Supporting STAAR™ Achievement: Targeting the TEKS and Readiness Standards

Grade 7 Mathematics

Teacher Edition

Product ID:
407-1670

Table of Contents

What Is *Supporting STAAR™ Achievement: Targeting the TEKS and Readiness Standards*?

1. A resource that focuses on the TEKS identified as readiness standards while integrating appropriate supporting standards and mathematical processes and skills

2. A resource that provides opportunities for rigorous mathematical conversations while providing supports for students at varying levels of readiness

3. A resource that provides support for English language learners and students struggling to learn mathematics through Tier I differentiated activities, preteaching experiences, scaffolds for activities such as hint cards and graphic organizers, and facilitation questions

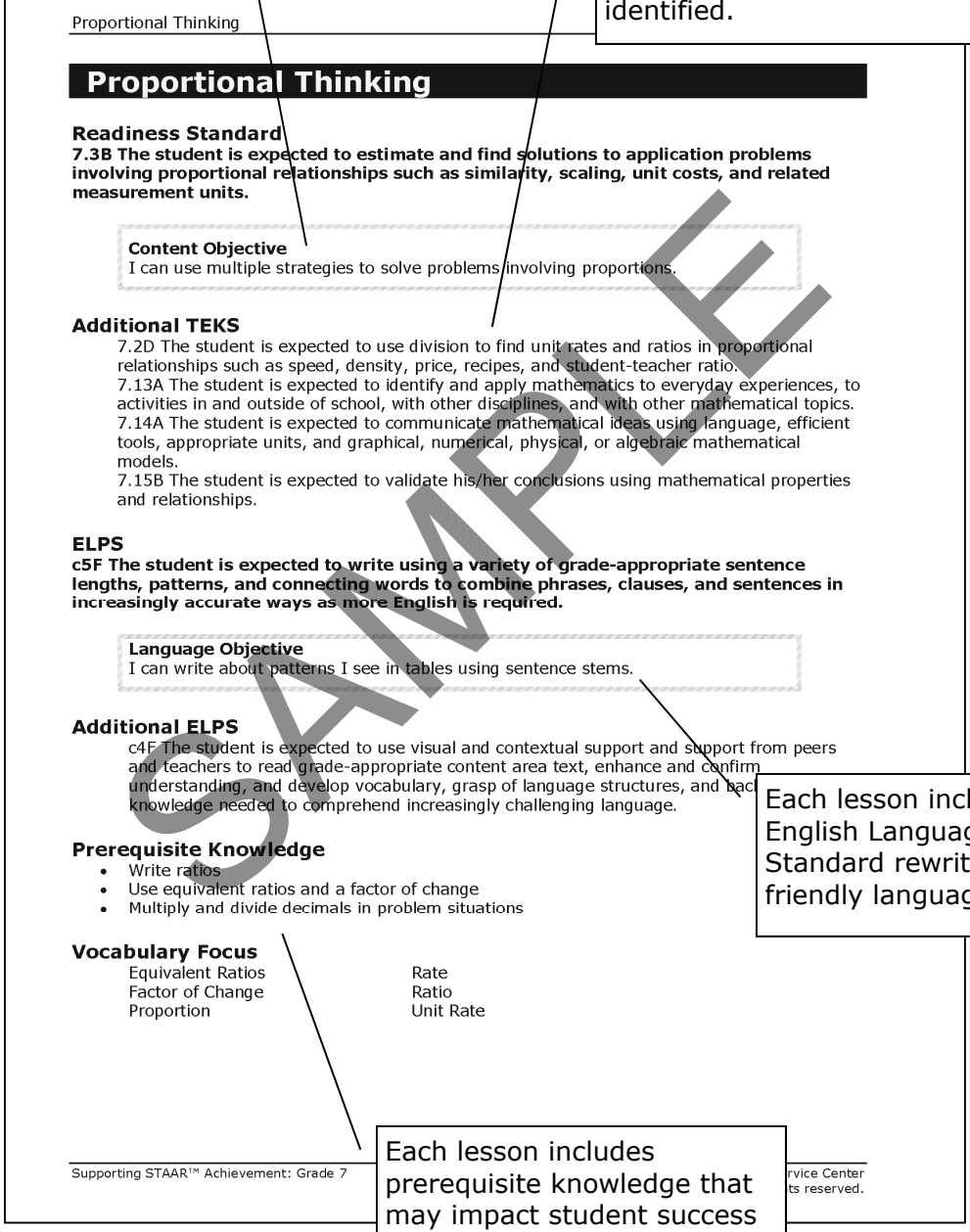
4. A resource that supports beginning as well as experienced teachers through clear instructions and facilitation questions that focus on potential stumbling blocks for students in the effort to bridge to formal understanding of mathematics

5. A resource of classroom-ready 5E lessons. The Engage phase of each lesson consists of a student-centered activity that either bridges from students' prior knowledge or encourages interest in deeper exploration of the concepts in the lesson. The Explore phase of each lesson provides students with an opportunity to "do mathematics" and begin to formulate ideas and conjectures. In the Explain phase of each lesson, students formalize the mathematical ideas from the Explore phase with a focus on academic vocabulary, as well as procedures related to the concepts. The Elaborate phase of each lesson allows students to apply or extend their understanding of the concepts in the lesson. The Evaluate phase consists of four selected-response or griddable items that can be used to assess student understanding.

What Is in a Lesson Found in *Supporting STAAR™ Achievement: Targeting the TEKS and Readiness Standards*?

Each readiness standard has been rewritten in student-friendly language so that students may gauge their learning.

Additional TEKS that support the conceptual and procedural development of the readiness standard within this lesson are identified.



Proportional Thinking

Proportional Thinking

Readiness Standard
7.3B The student is expected to estimate and find solutions to application problems involving proportional relationships such as similarity, scaling, unit costs, and related measurement units.

Content Objective
I can use multiple strategies to solve problems involving proportions.

