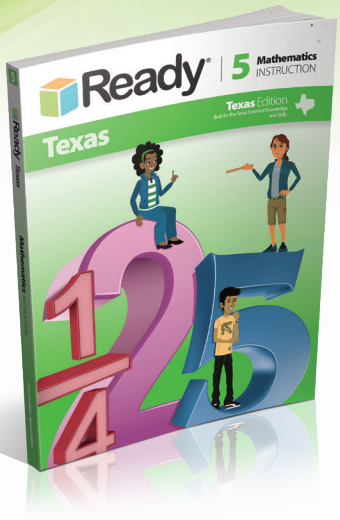
Ready® Texas | Mathematics

Program Overview

Instruction and practice that fully prepares students for the TEKS

New Teacher Toolbox offers unlimited access for teachers to small group activities and lessons for all Grades 1–8 standards!



Supporting Students to Develop Mathematical Reasoning

The *Ready Texas Mathematics* Student Book for Grades 1–8 addresses the TEKS with clear and thoughtful instruction and independent practice of key concepts and multiple open-ended items.

Open-ended Modeled and Guided Instruction provides opportunities for students to explore multiple representations and make mathematical connections.

Open-ended questions expose students to the rigor required by the TEKS.

Part 2: Modeled Instruction Lesson 24

Read the problem below. Then explore how to generate a numerical pattern from the relationship.

Felix starts the second level of a video game with 3 points from completing the first level. The number of points Felix can score in the second level is given by the equation $y = x + 3$, where x represents the number of points earned in the second round and y represents the total score. Use a pattern to find Felix's score if he earns 0, 1, 2, 3, 4, 5, or 6 points in the second round.

Model It

You can make a table to show the possible number of points.

Second Round Points, x	0	1	2	3	4	5	6
Total Score, y	3	4	5	6	7	8	9

Picture It

You can graph the ordered pairs that represent $y = x + 3$.

Use the table to make a list of the ordered pairs (x, y).

Then graph each ordered pair on a coordinate plane.

Ordered pairs

(0, 3)

(1, 4)

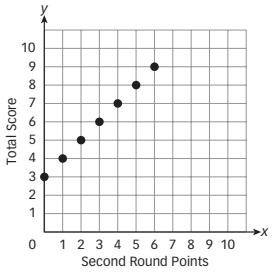
(2, 5)

(3, 6)

(4, 7)

(5, 8)

(6, 9)



Part 5: Guided Practice Lesson 24

Study the model below. Then solve problems 22–24.

Is the relationship additive or multiplicative?

Pair/Share

Why do you compare each x-coordinate in the table to its corresponding y-coordinate to find the pattern?

Student Model

The table shows the number of miles Nicole cycled on a weekend ride. Describe the pattern.

Time (Hours), x	0	1	2	3	4	5
Number of Miles Cycled, y	0	10	20	30	40	50

Look at how you could show your work.

Look for a pattern.

Multiply x by 10 to get y:

$0 \times 10 = 0$ $1 \times 10 = 10$ $2 \times 10 = 20$

$3 \times 10 = 30$ $4 \times 10 = 40$ $5 \times 10 = 50$

Solution: **The number of miles cycled is 10 times the number hours cycled.**

Part 6: TEKS Practice Lesson 24

Solve the problems.

6 School magnets cost $4, and shirts cost $24. Write a pattern for the costs of 0–5 magnets and a second pattern for the costs of 0–5 shirts. How do the corresponding terms of the two patterns compare?

Show your work.

Answer: _____

7 Tom and Ehrin write number patterns. Tom uses the rule $y = x + 3$ and starts at 12. Ehrin uses the rule $t = s - 4$ and starts at 26. Write the first five terms of their patterns. What number appears as a term in both patterns?

Show your work.

Answer: _____

8 The table shows the terms of a pattern of x-coordinates and a pattern of y-coordinates.

x	1	2	3	4	5
y	5	10	15	20	25

Part A

What rule was used to make the patterns?

Part B

Do the patterns have a corresponding term that is the same? Explain.

$= x + 4$ to write a list of ordered pairs. Then graph the that represent $y = x + 4$.

