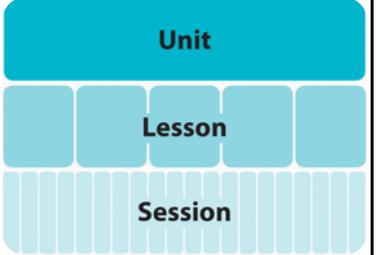


Response to

Instructional Materials Evaluation Tool (IMET)

Grades K–5

Indicator	<i>i-Ready Classroom Mathematics</i> Evidence	
Non-Negotiable 1: Materials must reflect the content architecture of the Standards by not assessing the topics named before the grade level where they first appear in the Standards.		
<p>NN Metric 1A: Materials reflect the basic architecture of the Standards by not assessing the listed topics before the grade level indicated.</p>	<p><i>i-Ready Classroom Mathematics</i> is written to address the Common Core State Standards for Mathematics (CCSSM) and all assessments focus on grade-level content. The materials provide teachers with frequent opportunities to assess understanding of grade-level content at the session, lesson, and unit level.</p> <p>For a frame of reference, <i>i-Ready Classroom Mathematics</i>' structure is built upon units of study that break down into multi-day lessons, each part of which is called a session. The Program Overview explanations and descriptions of the unique unit, lesson, and session design can be found in the front of the <i>Teacher's Guide</i>. The same pages are available to educators digitally on the <i>Teacher Toolbox</i> under the Program Implementation tab.</p> <ul style="list-style-type: none"> • Grade K – pages A12–A25 • Grade 1 – pages A14–A27 • Grade 2 – pages A12–A25 • Grade 3 – pages A12–A25 • Grade 4 – pages A14–A27 • Grade 5 – pages A12–A25 <p>Each multi-day lesson starts with an Explore session that connects previously learned concepts and skills to the lesson. Topics may connect to concepts or skills from previous grades to strengthen the connections students make to the grade-level content, however, no prerequisite concepts are explicitly assessed.</p> <p>Because the program was written to address the grade-level standards, the assessments focus on grade-level content. See examples of assessments in Quality Indicator 6 for further descriptions of each type of assessment available in <i>i-Ready Classroom Mathematics</i>. To see how topics in each Unit connect throughout the year and to previous content, please refer to the Table of Contents in the <i>Teacher's Guide</i> (pages A3–A7) and the beginning of each unit for Learning Progression charts. See examples:</p> <ul style="list-style-type: none"> • Grade K – <i>Teacher's Guide</i> Unit 2, page 103b • Grade 1 – <i>Teacher's Guide</i> Unit 1, pages 1a–1d • Grade 2 – <i>Teacher's Guide</i> Unit 1, pages 1a–1b • Grade 3 – <i>Teacher's Guide</i> Unit 2, pages 89a–89d • Grade 4 – <i>Teacher's Guide</i> Unit 2, pages 105a–105b • Grade 5 – <i>Teacher's Guide</i> Unit 2, pages 117a–117d 	

Non-Negotiable 2: Materials must focus coherently on the Major Work of the grade in a way that is consistent with the progressions in the Standards.

NN Metric 2A: In each grade K–8, students and teachers using the materials as designed devote the large majority of time to the Major Work of the grade.

All the resources in *i-Ready Classroom Mathematics*; from the *Student Worktext*, *Student Digital Experience*, *Teacher’s Guide* and *Teacher Digital Experience* combine to allow teachers to spend significantly more time on the Major Work of the grade than on Supporting and Additional Work.

Pacing Guidance for the Year encourages teachers to spend more time on the Major Work of the grade. An “M” in the pacing guide identifies lessons that focus on or apply the Major Work of the grade, while an “S” or an “A” identify those lessons that focus on standards with Supporting or Additional emphasis. When reviewing pacing guides, please note that students spend multiple days on each *i-Ready Classroom Mathematics* lesson.

Review each grade level’s recommended **Pacing Guidance for the Year** in the *Teacher’s Guide* to see the number of lessons dedicated to the Major Work (M) of the grade in *i-Ready Classroom Mathematics*. Within the correlations, the Major, Supporting and Additional Emphasis is indicated. The percentages below indicate that the majority of lessons in *i-Ready Classroom Mathematics* focus on the Major work for each grade level. It is important to note that the percentages for some grades are above 85 percent as some Major Work lessons also incorporate work on Additional and Supporting standards yet count towards the overall percentage of Major Work.

- In **kindergarten**, there are a total of 32 lessons, 28 of which focus on the Major Work of the grade (about 87 percent of the lessons). See the **Pacing Guidance for the Year** on pages A20–A21.
- In **1st grade**, there are a total of 35 lessons, 30 of which focus on the Major Work of the grade (about 86 percent of the lessons). See the **Pacing Guidance for the Year** on pages A22–A23.
- In **2nd grade**, there are a total of 32 lessons, 27 of which focus on the Major Work of the grade (about 84 percent of the lessons). See the **Pacing Guidance for the Year** on pages A20–A21.
- In **3rd grade**, there are a total of 33 lessons, 28 of which focus on the Major Work of the grade (about 84 percent of the lessons). See the **Pacing Guidance for the Year** on pages A22–A23.
- In **4th grade**, there are a total of 34 lessons, 27 of which focus on the Major Work of the grade (about 79 percent of the lessons). See the **Pacing Guidance for the Year** on pages A20–A21.
- In **5th grade**, there are a total of 33 lessons, 27 of which focus on the Major Work of the grade (about 82 percent of the lessons). See the **Pacing Guidance for the Year** on pages A20–A21.