Additional TEKS
7.2D The student is expected to use division to find unit rates and ratios in proportional relationships such as speed, density, price, recipes, and student-teacher ratio.
7.13A The student is expected to identify and apply mathematics to everyday experiences, to activities in and outside of school, with other disciplines, and with other mathematical topics.
7.14A The student is expected to communicate mathematical ideas using language, efficient tools, appropriate units, and graphical, numerical, physical, or algebraic mathematical models.
7.15B The student is expected to validate his/her conclusions using mathematical properties and relationships.

ELPS
c5F The student is expected to write using a variety of grade-appropriate sentence lengths, patterns, and connecting words to combine phrases, clauses, and sentences in increasingly accurate ways as more English is required.

Language Objective
I can write about patterns I see in tables using sentence stems.

Additional ELPS
c4F The student is expected to use visual and contextual support and support from peers and teachers to read grade-appropriate content area text, enhance and confirm understanding, and develop vocabulary, grasp of language structures, and background knowledge needed to comprehend increasingly challenging language.

Prerequisite Knowledge
- Write ratios
- Use equivalent ratios and a factor of change
- Multiply and divide decimals in problem situations

Vocabulary Focus

Equivalent Ratios	Rate
Factor of Change	Ratio
Proportion	Unit Rate

Supporting STAAR™ Achievement: Grade 7

rvice Center
ts reserved.

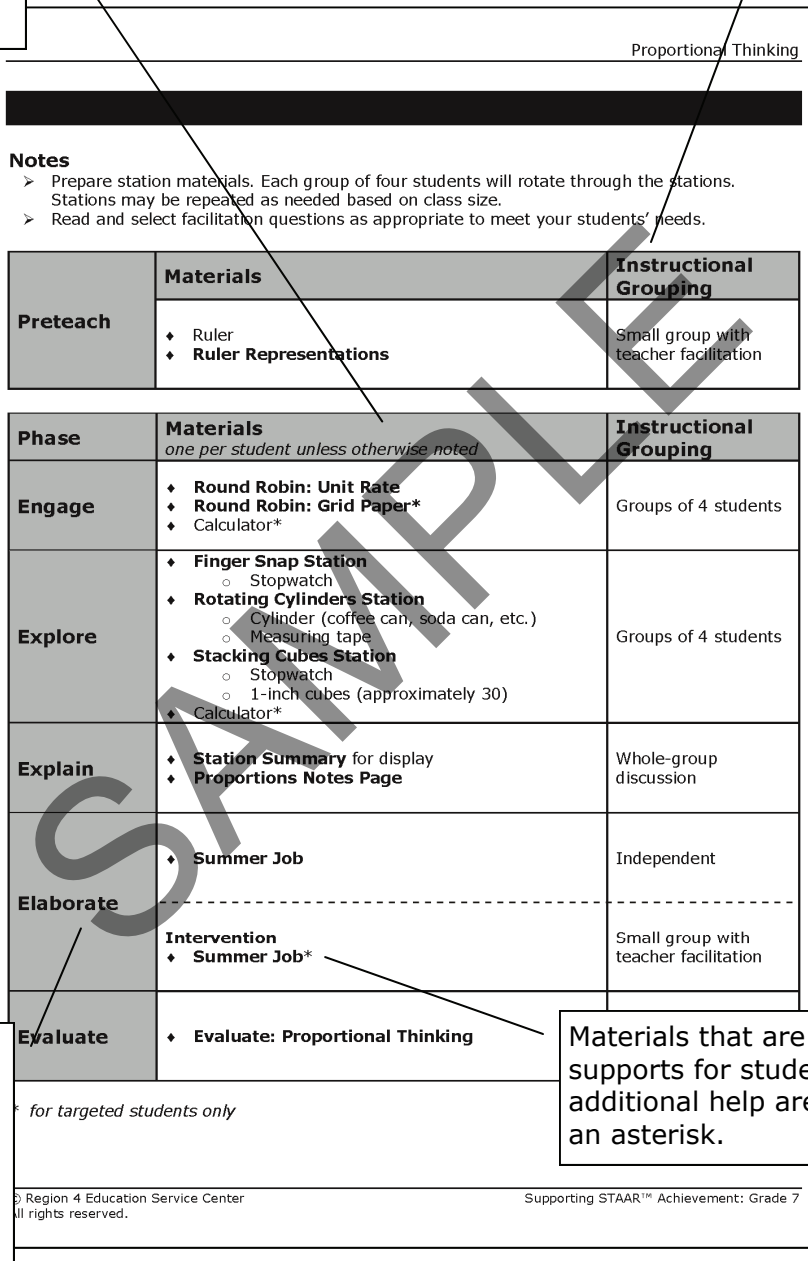
Each lesson includes an English Language Proficiency Standard rewritten in student-friendly language.

Each lesson includes prerequisite knowledge that may impact student success within the lesson as well as vocabulary that will be used during the lesson.

What Is in a Lesson Found in *Supporting STAAR™ Achievement: Targeting the TEKS and Readiness Standards*?

Materials for each phase are summarized on one page for ease in preparation.

Grouping strategies for each phase are summarized to assist in the arrangement of the classroom.



Proportional Thinking

Notes

- Prepare station materials. Each group of four students will rotate through the stations. Stations may be repeated as needed based on class size.
- Read and select facilitation questions as appropriate to meet your students' needs.