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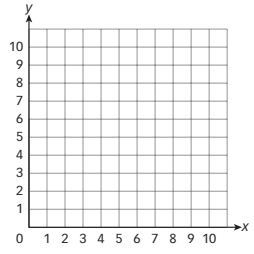
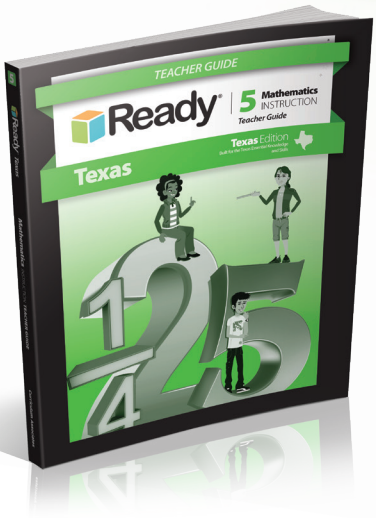


TEKS Practice assesses students' understanding of the TEKS covered within the lesson.



Think-Share-Compare Routine Supports Mathematical Discourse

The *Ready Texas Mathematics* Teacher Guide has embedded, instructional routines to strengthen and expand teaching strategies for an immediate, sustained impact on the classroom.

Mathematical Discourse prompts support educators in encouraging classroom conversation about the lesson concept.

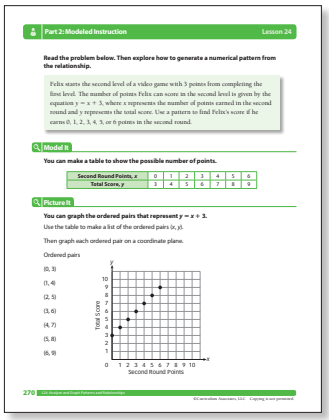
Part 2: Modeled Instruction — Lesson 24

AT A GLANCE

Students use a table and a graph to explore how to generate an additive numerical pattern from a problem situation.

STEP BY STEP

- Read the problem at the top of the page as a class.
- Ask, *What does the 3 stand for in the equation* $y = x + 3$*?* [The number of points that Felix scored in the first round.] Make sure students understand that x stands for the points scored in the second round and y stands for the total score.
- Read Model it. Remind students that the y-value is found by adding 3 to the x-value.
- Go over Picture It. Review the meaning of ordered pairs. Remind students to always put the x-value first and the y-value second when writing an ordered pair.
- Point out the labels for the axes of the graph and have students match each ordered pair to its point on the graph.



ELL Support

Point out that the phrase *ordered pair* contains the word *order*. Explain that the order of the coordinates in an ordered pair is important: the x-value comes first, and the y-value comes second.

Mathematical Discourse

- *Is the numeric pattern in the problem an additive pattern or a multiplicative pattern? How do you know?*
  It is an additive pattern because y is always exactly 3 more than x.
- *What is another way you could model the pattern?*
  Responses may indicate using counters. You could display counters for each number in the

Point-of-use ELL Support helps teachers recognize strategies to enhance learning.

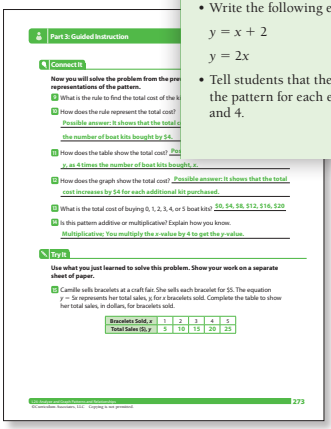
Part 3: Guided Instruction

AT A GLANCE

Students revisit the problem on the previous page. They use different representations of the pattern—a table and a graph—to solve the problem.

STEP BY STEP

- Tell students that Connect It refers to the problem on the previous page.
- Work through Problems 9–13 with students.
- Have students share their answers to Problems 9 and 10. Point out that they can describe the rule in words or with an equation.
- After completing Problems 11 and 12, have students compare and contrast the table and the graph. Emphasize that the data and the relationship described in the problem does not change—it can just be shown in more than one way.
- Have students discuss which representation they prefer—the table or the graph—and explain why.
- Ask students to share their answers to Problem 14.
- Have students complete the Try It problem on their own or in pairs.



Visual Model

Make and test a conjecture.

- Tell students they are going to explore how the graph changes if they list the total cost as the x-coordinate and the kits bought as the y-coordinate.
- Have students make a conjecture about how the graph will look. [Possible answer: The points will not form a line.]
- Show the original table from the previous page. Make a new table with the total cost in the x-row and the kits bought in the y-row.

TRY IT SOLUTIONS

15 *Solution:* 5, 10, 15, 20, 25. Students complete the table by multiplying each x-value by 5 to find its corresponding y-value.

ERROR ALERT: Students who answered 6, 7, 8, 9, 10 added 5 to each x-value instead of multiplying by 5.

Error Alerts identify common computational mistakes and the errors students might produce.