Program Overview

Pacing Guidance for the Year

The chart below provides pacing for *i-Ready Classroom Mathematics*. Use these guidelines flexibly alongside district calendars to ensure program completion.

M = major standards of a grade
S = supporting standard
A = additional standard

		Session 45–60 min.	Focus
Diagnostic Assessment*			
Unit 1 Three-Digit Numbers: Place Value, Addition, and Subtraction		2	
Lesson 0**	Lessons for the First Five Days: Recommended	5	
Lesson 1	Use Place Value to Round Numbers	4	A
Lesson 2	Add Three-Digit Numbers	4	A
Lesson 3	Subtract Three-Digit Numbers	5	A
Math In Action	Use Rounding and Operations: Flexibly Scheduled	2	A
Unit 1 Unit Assessment or Digital Comprehension Check		1	
Unit 1 Total Days		21	
Unit 2 Multiplication and Division: Concepts, Relationships, and Patterns			
Lesson 4	Understand the Meaning of Multiplication	3	M
Lesson 5	Multiply with 0, 1, 2, 5, and 10	4	M
Lesson 6	Multiply with 3, 4, and 6	5	M
Lesson 7	Multiply with 7, 8, and 9	5	M
Lesson 8	Use Order and Grouping to Multiply	5	M
Lesson 9	Use Place Value to Multiply	3	M
Unit 2 Mid-Unit Assessment or Digital Comprehension Check		1	
Lesson 10	Understand the Meaning of Division	3	M
Lesson 11	Understand How Multiplication and Division Are Connected	3	M
Lesson 12	Multiplication and Division Facts	4	M
Lesson 13	Understand Patterns	3	M
Math In Action	Solve Multiplication and Division Problems: Flexibly Scheduled	2	M
Unit 2 Unit Assessment or Digital Comprehension Check		1	
Unit 2 Total Days		42	
Unit 3 Multiplication: Finding Area, Solving Word Problems, and Using Scaled Graphs			
Lesson 14	Understand Area	3	M
Lesson 15	Multiply to Find Area	4	M
Lesson 16	Add Areas	4	M
Unit 3 Mid-Unit Assessment or Digital Comprehension Check		1	
Lesson 17	Solve One-Step Word Problems Using Multiplication and Division	5	M
Lesson 18	Solve Two-Step Word Problems Using the Four Operations	5	M
Lesson 19	Scaled Graphs	5	M
Math In Action	Use the Four Operations: Flexibly Scheduled	2	M
Unit 3 Unit Assessment or Digital Comprehension Check		1	
Unit 3 Total Days		30	
Practice Test or Diagnostic Assessment		2	

*The Diagnostic takes two days to administer. See *i-Ready Classroom* Central for information on when to administer.
**Lesson 0 is on the *Teacher Digital Experience*. See the Classroom Resources tab on the *Teacher Toolkit*.

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NN Metric 2B:
Supporting Work, where present, enhances focus and coherence simultaneously by also engaging students in the Major Work of the grade.

In *i-Ready Classroom Mathematics*, Supporting and Additional work enhances focus and coherence by also engaging students in the Major Work of the grade. Lessons on Major Work precede most of the lessons on Supporting Work, allowing the Major Work of the grade to be applied and reinforced while students are studying the Supporting and Additional work of the grade. Below are some examples from each grade illustrating how the Supporting content engages students in the Major Work of the grade.

Grade K examples:

- Lesson 12 (Name Shapes) addresses supporting and additional standards that allows students to apply the skills of counting from the Major Work within the context of geometry concepts.
- Lesson 9 (Sort and Count Objects) allows students to apply what they have learned about counting and comparing numbers in the Major Work of the grade to solve problems involving sorting, a Supporting standard.

Grade 1 examples:

- Lesson 18 (Collect and Compare Data) addresses a Supporting standard that allows students to apply what they have learned from the Major Work of the grade to solve problems involving data displays. Some of the Major Work applied in this lesson includes teen numbers, comparing numbers, and addition/subtraction.
- Lesson 33 (Shapes) addresses an Additional standard that engages students in the Major Work of counting and comparing numbers in a geometry context

Grade 2 examples:

- Lesson 10 (Solve Word Problems Involving Money) addresses a Supporting standard that allows students to apply what they have learned about Major Work standards involving addition strategies and solving addition and subtraction problems to solve word problems about money.
- Lesson 11 (Tell and Write Time) addresses a Supporting standard by having students use addition strategies and skip counting from the Major Work of the grade in the context of telling time.

Grade 3 examples:

- Lesson 9 (Use Place Value to Multiply) addresses a Supporting standard that builds upon the Major Work on multiplying addressed in Lessons 4 and 8. In this lesson, students apply what they have learned about multiplication to develop strategies that students apply in later lessons, particularly to check for reasonableness of answers.
- Lesson 19 (Scaled Graphs) allows students to apply the four operations developed as part of the Major Work of the grade within the context of analyzing data (a Supporting standard).

Grade 4 examples:

- Lesson 13 (Use Multiplication to Convert Measurements) and Lesson 16 (Find Perimeter and Area) address Supporting standards that build upon multi-digit multiplication, part of the Major Work of the grade.
- In Lesson 22 (Add and Subtract Fractions in Line Plots), students apply what they have learned from the Major Work of the grade about fraction equivalence and fraction addition to solve problems involving line plots with fractional values from the Supporting standards.
- In Lesson 29 (Problems About Length, Liquid Volume, Mass, and Weight) students apply what they have learned about the Major Work topics of comparing, adding, subtracting, multiplying and dividing of whole numbers, fractions, and decimals to problem situations involving length, liquid volume, mass, and weight from the Supporting standards.