	Materials	Instructional Grouping
Preteach	♦ Ruler ♦ **Ruler Representations**	Small group with teacher facilitation

Phase	Materials *one per student unless otherwise noted*	Instructional Grouping
Engage	♦ **Round Robin: Unit Rate** ♦ **Round Robin: Grid Paper*** ♦ Calculator*	Groups of 4 students
Explore	♦ **Finger Snap Station** ○ Stopwatch ♦ **Rotating Cylinders Station** ○ Cylinder (coffee can, soda can, etc.) ○ Measuring tape ♦ **Stacking Cubes Station** ○ Stopwatch ○ 1-inch cubes (approximately 30) ♦ Calculator*	Groups of 4 students
Explain	♦ **Station Summary** for display ♦ **Proportions Notes Page**	Whole-group discussion
Elaborate	♦ **Summer Job**	Independent
	Intervention ♦ **Summer Job***	Small group with teacher facilitation
Evaluate	♦ **Evaluate: Proportional Thinking**	

* *for targeted students only*

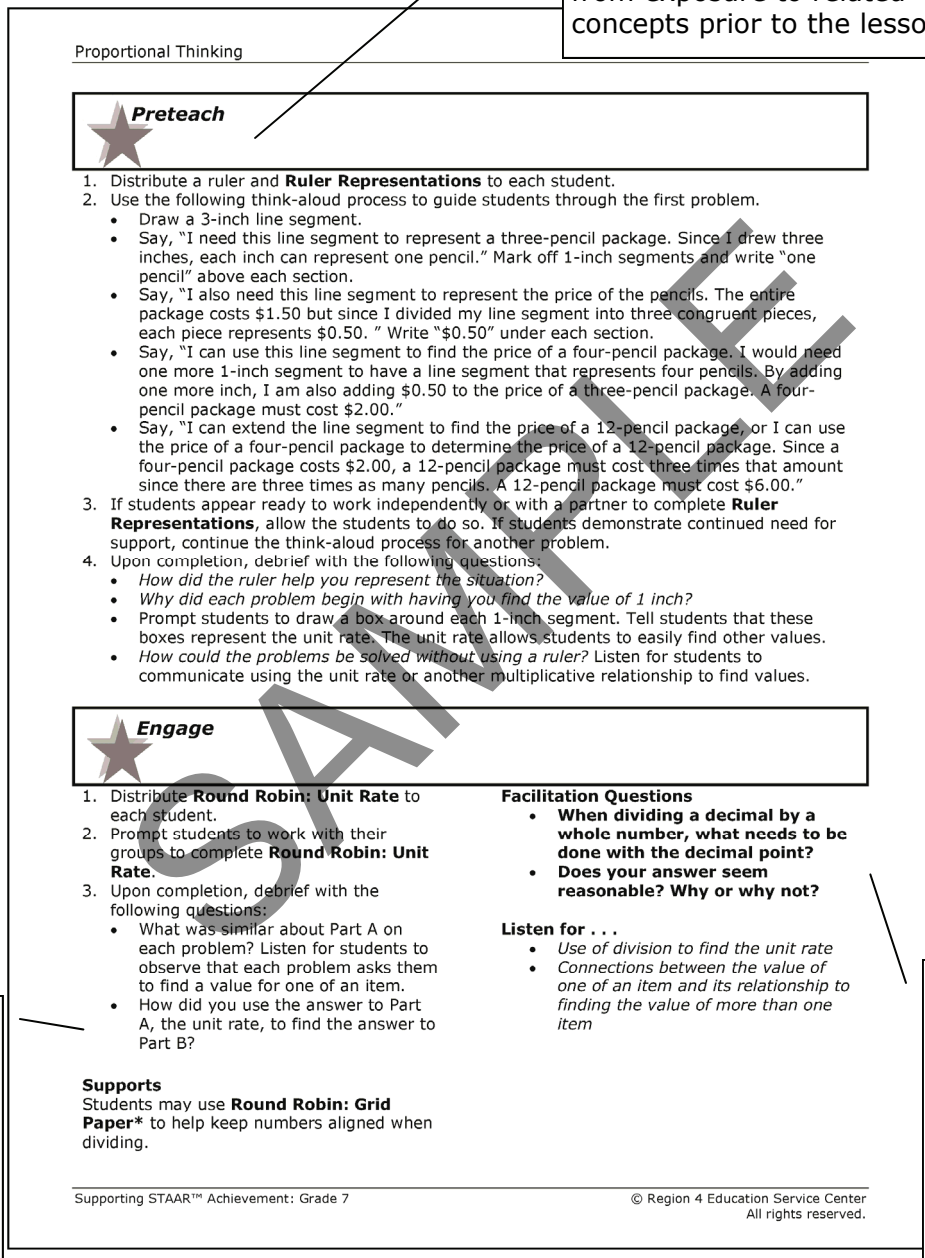
Supporting STAAR™ Achievement: Grade 7

The Elaborate phase has two concurrent components: a student-facilitated activity and a teacher-facilitated activity that focuses on the needs of students struggling with the content.

Materials that are provided as supports for students in need of additional help are labeled with an asterisk.

What Is in a Lesson Found in *Supporting STAAR™ Achievement: Targeting the TEKS and Readiness Standards*?

Each lesson includes a preteach activity that teachers may use with students who might benefit from exposure to related concepts prior to the lesson.



Proportional Thinking

Preteach

1. Distribute a ruler and **Ruler Representations** to each student.
2. Use the following think-aloud process to guide students through the first problem.
   - Draw a 3-inch line segment.
   - Say, "I need this line segment to represent a three-pencil package. Since I drew three inches, each inch can represent one pencil." Mark off 1-inch segments and write "one pencil" above each section.
   - Say, "I also need this line segment to represent the price of the pencils. The entire package costs $1.50 but since I divided my line segment into three congruent pieces, each piece represents $0.50. " Write "$0.50" under each section.
   - Say, "I can use this line segment to find the price of a four-pencil package. I would need one more 1-inch segment to have a line segment that represents four pencils. By adding one more inch, I am also adding $0.50 to the price of a three-pencil package. A four-pencil package must cost $2.00."
   - Say, "I can extend the line segment to find the price of a 12-pencil package, or I can use the price of a four-pencil package to determine the price of a 12-pencil package. Since a four-pencil package costs $2.00, a 12-pencil package must cost three times that amount since there are three times as many pencils. A 12-pencil package must cost $6.00."
3. If students appear ready to work independently or with a partner to complete **Ruler Representations**, allow the students to do so. If students demonstrate continued need for support, continue the think-aloud process for another problem.
4. Upon completion, debrief with the following questions:
   - *How did the ruler help you represent the situation?*
   - *Why did each problem begin with having you find the value of 1 inch?*
   - Prompt students to draw a box around each 1-inch segment. Tell students that these boxes represent the unit rate. The unit rate allows students to easily find other values.
   - *How could the problems be solved without using a ruler?* Listen for students to communicate using the unit rate or another multiplicative relationship to find values.