Differentiated Instruction — Lesson 24

Assessment and Remediation

- Ask students to describe the rule for the pattern in the table below and tell if the pattern is additive or multiplicative. [Multiply x by 4 to get y; multiplicative]

x	1	2	3	4	5
y	4	8	12	16	20

- For students who are still struggling, use the chart below to guide remediation.
- After providing remediation, check students' understanding. Ask students to use the equation $y = x + 6$ to complete the table below. [7, 8, 9, 10, 11]

x	1	2	3	4	5
y					

- If a student is still having difficulty, use ***Ready Texas Mathematics,*** Grade 4, Lesson 20.

If the error is . . .	Students may . . .	To remediate . . .
describing the rule as adding 3 to x	have only looked at the first column of values in the table (1, 4).	Have students examine *all* the values in the table to determine the pattern.
describing the rule as adding 4	have looked at the changes in the y-values, not the relationship between x and y.	Have students circle and list each ordered pair from the table and decide what must be done to x to get y.

Hands-On Activity

Use counters to compare two numerical patterns.

Materials: colored counters

- Have students work in pairs or groups. Distribute counters so that each pair or group has two different colors of counters to work with.
- Write the following equations on the board:
  $y = x + 2$
  $y = 2x$
- Tell students that they will use counters to model the pattern for each equation when $x = 1, 2, 3,$ and 4.
- Have students use one color counter to model each x-value and the second color to model the y-value.
- After modeling, ask students to compare the two patterns and tell if they are additive or multiplicative and explain how they know.

Challenge Activity

Create your own pattern.

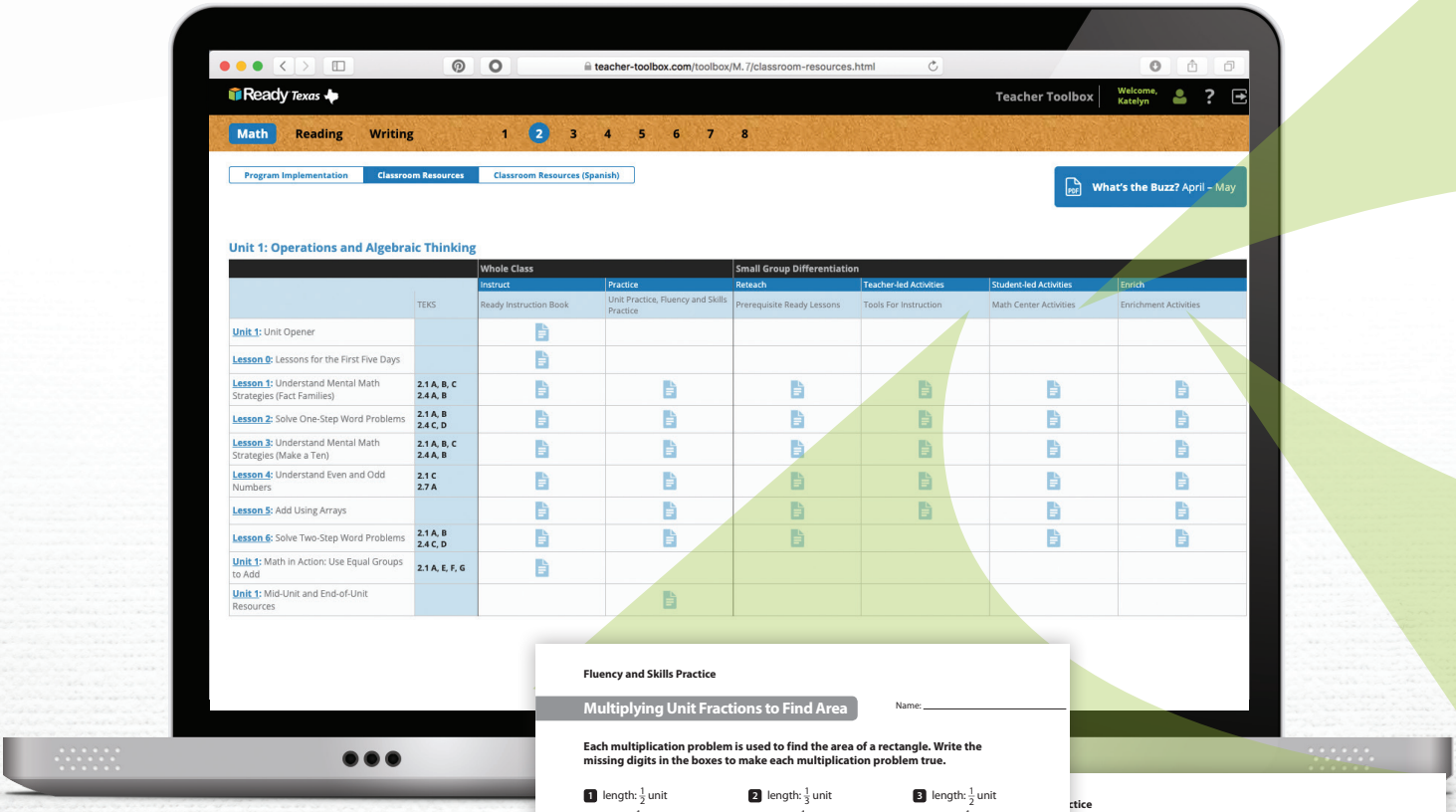
Tell students to create one additive and one multiplicative pattern. Have students express each pattern as a table, a list of ordered pairs, and a graph. Have them write the rule for each pattern in words and using an equation. For extra challenge, have students write a word problem to accompany each pattern.

