchy of sets and subsets using graphic organizers based</p>	<p><b>6.8(D)</b> 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</p>	<p><b>8.3(C)</b> use an algebraic representation to explain the effect of a given positive rational scale factor applied to two-dimensional figures on a coordinate plane with the origin as the center of dilation</p>	<p><b>G.11(B)</b> determine the area of composite two-dimensional figures comprised of a combination of triangles, parallelograms, trapezoids, kites, regular polygons, or sectors of circles to solve problems using appropriate units of measure</p>
<p>on their attributes and properties  <b>5.6(A)</b> recognize a cube with side length of one unit as a unit cube having one cubic unit of volume and the volume of a three-dimensional figure as the number of unit cubes (n cubic units) needed to fill it with no gaps or overlaps if possible  <b>5.6(B)</b> determine the volume of a rectangular prism with whole number side lengths in problems related to the number of layers times the number of unit cubes in the area of the base</p>	<p><b>6.8(A)</b> 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  <b>6.8(B)</b> model area formulas for parallelograms, trapezoids, and triangles by decomposing and rearranging parts of these shapes  <b>6.8(C)</b> 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</p>	<p><b>8.10(C)</b> explain the effect of translations, reflections over the x- or y-axis, and rotations limited to 90°, 180°, 270°, and 360° as applied to two-dimensional shapes on a coordinate plane using an algebraic representation  <b>8.3(A)</b> generalize that the ratio of corresponding sides of similar shapes are proportional, including a shape and its dilation  <b>8.8(D)</b> 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</p>	<p><b>G.11(C)</b> apply the formulas for the total and lateral surface area of three-dimensional figures, including prisms, pyramids, cones, cylinders, spheres, and composite figures, to solve problems using appropriate units of measure  <b>G.11(D)</b> apply the formulas for the volume of three-dimensional figures, including prisms, pyramids, cones, cylinders, spheres, and composite figures, to solve problems using appropriate units of measure  <b>G.11(A)</b> apply the formula for the area of regular polygons to solve problems using appropriate units of measure  <b>G.12(B)</b> apply the proportional relationship between the measure of an arc length of a circle and the circumference of the circle to solve problems  <b>G.12(C)</b> apply the proportional relationship between the measure of the area of a sector of a circle and the area of the circle to solve problems</p>