Engage

1. Distribute **Round Robin: Unit Rate** to each student.
2. Prompt students to work with their groups to complete **Round Robin: Unit Rate**.
3. Upon completion, debrief with the following questions:
   - What was similar about Part A on each problem? Listen for students to observe that each problem asks them to find a value for one of an item.
   - How did you use the answer to Part A, the unit rate, to find the answer to Part B?

Supports
Students may use **Round Robin: Grid Paper*** to help keep numbers aligned when dividing.

Facilitation Questions
- **When dividing a decimal by a whole number, what needs to be done with the decimal point?**
- **Does your answer seem reasonable? Why or why not?**

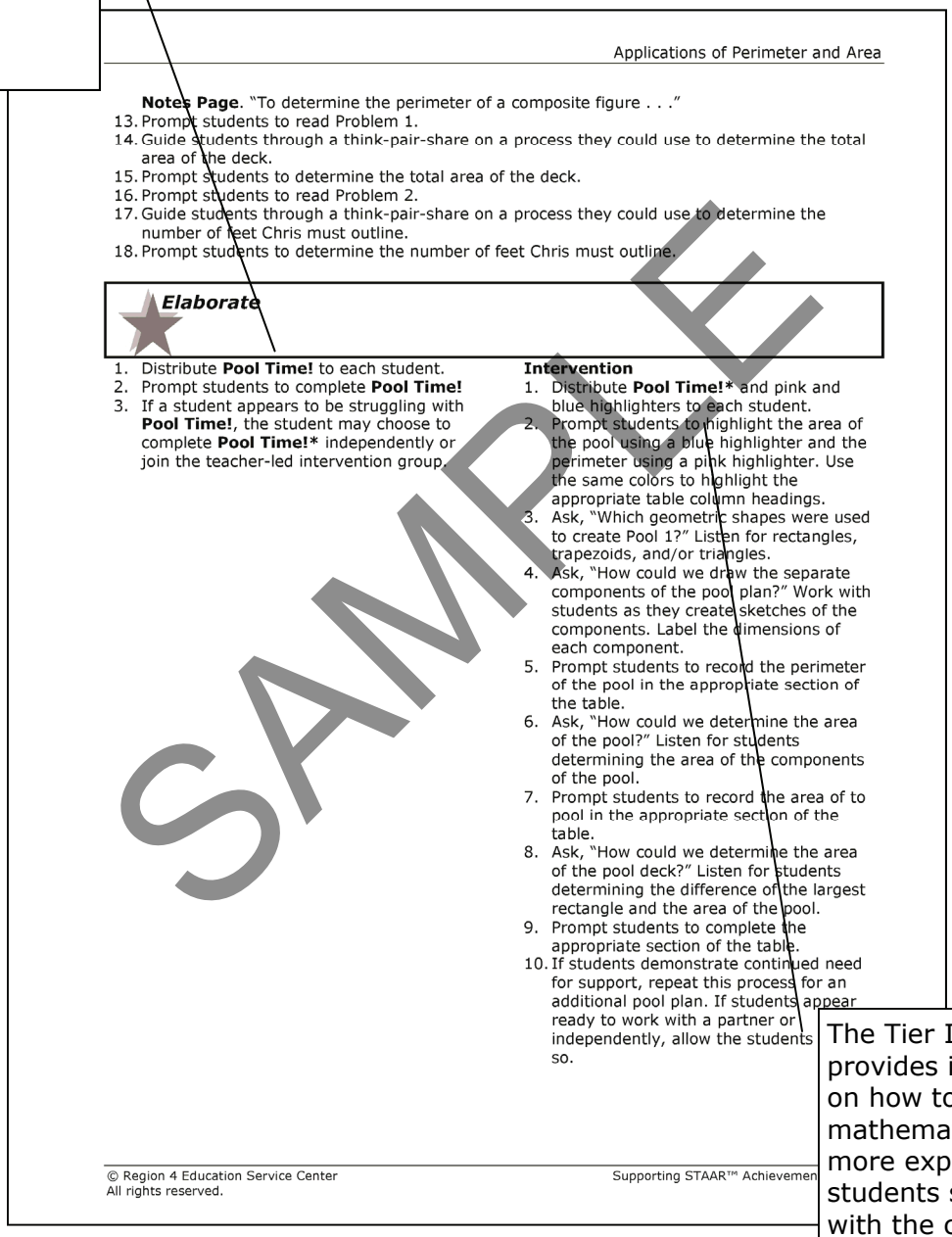
Listen for . . .
- *Use of division to find the unit rate*
- *Connections between the value of one of an item and its relationship to finding the value of more than one item*

Supporting STAAR™ Achievement: Grade 7

Each phase includes directions to implement the activity and the identification of additional student supports for the activity.

Each phase includes facilitation questions to help students who may be struggling to interpret or process components of the activity.

Titles of activity masters and student pages are printed in bold for ease of reference.



Applications of Perimeter and Area

Notes Page. "To determine the perimeter of a composite figure . . ."

13. Prompt students to read Problem 1.
14. Guide students through a think-pair-share on a process they could use to determine the total area of the deck.
15. Prompt students to determine the total area of the deck.
16. Prompt students to read Problem 2.
17. Guide students through a think-pair-share on a process they could use to determine the number of feet Chris must outline.
18. Prompt students to determine the number of feet Chris must outline.