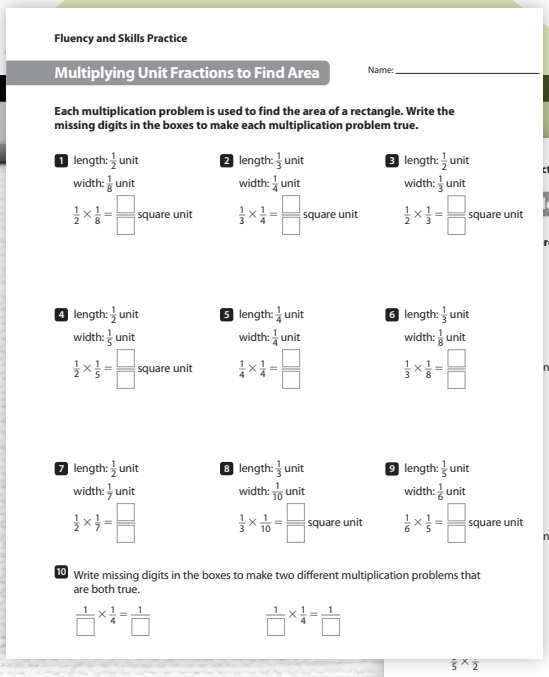
Hands-On Activities and Challenge Activities provide additional opportunities for differentiation after the lesson.

NEW! Teachers Get Instant Access to All Grades 1–8 Lessons

Ready Texas Teacher Toolbox **provides full versions of both student and teacher instruction books, which are available digitally by lesson. Teacher Toolbox includes activities for whole class and small group differentiation, including:**

- Unit Practice
- Fluency and Skills Practice
- Prerequisite Lessons
- Enrichment Activities
- Math Center Activities



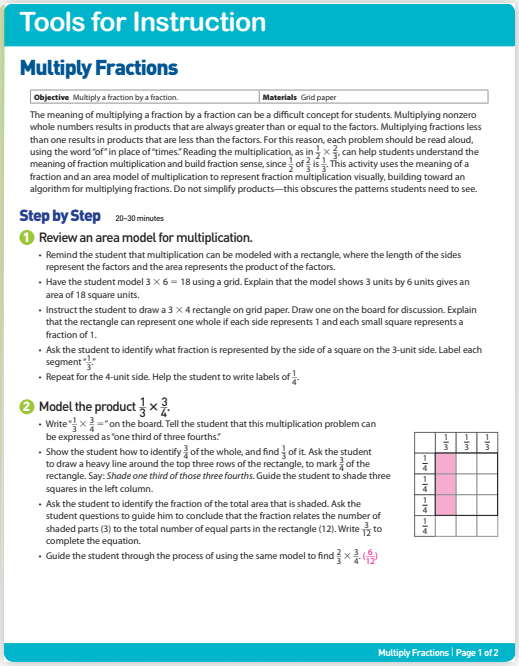


Fluency and Skills Practice

Practice that supports your students in looking for and expressing repeated reasoning. Exercises provide fluency and skills practice for independent practice in class, after school, or at home.

Teacher-Led Tools for Instruction

These tools provide teachers with alternative activities and teaching strategies for reteaching challenging concepts or skills.