Grade 5 examples:

- In Lesson 25 (Convert Measurement Units) and Lesson 26 (Solve World Problems Involving Conversions) students use Supporting standards to apply the Major Work of the grade, including work with powers of ten and fractions as division.
- In Lesson 31 (Understand the Coordinate Plane) and Lesson 32 (Represent Problems in the Coordinate Plane), students apply what they have learned about expressions and relationships from the Major Work of the grade to solve real world and mathematical problems involving the Additional standards about the coordinate plane.

NN Metric 2C: Materials base content progressions on the grade by-grade progressions in the Standards. Content from previous or future grades does not unduly interfere with or displace on-grade level content.

Great care was taken in the development of *i-Ready Classroom Mathematics* to create materials with purposeful learning progressions that create an environment for students to build conceptual understanding from one grade to the next. Content from previous or future grades does not unduly interfere with or displace on-grade-level content but is used to make connections for students and build on prior learning.

Lesson Progression charts are highlighted throughout the *Teacher’s Guide* at the beginning of each unit so teachers can see at a glance how lessons connect to previous and future learning to build coherence. Reviewers may see additional examples in the *Teacher’s Guides* on the following pages:

- Grade K – Unit 2, page 103b
- Grade 1 – Unit 2, pages 237a–237b
- Grade 2 – Unit 2, pages 137a–137b
- Grade 3 – Unit 2, pages 89a–89d
- Grade 4 – Unit 2, pages 227a–227b
- Grade 5 – Unit 2, pages 117a–117d



In the *Teacher’s Guide* at the beginning of each lesson, the **Learning Progression** sets a context for the mathematics of the lesson, providing information on connections of what students previously learned, what they are learning now and what they will be learning next. For additional examples see the *Teacher’s Guide*:

- Grade K – page 201a
- Grade 1 – page 163a
- Grade 2 – page 51a
- Grade 3 – page 91a
- Grade 4 – page 107a
- Grade 5 – page 75a

Learning Progression

In Grade 2 students found the number of items in an array using repeated addition and skip-counting.

In this lesson students gain a conceptual understanding of multiplication as the total of a number of equal groups. Students interpret equations such as $3 \times 5 = 15$ as *3 groups of 5 equals 15*.

Students think about multiplication as combining equal groups. They use

drawings of equal groups of objects, of arrays, and of square tiles to represent a multiplication situation. They describe a situation using words and express the situation as a multiplication equation.

Later in Grade 3 explicit connections are made between using multiplication to find area and using area models to represent multiplication.

NN Metric 2D:
Materials give all students extensive work with on grade-level problems.

i-Ready Classroom Mathematics provides extensive work with grade-level problems throughout the *Student Worktext* and the *Student Digital Experience*. Reviewers can find specific examples of how *i-Ready Classroom Mathematics* engages students with a wide variety of on-grade-level problems on the following pages:

Kindergarten Examples: A primary focus of Grade K is on counting, representing, relating and operating on whole numbers, including developing strategies for adding and subtracting whole numbers. These include Add To and Take From problem situations where the result is unknown and Put Together/Take Apart problem situations where the total is unknown or both addends are unknown. See examples on the following pages:

- Counting: Lesson 2 (pages 21–38); Lesson 11 (pages 203–218)
- Put Together/Take Apart: Lesson 17 (pages 331–348); Lesson 19 (pages 367–384); Lesson 22 (pages 427–444)

Grade 1 Examples: The primary focus of Grade 1 is on developing strategies for adding and subtracting whole numbers, including using properties and place value. Also included are Add To/Take From problem situations where the change is unknown and Put Together/Take Apart problem situations where an addend is unknown, as well as comparison problems such as “How many more?” and “How many fewer?” For examples, see:

- Counting/addition/subtraction: Lesson 1 (pages 5–26); Lesson 4 (pages 77–90); Lesson 6 (pages 117–138)
- Put Together/Take Apart: Lesson 7 (pages 141–162); Lesson 12 (pages 257–278); Lesson 15 (pages 329–350)
- Addition/Subtraction equations: Lesson 16 (pages 353–373)
- Properties and Place Value: Lesson 13 (pages 281–302); Lesson 28 (pages 639–660)
- Compare: Lesson 8 (pages 165–186)

Grade 2 Examples: The primary focus of Grade 2 is on all the situations of Adding to, Taking from, Putting Together, Taking Apart, and Comparing, including Start Unknown Problems. Students apply strategies in word problems, representing different situations, and use place value and properties in two-digit and multi-step problem-solving. For examples see:

- One-Step Problems: Lesson 3 (pages 53–74)
- Two-Step Problems: Lesson 5 (pages 101–122)
- Two-digit problems: Lesson 8 (pages 189–210); Lesson 9 (pages 213–240)
- Applications of problem-solving: Lesson 10 (pages 243–270); Lesson 25 (pages 593–614)

Grade 3 Examples: A primary focus of Grade 3 is on developing an understanding of multiplication and strategies for multiplication and division within 100. These include equal groups where the product is unknown, arrays, and area where the group size or number of groups is unknown in both multiplication and division equations. These situations are introduced in Lesson 4 (pages 93–102) and Lesson 10 (pages 227–236) and are expanded upon throughout *i-Ready Classroom Mathematics*. For examples see:

- Arrays: Lesson 8 (pages 183–208); Lesson 17 (pages 359–384)
- Understanding the Relationship between Multiplication and Division: Lesson 11 (pages 239–248); Lesson 12 (pages 251–270)
- Area: Lesson 14 (pages 303–312); Lesson 15 (pages 315–334); Lesson 16 (pages 337–356)