Elaborate

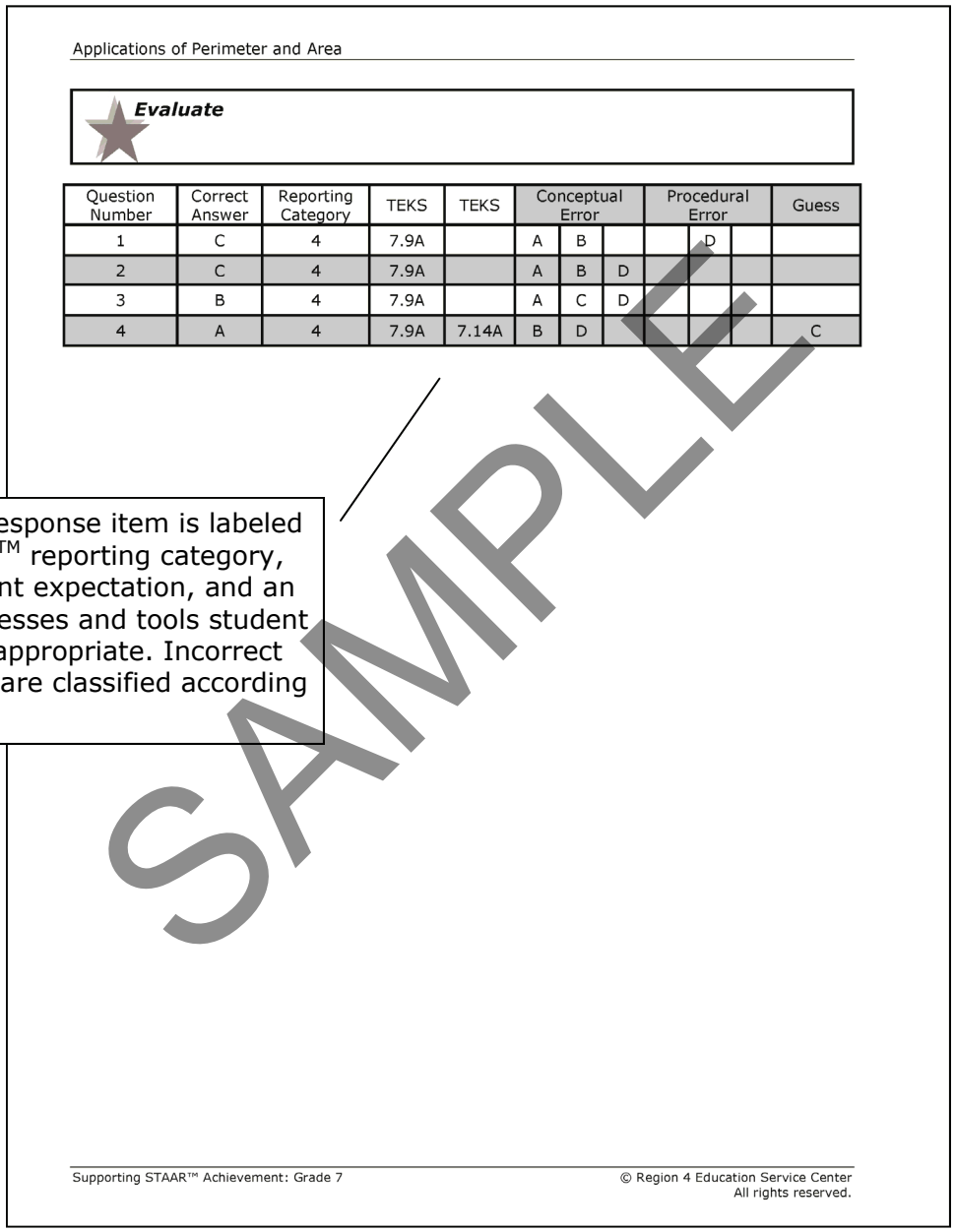
1. Distribute **Pool Time!** to each student.
2. Prompt students to complete **Pool Time!**
3. If a student appears to be struggling with **Pool Time!**, the student may choose to complete **Pool Time!*** independently or join the teacher-led intervention group.

Intervention

1. Distribute **Pool Time!*** and pink and blue highlighters to each student.
2. Prompt students to highlight the area of the pool using a blue highlighter and the perimeter using a pink highlighter. Use the same colors to highlight the appropriate table column headings.
3. Ask, "Which geometric shapes were used to create Pool 1?" Listen for rectangles, trapezoids, and/or triangles.
4. Ask, "How could we draw the separate components of the pool plan?" Work with students as they create sketches of the components. Label the dimensions of each component.
5. Prompt students to record the perimeter of the pool in the appropriate section of the table.
6. Ask, "How could we determine the area of the pool?" Listen for students determining the area of the components of the pool.
7. Prompt students to record the area of to pool in the appropriate section of the table.
8. Ask, "How could we determine the area of the pool deck?" Listen for students determining the difference of the largest rectangle and the area of the pool.
9. Prompt students to complete the appropriate section of the table.
10. If students demonstrate continued need for support, repeat this process for an additional pool plan. If students appear ready to work with a partner or independently, allow the students so.

Supporting STAAR™ Achievemen

The Tier I intervention provides instructions on how to make the mathematics content more explicit for students struggling with the concepts within the lesson. The activity is at the same rigor as the activity being completed by the students in a self-directed environment.



Applications of Perimeter and Area

Evaluate

Question Number	Correct Answer	Reporting Category	TEKS	TEKS	Conceptual Error			Procedural Error			Guess
1	C	4	7.9A		A	B			D		
2	C	4	7.9A		A	B	D				
3	B	4	7.9A		A	C	D				
4	A	4	7.9A	7.14A	B	D					C

Each selected-response item is labeled with the STAAR™ reporting category, a content student expectation, and an underlying processes and tools student expectation as appropriate. Incorrect answer choices are classified according to type.

Supporting STAAR™ Achievement: Grade 7

Equations and Problem Situations

Readiness Standard

7.5B The student is expected to formulate problem situations when given a simple equation and formulate an equation when given a problem situation.

Content Objective
I can use equations to represent problem situations.

Additional TEKS

7.2F The student is expected to select and use appropriate operations to solve problems and justify the selections.
7.14A The student is expected to communicate mathematical ideas using language, efficient tools, appropriate units, and graphical, numerical, physical, or algebraic mathematical models.
7.15B The student is expected to validate his/her conclusions using mathematical properties and relationships.