Tools for Instruction

Multiply Fractions

Objective	Multiply a fraction by a fraction.	Materials	Grid paper

The meaning of multiplying a fraction by a fraction can be a difficult concept for students. Multiplying nonzero whole numbers results in products that are always greater than or equal to the factors. Multiplying fractions less than one results in products that are less than the factors. For this reason, each problem should be read aloud, using the word "of" in place of "times." Reading the multiplication, as in $\frac{1}{2} \times \frac{2}{3}$, can help students understand the meaning of fraction multiplication and build fraction sense, since $\frac{1}{2}$ of $\frac{2}{3}$ is $\frac{1}{3}$. This activity uses the meaning of a fraction and an area model of multiplication to represent fraction multiplication visually, building toward an algorithm for multiplying fractions. Do not simplify products—this obscures the patterns students need to see.

Step by Step 20–30 minutes

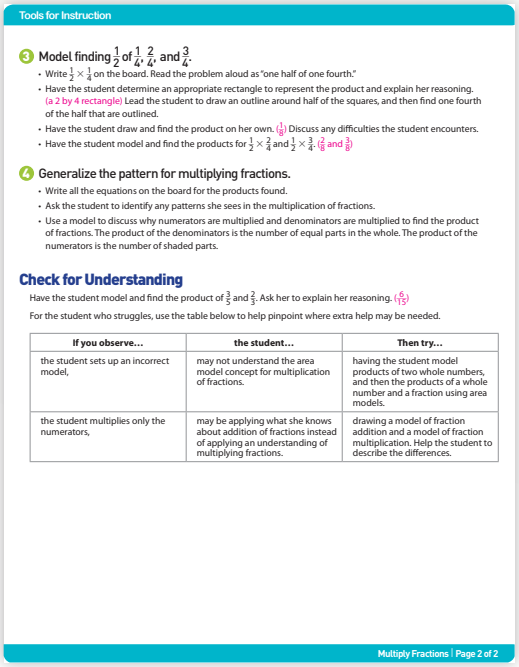
1 Review an area model for multiplication.

- Remind the student that multiplication can be modeled with a rectangle, where the length of the sides represent the factors and the area represents the product of the factors.
- Have the student model $3 \times 6 = 18$ using a grid. Explain that the model shows 3 units by 6 units gives an area of 18 square units.
- Instruct the student to draw a 3×4 rectangle on grid paper. Draw one on the board for discussion. Explain that the rectangle can represent one whole if each side represents 1 and each small square represents a fraction of 1.
- Ask the student to identify what fraction is represented by the side of a square on the 3-unit side. Label each segment "$\frac{1}{3}$."
- Repeat for the 4-unit side. Help the student to write labels of $\frac{1}{4}$.

2 Model the product $\frac{1}{3} \times \frac{3}{4}$.

- Write "$\frac{1}{3} \times \frac{3}{4} =$ " on the board. Tell the student that this multiplication problem can be expressed as "one third of three fourths."
- Show the student how to identify $\frac{3}{4}$ of the whole, and find $\frac{1}{3}$ of it. Ask the student to draw a heavy line around the top three rows of the rectangle, to mark $\frac{3}{4}$ of the rectangle. Say: *Shade one third of those three fourths.* Guide the student to shade three squares in the left column.
- Ask the student to identify the fraction of the total area that is shaded. Ask the student questions to guide him to conclude that the fraction relates the number of shaded parts (3) to the total number of equal parts in the rectangle (12). Write $\frac{3}{12}$ to complete the equation.
- Guide the student through the process of using the same model to find $\frac{2}{3} \times \frac{3}{4}$. ($\frac{6}{12}$)

	$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$
$\frac{1}{4}$			
$\frac{1}{4}$			
$\frac{1}{4}$			
$\frac{1}{4}$			



3 Model finding $\frac{1}{2}$ of $\frac{1}{4}$, $\frac{2}{4}$, and $\frac{3}{4}$.

- Write $\frac{1}{2} \times \frac{1}{4}$ on the board. Read the problem aloud as "one half of one fourth."
- Have the student determine an appropriate rectangle to represent the product and explain her reasoning. (a 2 by 4 rectangle) Lead the student to draw an outline around half of the squares, and then find one fourth of the half that are outlined.
- Have the student draw and find the product on her own. ($\frac{1}{8}$) Discuss any difficulties the student encounters.
- Have the student model and find the products for $\frac{1}{2} \times \frac{2}{4}$ and $\frac{1}{2} \times \frac{3}{4}$. ($\frac{2}{8}$ and $\frac{3}{8}$)

4 Generalize the pattern for multiplying fractions.

- Write all the equations on the board for the products found.
- Ask the student to identify any patterns she sees in the multiplication of fractions.
- Use a model to discuss why numerators are multiplied and denominators are multiplied to find the product of fractions. The product of the denominators is the number of equal parts in the whole. The product of the numerators is the number of shaded parts.