Grade 4 Examples: The primary focus of Grade 4 is on developing understanding and fluency with multi-digit multiplication and developing understanding of dividing to find quotients involving multi-digit dividends. Problem solving situations are introduced in Lesson 6 (pages 109–118) and Lesson 7 (pages 121–140) and are expanded upon throughout *i-Ready Classroom Mathematics*. For examples see:

- Multiplicative Comparison: Lesson 6 (pages 109–118)
- Multiplication and Division in Word Problems: Lesson 7 (pages 121–140)
- Multi-step Problems: Lesson 10 (pages 193–212)
- Multiplication with Multi-digit Numbers: Lessons 11 (pages 231–250); Lesson 12 (pages 253–266)
- Division with Multi-digit Dividends: Lessons 14 (pages 291–310); Lesson 15 (pages 313–326)

NN Metric 2D:
Materials give all students extensive work with on grade-level problems.

(continued)

Grade 5 Examples: The primary focus of Grade 5 is on fluency with addition and subtraction of fractions and developing an understanding of multiplication of fractions and of division of fractions in limited cases. See, for example, Lesson 14 (pages 271–290), Lesson 19 (pages 391–400), and Lesson 23 (pages 459–468). Another primary focus of Grade 5 is on extending division to 2-digit divisors, including problems where the group size is unknown and where the number of groups is unknown. These situations are introduced in Lesson 5 (pages 77–102) and expanded upon throughout *i-Ready Classroom Mathematics* to include dividing with decimals. For examples see:

- Dividing whole numbers: Lesson 5 (pages 77–102), extended with two-digit numbers and applied to measurement topics in Lesson 25 (pages 509–528) and Lesson 26 (pages 531–550)
- Divide Decimals: Lesson 17 (pages 347–372)

Grade-Level Problems at the Session Level

- **Explore** Session
 - The **Try–Discuss–Connect** instructional routine connects previously-learned content to the current grade level content being introduced in the lesson. Students discuss possible strategies with peers and connect what they have learned with multiple models and representations.
 - **Building Fluency** Activities (Grade K) are fun and repeatable activities that provide early learners with on-grade-level fluency practice.
 - **Hands-On Activities** and **Visual Models** provide alternative approaches to modeling the concepts, problems, or strategies. These activities are geared to students who are striving towards mastery.
 - **Close: Exit Ticket** provides a reflection point in the day’s session of working with on-grade-level problems.
 - **Additional Practice** reinforces essential mathematical vocabulary
- **Develop** Session
 - The **Try–Discuss–Connect** instructional routine enables students to address an on-grade-level problem by drawing on what they already know, discuss possible strategies with peers, and connect what they have learned with multiple models and representations.
 - **Hands-On Activities** and **Visual Models** provide alternative approaches to modeling the concepts, problems, or strategies. These activities are geared to students who are striving towards mastery.
 - **Close: Exit Ticket** provides a reflection point in the day’s session of working with on-grade-level problems.
 - **Additional Practice** allows students to demonstrate a flexible use of strategies and solution methods, to explain their thinking about the strategies they are using, and to apply those ideas appropriately and efficiently.

DISCUSS IT

Support Partner Discussion

Encourage students to talk about the model or strategy they chose and to use the terms *start* and *change* as they discuss their solutions.

Support as needed with questions such as:

- *How is your strategy the same as your partner’s? How is it different?*
- *What do you like about your partner’s strategy? What do you disagree with?*

Common Misconception Look for students who use the counting on strategy and count 9, 10, 11 instead of 10, 11, 12. As students present solutions, be sure to have them specify why they began counting with 10.

LESSON 17
Develop Regrouping Tens to Ones SESSION 2 ● ● ● ● ●

Read and try to solve the problem below.

There are 450 campers at Camp Cody. One day, 218 campers do art projects. The rest do sports.
How many campers do sports that day?

TRY IT

Math Toolkit

- base-ten blocks
- hundred charts
- hundreds place-value mats
- open number lines

DISCUSS IT

Ask your partner:
How did you get started?

Tell your partner:
The strategy I used to find the answer was ...

NN Metric 2D: Materials give all students extensive work with on-grade-level problems.

(continued)

- **Fluency and Skills Practice**, found on the *Teacher Toolbox*, are for brief and targeted on-grade-level fluency practice of the sessions content.
- **Fluency Practice** activities for Grade K and 1 are built into the *Teacher's Guide* to supply teachers with a quick activity or game that reinforces the fluency skills of the lesson.
- **Refine Session**
 - Refine sessions devote an entire session (two sessions in Grade K–2) to deepening understanding and practicing on-grade-level skills in Apply it.
 - **Reteach:** *Tools for Instruction*, found on the *Teacher Toolbox*, for students who require additional support for on-level skills experienced in a new way.
 - **Reinforce:** Math Center Activities, found on the *Teacher Toolbox*, are collaborative activities for small groups available in three versions: on-level, below-level and above-level.
 - **Extend:** Enrichment Activities, found on the *Teacher Toolbox*, for students who have achieved proficiency with concepts and skills and are ready for additional challenges using on-grade-level content.

Enrichment Activity Name _____

Designing a New Home

Your Challenge
Your family is planning a rabbit pen. The pen must hold at least 4 rabbits but no more than 15 rabbits. Each rabbit will have its own space within the pen. All rabbits should get the same amount of floor space.