ELPS

c1E The student is expected to internalize new basic and academic language by using and reusing it in meaningful ways in speaking and writing activities that build concept and language attainment.

Language Objective
I can share information with my group by speaking, listening, and writing.

Additional ELPS

c1A The student is expected to use prior knowledge and experiences to understand meanings in English.
c3E The student is expected to share information in cooperative learning interactions.
c5G The student is expected to narrate, describe, and explain with increasing specificity and detail to fulfill content area writing needs as more English is acquired.

Prerequisite Knowledge

- Use of variables to represent unknown quantities
- Order of operations
- Write simple equations and/or expressions from problem situations

Vocabulary Focus

Equation
Expression
Known
Unknown
Variable

Notes

- Read and select facilitation questions as appropriate to meet your students' needs.

	Materials	Instructional Grouping
Preteach	♦ **Which Operation? Sorting Mat** ♦ **Which Operation? Cards** ♦ Scissors ♦ Tape or glue	Small group with teacher facilitation

Phase	Materials *one per student unless otherwise noted*	Instructional Grouping
Engage	♦ **Digit Mania Cards** (one card per student)	Pairs of students
Explore	♦ **Wave World** ♦ **Wave World***	Groups of 2–3 students
Explain	♦ **Equations and Problem Situations Notes Page**	Whole-group discussion
Elaborate	♦ **What's the Problem?**	Groups of 2–3 students
	Intervention ♦ **Equation Match Recording Sheet*** ♦ **Equation Match Cards*** ♦ Scissors	Groups of 4 students with teacher facilitation
Evaluate	♦ **Evaluate: Equations and Problem Situations**	Individual

* *for targeted students only*

Preteach

1. Distribute scissors, one set of **Which Operation? Cards** and **Which Operation? Sorting Mat** to each student.
2. Prompt students to cut apart the cards and sort them by the operation represented in the problem situation.
   - *Is there another possible way to solve the problem using a different operation? How do you know that this operation will also work?* Listen for students to describe the processes used to answer the question.
3. Prompt students to compare their sorted cards with each other to verify that the cards have been sorted correctly.
   - *Which operations have only one card? Which operations have two cards?*
   - *Does your neighbor's sorting mat look like yours? If not, why? Do you agree with each other's arrangements or does a card need to be moved?*
4. Once the sorting has been compared, distribute tape or glue and prompt students to attach the cards in place.
5. Prompt students to write a numerical expression showing how the appropriate operation would be used to solve the problem.
   - *What would you do to find the answer?*
   - *How can we represent the process you described using a numerical expression?*
6. Upon completion, debrief using the following questions:
   - *Why are these numerical representations called expressions, not equations? What is the difference between an expression and an equation?* Listen for students to express that an equation contains an equals sign, but an expression does not.
   - *On Card C, if we included the variable j to represent the number of tickets that Julia has sold, how could we rewrite our expression as an equation?* Listen for students to verbalize the equation $j = 528 + 349$. Note that some students may interpret addition/subtraction situations from a "counting on" perspective or a "taking away" perspective. Therefore, some students may write the equation $j - 349 = 528$. For Card D, they may write the equation $m + 349 = 528$.
   - Repeat this process using appropriate variables for the other cards. See answer key for possible responses.

Engage

1. Distribute one card from **Digit Mania Cards** to each student.
2. Prompt students to follow the directions on the card to complete the activity.
3. Prompt students to compare and contrast their expressions with a partner.
4. Upon completion, debrief with the following questions:
   - Did everyone begin with the same value?
   - What do you notice about everyone's end value?
   - How did you write an expression for Steps 1–3?
   - How did you continue writing the expression for Steps 4–5?

Facilitation Questions

- **What operation do you write to show doubling a value?**
- **The instructions on the card tell you what to do in words. How could you represent this same process with numbers and symbols?**

Listen for . . .

- *Use of grouping symbols to represent operations on a determined quantity*
- *Use of a variable to represent the beginning value*

- How did you use grouping symbols to write the expression?

5. Ask, "How could you verify that the expression you wrote is correct?" Prompt students to use the order of operations to simplify the expression and verify that their expression yields the correct beginning value.
6. Ask, "Is there a way to represent the beginning value in a nonspecific way? How could we write the expression so that it represents the procedure for any possible beginning value?" Prompt students to rewrite the expression using a variable in place of the starting value.
   For example: $\frac{2(x+15)-30}{2}$

Explore

1. Distribute **Wave World** to each student.
2. Prompt students to work with their groups to complete the activity.
3. Upon completion, debrief with the following questions:
   - How did you determine the expression/equation for the situation? Describe the thinking process that you used.
   - How did you determine what each expression/equation might mean? Describe the thinking process that you used.
   - What is the purpose of using variables in these situations?

Supports
Distribute **Wave World***. To help focus students' attention, prompt students to cover up everything below the data table.

Ask students to discuss the data with a partner and generate two questions that could be asked about the known and unknown values.

Prompt students to work with their partners to complete the remainder of **Wave World***.