Check for Understanding

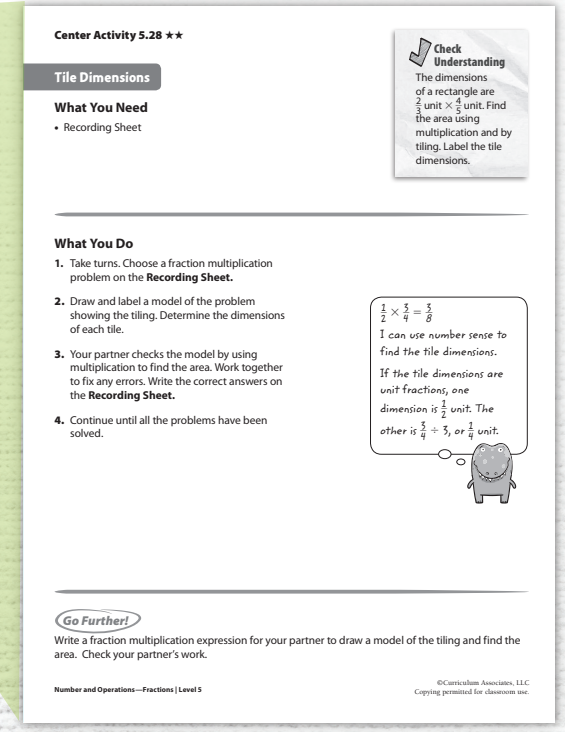
Have the student model and find the product of $\frac{3}{5}$ and $\frac{2}{3}$. Ask her to explain her reasoning. ($\frac{6}{15}$)

For the student who struggles, use the table below to help pinpoint where extra help may be needed.

If you observe…	the student…	Then try…
the student sets up an incorrect model,	may not understand the area model concept for multiplication of fractions.	having the student model products of two whole numbers, and then the products of a whole number and a fraction using area models.
the student multiplies only the numerators,	may be applying what she knows about addition of fractions instead of applying an understanding of multiplying fractions.	drawing a model of fraction addition and a model of fraction multiplication. Help the student to describe the differences.

Student-Led Math Center Activities (Grades 1–5)

Collaborative activities for small groups are available in three versions: on level, below level, and above level.



Center Activity 5.28 ★★

Tile Dimensions

What You Need

- Recording Sheet

Check Understanding

The dimensions of a rectangle are $\frac{2}{3}$ unit $\times \frac{3}{4}$ unit. Find the area using multiplication and by tiling. Label the tile dimensions.

What You Do

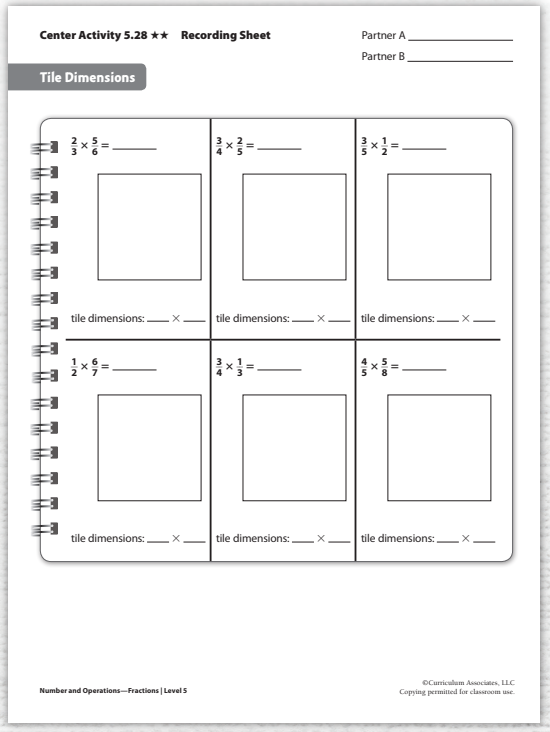
1. Take turns. Choose a fraction multiplication problem on the **Recording Sheet.**
2. Draw and label a model of the problem showing the tiling. Determine the dimensions of each tile.
3. Your partner checks the model by using multiplication to find the area. Work together to fix any errors. Write the correct answers on the **Recording Sheet.**
4. Continue until all the problems have been solved.

$\frac{1}{2} \times \frac{5}{4} = \frac{5}{8}$

I can use number sense to find the tile dimensions. If the tile dimensions are unit fractions, one dimension is $\frac{1}{2}$ unit. The other is $\frac{5}{4} \div 5$, or $\frac{1}{4}$ unit.