1. Look at the diagram of the rabbit pen below. How many rabbits could your family get? Make three plans for 3 different numbers of rabbits. In at least one of your plans, do not make all the rabbit spaces look the same. Plan your layouts on the **Recording Sheet**.

2. What fraction of the pen will each rabbit get in each of your plans? What do you notice about the size of the space each rabbit gets when you plan for more rabbits?

Grade-Level Problems at the Lesson Level

- **Family Letter** and **Activities** encourage students to complete tasks with their family members using the mathematics they are learning in class. These family-friendly activities are available in multiple languages and apply the mathematics content to everyday situations.
- Digital **Interactive Practice** engages students in on-grade-level digital practice with immediate feedback.
- Digital, adaptive **Learning Games** help students gain rich conceptual understanding of mathematics concepts with student reports for educators. Students can choose which games to play and since the games adapt, students are able to get immediate feedback and any needed support.
- **Math Center Activities** are collaborative games and activities for small groups available in three versions that are adapted to address students' level of mastery of the topic (on-level, below-level and above-level) making the mathematics accessible for all students.

Center Activity 6.28 n n

Fraction Word Problems

What You Need
• Recording Sheet

What You Do
1. Make sure there is a model on the Recording Sheet.
2. Write a word problem for the model.
3. Use counters to solve the problem.
4. Use repeated addition to check the answer.
5. Repeat until all the models on the Recording Sheet have been used.

Tip
Some of my word problems are about equal-sized parts of a whole. Others are about comparing, such as "I have 4 more than you."

Go Further
Write your word problem cards to use that you create with, but with different numbers. Exchange papers with your partner to draw a model and solve the problem.

Fraction Word Problems
On Level

Center Activity 6.28 n n

Fraction Word Problems

What You Need
• Recording Sheet

What You Do
1. Make sure there is a model on the Recording Sheet.
2. Write a word problem for the model.
3. Use counters to solve the problem.
4. Use repeated addition to check the answer.
5. Repeat until all the models on the Recording Sheet have been used.

Tip
Some of my word problems are about equal-sized parts of a whole. Others are about comparing, such as "I have 4 more than you."

Go Further
Write your word problem cards to use that you create with, but with different numbers. Exchange papers with your partner to draw a model and solve the problem.

Fraction Word Problems
Below Level

Center Activity 6.28 n n

Fraction Word Problems

What You Need
• Recording Sheet

What You Do
1. Make sure there is a model on the Recording Sheet.
2. Write a word problem for the model.
3. Use counters to solve the problem and write the two whole numbers between which the answer is found.
4. Use repeated addition to check the answer.
5. Repeat until all the models on the Recording Sheet have been used.

Tip
Some of my word problems are about equal-sized parts of a whole. Others are about comparing, such as "I have 4 more than you."

Go Further
Write your word problem cards to use that you create with, but with different numbers. Exchange papers with your partner to draw a model and solve the problem.

Fraction Word Problems
Above Level

Grade-Level Problems at the Unit Level

- In **Math in Action** lessons (Grades 2–5) students interact with rich multi-step problems and exemplary responses, then apply critical thinking to solve the task another way. These complex problems integrate multiple standards from the unit and include open-ended real-world problems that help students refine their ability to answer more robust performance tasks.
- **Grade Level Games** (Grades K–2) provide students fluency and number sense practice that can be used throughout the year.

NN Metric 2D: Materials give all students extensive work with on grade-level problems.

(continued)

- **Literacy Connection, Reading Passage & Problems** are informational texts and engaging problems where students make cross-curricular connections to the mathematics they are learning in class.
- **Unit Games** at the end of every unit provide practice for students as they work collaboratively and use critical thinking to apply skills, strategies and procedures taught in the unit.
- **Performance Tasks** (Grades 1–5) provide robust practice on each standard covered throughout the unit in multi-step, rich context problems.
- **Unit Review** and **Cumulative Practice** provide robust practice on each standard covered throughout the unit in multi-step, rich context problems.

Literacy Connection Teacher Toolbox

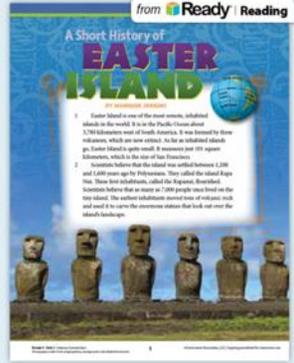
Social Studies

Materials "A Short History of Easter Island"; Rounding Numbers Activity Sheet

Summary In "A Short History of Easter Island," students will read about the discovery of Easter Island and the history of its inhabitants.

Math Connection History articles tell about important events that happened in the past and explain why those events happened. They may present facts and information in time order with specific dates that indicate the order of events. Some information may be presented visually in photographs, maps, and time lines. This passage provides the setting for students to use their understanding of rounding numbers to complete the activity.

- Have students read the passage.
- Distribute the activity sheet. After reading the directions aloud, direct students to turn to a partner and talk about problems 1 and 3. Check for understanding.
- Have students work independently to complete the remaining problems.
- Circulate and monitor while students work.
- Ask student volunteers to share and discuss their solutions with the class.



Unit Game

Area-Rama

Materials For each pair: 2 copies of the Recording Sheet, 2 number cubes (one labeled 0–4 and "choice"; the other labeled 2–6 and "choice")

WHY Reinforce finding the area of triangles, rectangles, parallelograms, and other polygons composed of these shapes.

HOW Pairs roll number cubes to form a two-digit number that represents the area of a polygon. They draw a polygon having the given area on grid paper. The goal is to fill up as much space as possible on the grid. After several rounds, the player who has covered the most area wins.