Facilitation Questions
- **What would multiplying a price by the number sold tell me?**
- **If you let *p* equal 10, what does 2*p* mean?**

Listen for . . .
- *Student use of key terms: equation, expression, variable*
- *Connections between the definition of the variable and the equation/ expression*
- *Connections between operations with known and unknown values*

Explain

1. Distribute **Equations and Problem Situations Notes Page**.
2. Ask, "As we write equations to describe situations, what questions might we ask ourselves?" It may be helpful to refer students to the example provided and have them think about what they would do to solve the problem.
   - How is this problem situation similar to **Wave World**? How is it different? Listen for students to express that a variable is not identified and defined here and we must identify the variable on our own. Students may also express that **Wave World** included multiple variables, and this situation includes only one variable.
3. Ask, "What is known and what is unknown?" Prompt students to record these two questions on the graphic organizer. Students should also answer each question based on the problem situation provided.
   - What is known? Listen for the number of hours Taylor slept Thursday night and the relative number of hours Taylor slept Friday night.
   - What is unknown? Listen for the actual number of hours Taylor slept Friday night and the total number of hours Taylor slept both nights.
4. Ask the following questions and prompt students to record the questions on the graphic organizer.
   - Which unknowns will help me solve the problem? Listen for the number of hours Taylor slept Friday night.
   - Which unknowns may be represented with a variable? Listen for the total number of hours slept on both nights.
5. Prompt students to write an expression representing the number of hours Taylor slept Friday night.
6. Prompt students to identify and define a variable and then use the variable to write an equation representing the total number of hours Taylor slept both nights.
7. Ask the following questions:
   - What is the difference between an equation and an expression? Listen for understanding that an equation must include an equals sign and may or may not include an expression.
   - How does the equation relate to the original problem situation? Listen for students to verbalize that the equation is a symbolic representation of a process that could be used to solve the problem.
8. Prompt students to work with a partner to complete Question 1.
   - How does the position of the variable in the equation affect what it represents? Listen for student understanding that in the first equation, the cost of the clothing is being subtracted from x, indicating that x represents the amount used to pay for the clothing. In the second equation, the cost of the clothing subtracted from 50 results in x, indicating that x represents the amount of change received.
9. Prompt students to determine what each equation could mean and to write a question related to each equation. Students should then share their questions with a partner.
   - Did you generate a similar meaning as your partner? If so, how? If not, how are they different?
   - Do you agree that the explanation your partner wrote matches the equation?
   - How are your questions alike? How are they different?
10. Prompt students to work independently to complete Question 2. Upon completion, prompt a few students to share their responses with the class.
    - What does the variable x represent in your story?
    - Explain how your story matches the equation.

Elaborate

1. Distribute **What's the Problem?** to each student.
2. Prompt students to work with their group to complete the activity.
3. If a student appears to be struggling with **What's the Problem?**, the student may join the teacher-led intervention group.

Intervention

1. Distribute one set of **Equation Match Cards** to each group of four students and **Equation Match Recording Sheet** to each student.
2. Prompt students to follow the directions on **Equation Match Recording Sheet***.
3. Determine who will go first and have that student read the problem on his or her card to the group.
4. Facilitate discussion about whether or not the given equation matches the problem situation using the following questions. *Note that the problems may be completed in any order.*
   - What is known?
   - What is unknown?
   - Which unknown is represented by the variable? How do you know?
   - What might 2.89 represent for this situation?
   - What operations are included in the equation?
   - What operations would be necessary to solve the problem?
   - Do the operations in the equation match those needed to solve the problem?
5. If students demonstrate continued need for support, repeat this process for an additional problem. If students appear ready to work with a partner or independently, allow the students to do so.

Evaluate

Question Number	Correct Answer	Reporting Category	TEKS	TEKS	Conceptual Error			Procedural Error			Guess
1	B	2	7.5B		A	C	D				
2	C	2	7.5B		A	B	D				
3	C	2	7.5B	7.14A	A	B	D				
4	A	2	7.5B	7.15B	B	C	D				

Wave World (Answer Key)

Wave World Water Park is collecting data to determine its budget for next season. The tables below indicate which data it wishes to collect for initial review.

Part 1
Use the information below to answer the questions that follow.

Average Day at Wave World

Known and Unknown Values		
a	=	The number of adult visitors in the park
c	=	The number of child visitors in the park
$59.99	=	The cost of an adult ticket
$49.99	=	The cost of a child's ticket

1. Write an expression to represent the total number of visitors on an average day.
   a* + *c

2. What might $a = c$ represent?
   The number of adult visitors is the same as the number of child visitors.

3. What might $a + c = 2{,}500$ represent?
   The total number of adult and child visitors is 2,500.

4. Write an expression to represent the amount of money collected from—
   a. adult ticket sales on an average day
      59.99*a*

   b. child ticket sales on an average day
      49.99*c*

5. What might $59.99a = 49.99c$ represent?
   The amount collected from adult ticket sales is equal to the amount collected from child ticket sales.

6. What might $59.99a + 49.99c = 133{,}975$ represent?
   The total amount of money collected from ticket sales for adult and child visitors is $133,975.

7. The number of child visitors in the park on an average day is five more than twice the number of adult visitors. What equation represents this situation?
   c* = 5 + 2*a

Part 2
Use the information below to answer the questions that follow.

Average Daily Food Sales at Wave World

Known and Unknown Values		
h	=	The number of hamburgers sold
p	=	The number of pizzas sold
\$4.75	=	The cost of a hamburger
\$7.99	=	The cost of an 8-inch pizza

8. What might $h = p$ represent?
   The number of hamburgers sold is the same as the number of pizzas sold.

9. What might $h = 2p$ represent?
   The number of hamburgers sold is twice (double) the number of pizzas sold.

10. What might $h + p = 900$ represent?
    The total number of hamburgers and pizzas sold is 900.

11. What might each of the following expressions represent?
    a) $4.75h$
       The amount of money collected from hamburger sales.

    b) $7.99p$
       The amount of money collected from pizza sales.

12. What might $4.75h = 1{,}900$ represent?
    The amount of money collected from hamburger sales is \$1,900.

13. What might $4.75h + 7.99p = 5{,}895$ represent?
    The total amount of money collected from hamburger and pizza sales is \$5,895.

14. The amount of money collected from hamburger sales is \$400 less than the amount collected from pizza sales. What equation represents this situation?
    $4.75h = 7.99p - 400$

Wave World* (Answer Key)

Wave World Water Park is collecting data to determine its budget for next season. The tables below indicate which data it wishes to collect for initial review.

Part 1

Average Day at Wave World

Known and Unknown Values		
a	=	The number of adult visitors in the park
c	=	The number of child visitors in the park
$59.99	=	The cost of an adult ticket
$49.99	=	The cost of a child's ticket

What are two questions that you could answer using the information above?