Go Further!

Write a fraction multiplication expression for your partner to draw a model of the tiling and find the area. Check your partner's work.



Center Activity 5.28 ★★ Recording Sheet

Partner A _____

Partner B _____

Tile Dimensions

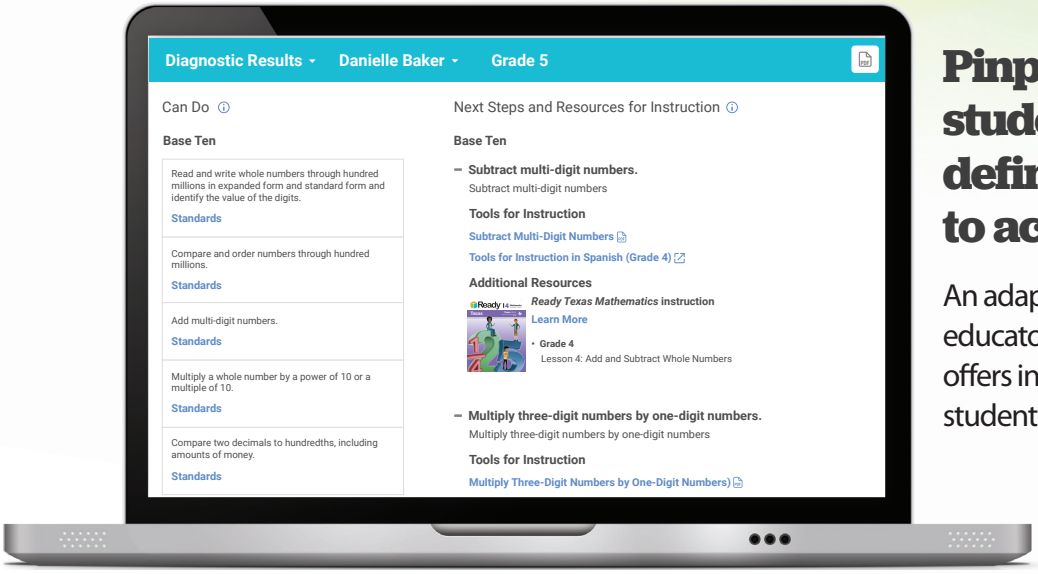
$\frac{2}{3} \times \frac{5}{6} =$ _____	$\frac{3}{4} \times \frac{2}{5} =$ _____	$\frac{3}{5} \times \frac{1}{2} =$ _____
tile dimensions: ___ × ___	tile dimensions: ___ × ___	tile dimensions: ___ × ___
$\frac{1}{2} \times \frac{6}{7} =$ _____	$\frac{3}{4} \times \frac{1}{3} =$ _____	$\frac{4}{5} \times \frac{5}{8} =$ _____
tile dimensions: ___ × ___	tile dimensions: ___ × ___	tile dimensions: ___ × ___

Preparing Students for the TEKS with Insight and Impact

i-Ready **uses rich assessment data to provide teachers with a complete picture of student performance aligned to the TEKS and access to the right resources to accelerate growth. This integrated program seamlessly connects the student experience across digital and classroom learning environments and provides educators with one system of support for all instructional needs.**

Rich Insights to Inform Instruction

i-Ready provides teachers with insights to inform instructional decisions and access resources based on performance and growth data.