- Tell students that the "0" can only be used in the ones place of the two-digit number.
- Ask students to identify the smallest and largest area they can roll, excluding the "choice" option. [smallest: 12; largest: 64]
- After students finish the game, have them share strategies they used. Ask: *How did you decide which shape to draw? How did you decide on the dimensions of your shape?*

Vary the Game Limit the number of rounds to play and/or the shapes that can be drawn. For example, play three rounds and players can only draw parallelograms (that are not rectangles).

Challenge Each player must make one of each kind of shape—triangle, rectangle, parallelogram, and a polygon composed of two or more of these shapes—before repeating any shape.

UNIT 2 UNIT REVIEW

Performance Task

Answer the questions. Show all your work on separate paper.

Nicole bakes chocolate and vanilla cupcakes for a party.

Some of the cupcakes have frosting. The rest have no frosting.

Use the clues to find how many of each type of cupcake Nicole bakes.

- There are 34 chocolate cupcakes with frosting.
- There are 11 vanilla cupcakes with no frosting.
- There are 80 cupcakes in all.
- There are 26 fewer chocolate cupcakes with no frosting than with frosting.

Checklist

- Did you ...
- use place value correctly?
 - check your answers?
 - explain your answers with words and numbers?

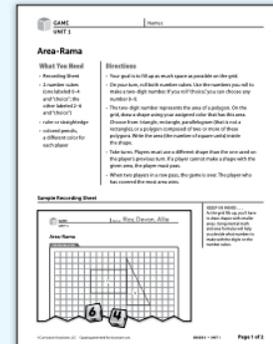
	Chocolate Cupcakes	Vanilla Cupcakes	Total
Frosting			
No Frosting			
Total			

Copy and complete the table on a separate piece of paper. Explain why your answer works.

REFLECT

Model with Mathematics Tell how you can use the table to help you check your work. Then check to make sure the numbers in your table are correct.

SMP 1, 2, 4, 6, 7



NN Metric 2E: Materials relate on-grade level concepts explicitly to prior knowledge from earlier grades.

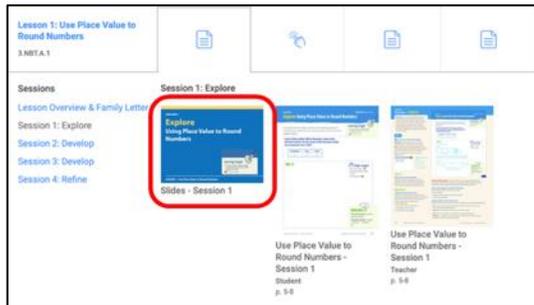
i-Ready Classroom Mathematics includes numerous opportunities for students to make connections between prior knowledge from earlier grades and on-grade level concepts. For example:

Explore sessions incorporate explicit connections to previous learning. Most lessons do this by presenting a problem situation followed by questions that guide students to access prior knowledge related to the current lesson. Many times, this knowledge is from previous grades and prepares students for the current content or helps them connect what they have previously learned to the current content.

For examples, see:

- Grade K – Lesson 27 (pages 529–532); Lesson 28 (pages 549–552)
- Grade 1 – Lesson 25 (pages 575–578); Lesson 26 (pages 599–602)
- Grade 2 – Lesson 19 (pages 463–466); Lesson 20 (pages 497–500)
- Grade 3 – Lesson 21 (pages 471–474); Lesson 23 (pages 495–498)
- Grade 4 – Lesson 19 (pages 401–404); Lesson 20 (pages 413–416)
- Grade 5 – Lesson 23 (pages 459–462); Lesson 24 (pages 471–474)

Start Questions, in Explore and Develop sessions, serve to assess students’ understanding of previously learned topics that connect to what they are about to learn. These questions often reflect back to recent grade-level instruction or prerequisite instruction from previous grades that is important for the current topic of study. These problems help teachers determine which students might need reteaching or additional practice. For example, see session Slides for each session on the *Teacher Toolbox*.



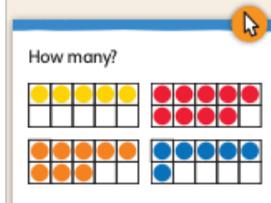
Start

Connect to Prior Knowledge

Materials For display: Activity Sheet *10-Frames* with 0 shown in one frame and 10 shown in the other

Why Reinforce the use of 10-frames to model a number. Practice knowing how many by seeing the way the 10-frame has been filled.

How Hold up the empty 10-frame and ask children what it is and what number it shows. [0] Then show the filled 10-frame. Ask children to tell how many it shows without counting and explain how they know. [10; A completely filled 10-frame always shows 10.] Have children look at the partially filled 10-frames on the slide and say how many each shows.



LESSON 14 **Explore Comparing Three-Digit Numbers** **SESSION 1**

Learning Target
 • Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using $>$, $=$, and $<$ symbols to record the results of comparisons.
 SMP 1, 2, 3, 4, 5, 6, 7

You have learned how to compare two-digit numbers. Use what you know to try to solve the problem below.

Kim and Jon toss beanbags at a target. Who can make the greater number using the digits their beanbags land on?

TRY IT

Math Toolkit
 • base-ten blocks
 • hundreds place-value charts
 • blank number lines
 • hundred charts

DISCUSS IT
Ask your partner: How did you get started?
Tell your partner: I started by ...

Curriculum Associates, LLC. Copying is not permitted. Lesson 14 Compare Three-Digit Numbers 343

Start

Connect to Prior Knowledge

Why Support students’ knowledge of choosing an inch ruler, a yardstick, or a measuring tape to find the lengths of familiar objects, foreshadowing measuring the lengths of objects with an appropriate tool.