One question: **Possible response: How many total people visit the park on an average day?**	A second question: **Possible response: If two adults and three children visit the park, what would be their admission fees?**

Use the information in the table above to answer the following questions.

Thinking about visitors . . .	Thinking about ticket sales . . .
1. Write an expression to represent the total number of visitors on an average day. ***a* + *c***	4. Write an expression to represent the amount of money collected from— a) adult ticket sales on an average day **59.99*a*** b) child ticket sales on an average day **49.99*c***
2. What might $a = c$ represent? **The number of adult visitors is the same as the number of child visitors.**	5. What might $59.99a = 49.99c$ represent? **The amount collected from adult ticket sales is equal to the amount collected from child ticket sales.**
3. What might $a + c = 2{,}500$ represent? **The total number of adult and child visitors is 2,500.**	6. What might $59.99a + 49.99c = 133{,}975$ represent? **The total amount of money collected from ticket sales for adult and child visitors is $133,975.**

7. The number of child visitors in the park on an average day is five more than twice the number of adult visitors. What equation represents this situation?
   c* = 5 + 2*a

Part 2

Average Daily Food Sales at Wave World

Known and Unknown Values		
h	=	The number of hamburgers sold
p	=	The number of pizzas sold
\$4.75	=	The cost of a hamburger
\$7.99	=	The cost of an 8-inch pizza

What are two questions that you could answer using the information above?

One question:	A second question:
Possible response: How much money is collected from hamburger sales on an average day?	**Possible response: How many more pizzas are sold than hamburgers on an average day?**

Use the information in the table above to answer the following questions.

Thinking about food items . . .	Thinking about food sales . . .
8. What might $h = p$ represent? **The number of hamburgers sold is the same as the number of pizzas sold.**	11. What might each of the following expressions represent? a) $4.75h$ **The amount of money collected from hamburger sales.** b) $7.99p$ **The amount of money collected from pizza sales.**
9. What might $h = 2p$ represent? **The number of hamburgers sold is twice (double) the number of pizzas sold.**	12. What might $4.75h = 1{,}900$ represent? **The amount of money collected from hamburger sales is \$1,900.**
10. What might $h + p = 900$ represent? **The total number of hamburgers and pizzas sold is 900.**	13. What might $4.75h + 7.99p = 5{,}895$ represent? **The total amount of money collected from hamburger and pizza sales is \$5,895.**

14. The amount of money collected from hamburger sales is \$400 less than the amount collected from pizza sales. What equation represents this situation?
$4.75h = 7.99p - 400$

What's the Problem?

Each of the equations below includes the variable *m*. For each set of equations:

a) Select what *m* should represent. Each of the choices listed below may only be used once.
b) Based on your selection, write a possible interpretation of each expression and/or equation.
c) As you complete each problem set, share your interpretations with a partner for verification.

What Does *m* Represent?

m = money saved	*m* = milkshakes purchased	*m* = number of students in class
m = money borrowed	*m* = meters run	*m* = movies rented

Problem Set 1: *m* = _____

a) $2.89m + 4.3$ could mean:

b) $2.89m + 4.3 = 15.86$ could mean:

c) $\frac{2.89m + 4.38}{3} = 4.35$ could mean:

d) $2.89m + 4.3 = 1.99m + 7.9$ could mean:

Problem Set 2: *m* = _____

a) $\frac{m}{2} + \frac{2m}{5} + 0.1m$ could mean:

b) $\frac{m}{2} + \frac{2m}{5} + 0.1m = 30$ could mean:

Equation Match Recording Sheet*

Distribute one problem card to each member of the group. Place the equation card in the center so that it is visible by all members of the group.

When it is your turn, read the problem on your card aloud. Work together to determine whether the equation does or does not accurately represent the situation. If it does, write the equation below. If it does not, write an equation that would represent the problem. Write a justification for why your equations match the problems.

Problem	Equation	Justification • define the variable • describe the *meaning* of the equation for this problem situation
Augustine and two friends buy *m* milkshakes for $2.89 each and share an order of cheese fries for $4.38. Each person's share of the bill is $4.35.		*m* = _____
Bruce rents *m* movies for $2.89 each and buys some popcorn for $4.38. He pays with a $20 bill and receives $4.35 in change.		*m* = _____
The 7th grade class needs $435 for a field trip. How many students, *m*, will it take to reach this goal if they each pay $2.89 and the teacher pays $4.38?		*m* = _____
Drew jogs at a rate of 2.89 meters per second for *m* seconds. He then walks another 4.38 meters. One-third of the distance he has jogged/walked is 4.35 meters.		*m* = _____

Equation Match Cards*

Cut along the bold dotted line and distribute one set of cards to each group. Two sets are provided.

$$\frac{2.89m + 4.38}{3} = 4.35$$

Augustine and two friends buy *m* milkshakes for $2.89 each and share an order of cheese fries for $4.38. Each person's share of the bill is $4.35.

Bruce rents *m* movies for $2.89 each and buys some popcorn for $4.38. He pays with a $20 bill and receives $4.35 in change.

The 7th grade class needs $435 for a field trip. How many students, *m*, will it take to reach this goal if they each pay $2.89 and the teacher pays $4.38?

Drew jogs at a rate of 2.89 meters per second for *m* seconds. He then walks another 4.38 meters. One-third of the distance he has jogged/walked is 4.35 meters.

$$\frac{2.89m + 4.38}{3} = 4.35$$

Augustine and two friends buy *m* milkshakes for $2.89 each and share an order of cheese fries for $4.38. Each person's share of the bill is $4.35.

Bruce rents *m* movies for $2.89 each and buys some popcorn for $4.38. He pays with a $20 bill and receives $4.35 in change.

The 7th grade class needs $435 for a field trip. How many students, *m*, will it take to reach this goal if they each pay $2.89 and the teacher pays $4.38?

Drew jogs at a rate of 2.89 meters per second for *m* seconds. He then walks another 4.38 meters. One-third of the distance he has jogged/walked is 4.35 meters.