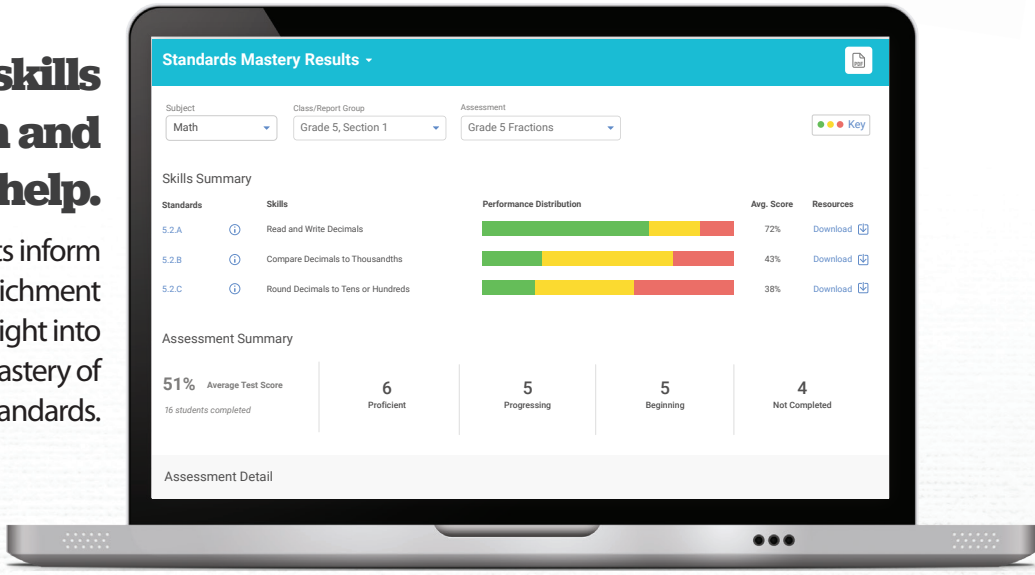


Pinpoint what each student can do and define next steps to accelerate growth.

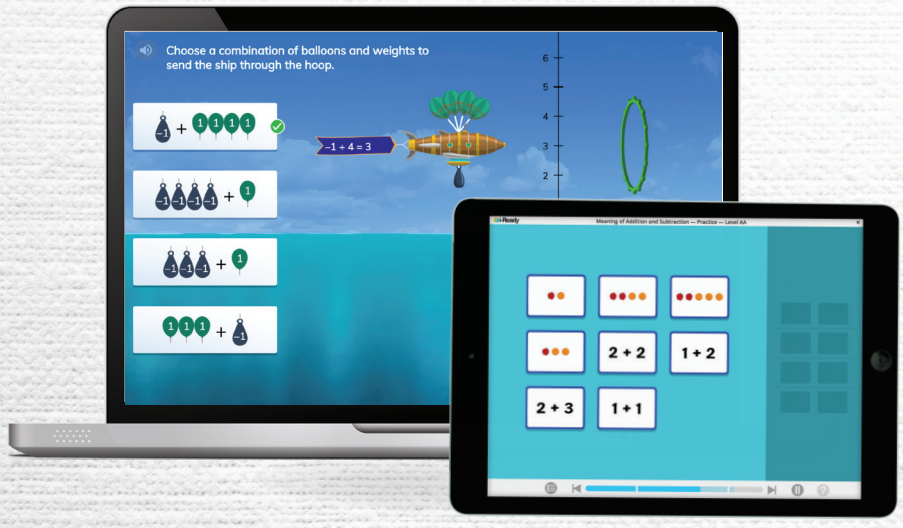
An adaptive Diagnostic provides educators with actionable insights and offers instructional resources to put every student on a pathway to proficiency.

Identify which skills students struggle with and who needs the most help.

Standards Mastery assessments inform planning for remediation and enrichment by providing ongoing insight into students' progress toward mastery of grade-level standards.



Standards Mastery is available in Texas for Mathematics. Standards Mastery for Texas Mathematics in Spanish is coming in the 2020–2021 school year.



Individualize learning for every student with Personalized Instruction.

Engaging, interactive lessons for Grades K–8 empower all students to build the skills to access grade-level content and accelerate growth.

Save Time!

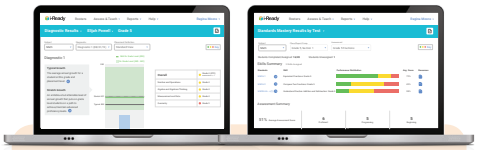
Complete your *Ready Texas Mathematics* instruction with *i-Ready Diagnostic* and *i-Ready Personalized Instruction*!

i-Ready Diagnostic helps teachers track student growth and identify areas that need more work, pointing them to specific lessons in *Ready Texas Mathematics* to use in your Multi-Tiered System of Supports (MTSS) plans or as a supplemental resource.

> ***i-Ready is an outstanding complementary tool for academic instruction in Reading and Mathematics.*** *The detailed analysis the program provides on student academic strengths and weaknesses has enabled our district to specifically target lessons and obtain student growth.*
>
> —Maggie B., Math RTI Interventionist, Selman Elementary School, Sealy, TX

Teacher-Led Small Group and Whole Class Instruction

- *Ready Texas Mathematics*
- *Ready Texas Teacher Toolbox*



A Complete System of Assessments

- *i-Ready Diagnostic*
- *i-Ready Standards Mastery*

Online Personalized Instruction and Practice

- *i-Ready Personalized Instruction*
- *i-Ready Learning Games*

For more information about ESSA evidence, please visit:
CurriculumAssociates.com/Research

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