How Have students choose an appropriate tool for measuring the lengths of different objects.

Would you choose an inch ruler, a yardstick, or a measuring tape to measure:

- the length of a truck?
- the length of a backpack?
- the length of a crayon?

Possible Solutions
 A measuring tape;
 a yardstick;
 an inch ruler

NN Metric 2F: Review of material from previous grades is clearly identified as such to the teacher, and teacher and students can see what their specific responsibility is for the current year.

i-Ready Classroom Mathematics was developed specifically for the grade-by-grade progressions required in the standards. Teachers and students have many resources to support them in recognizing the progressions and student learning responsibilities for the current year. In addition, clearly labeled review materials are provided for educators to use strategically with individuals or small groups to support striving students or unfinished learning.

At the beginning of every unit, a visual diagram called the **Lesson Progression** chart shows how the current Lessons connect to previous learning (in the current grade level or previous grades) and learning still to come (in the current grade or upcoming grade levels). See the Lesson Progression charts at the beginning of any unit in the *Teacher's Guide*.



The **Lesson Overview** at the beginning of every lesson provides a Learning Progression and how the work in the current lesson relates to previous and future work. For examples, see the Lesson Overview and Family Connection pages of any lesson in the *Teacher's Guide*. For example:

- Grade K – page 201a
- Grade 1 – page 163a
- Grade 2 – page 51a
- Grade 3 – page 91a (shown)
- Grade 4 – page 107a
- Grade 5 – page 75a

Learning Progression

In **Grade 3** students used equations, rectangular arrays, and the properties of operations to develop an understanding of multiplication. They learned basic multiplication facts and multiplied one-digit numbers by multiples of 10. Earlier in **Grade 4** students broadened their conceptual understanding of multiplication to include the idea of multiplication as a comparison of two numbers. **In this lesson** students use arrays of base-ten blocks, area models, and partial products to multiply. They apply their understanding of place value to multiply three- and four-digit numbers by one-digit numbers.

In the next lesson students will multiply two-digit numbers by two-digit numbers.

In Grade 5 students will multiply three-digit numbers by two-digit numbers as well as multiply decimals. Students will also become familiar with using the standard algorithm for multiplication.

NN Metric 2F: Review of material from previous grades is clearly identified as such to the teacher, and teacher and students can see what their specific responsibility is for the current year.

(continued)

At the beginning of each session in the *Teacher's Guide*, a **Purpose** statement lays the foundation and roadmap of what students will be learning and doing across the session. For examples, see the beginning of any session in the *Teacher's Guide*.

Students are presented with the **Learning Target** for each lesson in the *Student Worktext*. The Learning Target can be found on the first page of any lesson. For examples see:

- Grade K – *Student Worktext* Lesson 9, page 163
- Grade 1 – *Student Worktext* Lesson 8, page 165
- Grade 2 – *Student Worktext* Lesson 9, page 213
- Grade 3 – *Student Worktext* Lesson 3, page 49
- Grade 4 – *Student Worktext* Lesson 7, page 121
- Grade 5 – *Student Worktext* Lesson 6, page 121

Family Letters and Activities keep caregivers/parents informed about the upcoming content their student is responsible for learning and provides families with a suggested activity to reinforce learning at home. Family Letters are in the following languages digitally: English, Spanish, Tagalog, Russian, Arabic, Mandarin, Korean, and Vietnamese. Portuguese, Somali and Amharic will be available back-to-school 2022. For examples see the *Student Worktext* on the following pages:

- Grade K – Lesson 9, pages 161–162
 - Grade 1 – Lesson 8, pages 163–164
 - Grade 2 – Lesson 9, pages 211–212
 - Grade 3 – Lesson 3, pages 47–48
 - Grade 4 – Lesson 7, pages 119–120
 - Grade 5 – Lesson 6, pages 119–120
- [Grade K examples](#)
 - [Grade 1 examples](#)
 - [Grade 2 examples](#)
 - [Grade 3 examples](#)
 - [Grade 4 examples](#)
 - [Grade 5 examples](#)

Teachers are provided with clearly labeled **Prepare, Reteach, Reinforce** and **Extend** materials throughout *i-Ready Classroom Mathematics* in order to support students who may need additional support or who are ready for a challenge.

- The image is from Grade 3, Unit 1 on *Teacher Toolbox* and clearly identifies available resources for individual students or small groups.

Purpose In this session, students use place-value charts and expanded form to deepen understanding about place-value concepts. They then compare the models and practice writing numbers in expanded form.

Learning Target

- Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

SMP 1, 2, 3, 4, 5, 6, 7, 8

Numbers 0 to 5

Dear Family,
This week your child is building counting skills with the number 0.

This skill involves learning to recognize and write the numeral 0 and understand that zero represents a group of no objects. For example, when shown a flowerpot with 2 flowers and a flowerpot with no flowers, your child will identify the flowerpot with no flowers as showing 0 flowers.

Your child will also explore how counting numbers represent one more than the previous number. He or she will count groups, show one more, and count the group again to find how many are in the group. Your child will see how each number in the counting sequence increases by one.

1 2 3

2 0

This lesson also includes practice at recognizing groups of 1 through 5. Invite your child to share what he or she knows about counting and 0 by doing the following activity together.

Lesson 3: Numbers 0 to 5 39

Ready Classroom Math Teacher Toolbox

Grade **K 1 2 3 4 5 6 7 8**

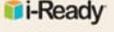
Program Implementation Classroom Resources Assessment Practice

Unit 1: Three-Digit Numbers: Place Value, Addition, and Subtraction

	Whole Class Instruction			Small Group Differentiation			
	Teach Instruction & Practice	Assess Interactive Tutorials	Assess Lesson Quizzes Unit Assessment	Prepare Prerequisite Lessons	Reteach Tools for Instruction	Reinforce Math-Center Activities	Extend Enrichment Activities
Unit 1: Beginning of Unit							
Lesson 0: Lessons for the First Five Days							
Lesson 1: Use Place Value to Round Numbers 3.NBT.A.1							
Lesson 2: Add Three-Digit Numbers 3.NBT.A.2							

NN Metric 2F: Review of material from previous grades is clearly identified as such to the teacher, and teacher and students can see what their specific responsibility is for the current year.

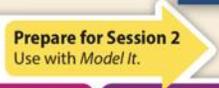
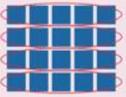
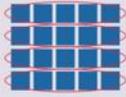
Refine sessions also provide multiple clearly labeled options for differentiation to meet students' varying learning needs. For examples, review any Refine session in the *Teacher's Guide*. The excerpt that follows is from Grade 3, Lesson 3, Session 5 (Refine), pages 73-74.

Differentiated Instruction			
<p>RETEACH</p> <p> Hands-On Activity Understand place value to subtract.</p> <p>Students struggling with subtracting by place value Will benefit from additional work regrouping with base-ten blocks. Materials For each pair: base-ten blocks (10 hundreds flats, 20 tens rods, 20 ones units); For display: bag holding base-ten blocks (10 hundreds flats, 15 tens rods, 15 ones units)</p> <ul style="list-style-type: none"> • Have a student volunteer grab a handful of base-ten blocks from the bag and use them to model a number. Repeat the process for a second number. • Have the pairs subtract the lesser number from the greater number. Have one student in each pair solve the problem on paper while the other solves it with base-ten blocks. Have students compare answers. • Direct partners to switch roles and repeat the steps. • Repeat with different volunteers creating new numbers to subtract. 	<p>EXTEND</p> <p> Challenge Activity Write your own problems.</p> <p>Students who have achieved proficiency with subtraction and regrouping Will benefit from deepening understanding of how numbers in subtraction problems are related to one another.</p> <p>Have students write and solve 3 subtraction problems.</p> <ul style="list-style-type: none"> • 1 requiring regrouping 1 ten as 10 ones • 1 requiring regrouping 1 hundred as 10 tens • 1 requiring regrouping twice 	<p>REINFORCE</p> <p>Problems 4–8 Subtract three-digit numbers.</p> <p>All students will benefit from additional work with subtracting three-digit numbers with regrouping by solving problems in a variety of formats.</p> <ul style="list-style-type: none"> • Have students work on their own or with a partner to solve the problems. • Encourage students to show their work. 	<p>PERSONALIZE</p> <p> i-Ready</p> <p>Provide students with opportunities to work on their personalized instruction path with <i>i-Ready</i> Online Instruction to:</p> <ul style="list-style-type: none"> • fill prerequisite gaps • build up grade-level skills

(continued)

Before each session, **English Language Learners: Differentiated Instruction** language support and scaffolds are provided in a chart format. These Language Development charts provide content-specific guidance for the different language proficiency levels, so teachers can address language needs throughout the lesson and provide strategic scaffolds for different language domains. These charts appear on the *Teacher's Guide* page immediately preceding the applicable session, with a yellow arrow noting specific parts of the session where the scaffolds will be used.

- Grade K – Lesson 5, page 84
- Grade 1 – Lesson 2, page 38
- Grade 2 – Lesson 5, page 104
- Grade 3 – Lesson 10, page 230
- Grade 4 – Lesson 3, page 36
- Grade 5 – Lesson 5, page 86

ELL English Language Learners: Differentiated Instruction  Prepare for Session 2 Use with Model It.		
<p>Levels 1–3</p> <p>Listening/Speaking Read <i>Model It</i> problem 3 aloud. Give 20 unit tiles to pairs. Review rows and columns. Have students build an array of four rows of five tiles. Display the same. Ask: <i>What multiplication fact is represented by the array?</i> Record: $4 \times 5 = 20$. Explain that the same array can also represent division. Represent the groups as shown. Display: $20 \div 4 = 5$. Ask: <i>What does the four represent in the array—the groups or the size of the group? What does the five represent—the groups or the size of the group?</i> Display $20 \div 5 = 4$. Repeat the same two questions.</p> 	<p>Levels 2–4</p> <p>Listening/Speaking Read <i>Model It</i> problem 3 chorally with students. Give 20 unit tiles to pairs. Have pairs build an array of four rows of five tiles. Display the same. Ask: <i>What multiplication fact is represented by the array?</i> Guide students to answer with words or phrases. Record: $4 \times 5 = 20$. Explain that the same array can also represent division. Draw the groups as shown. Display $20 \div 4 = 5$. Ask: <i>What does the four represent in the array? What does the five represent?</i> Display $20 \div 5 = 4$. Repeat the same two questions.</p> 	<p>Levels 3–5</p> <p>Speaking/Writing Have students read <i>Model It</i> problem 3 independently. Give 20 unit tiles to pairs. Have pairs build an array of four rows of five tiles. Display the same. Ask: <i>What multiplication fact is represented by the array?</i> Record: $4 \times 5 = 20$. Explain that the same array can also represent division. Draw the groups as shown. Display $20 \div 4 = 5$. Have students use complete sentences to tell what the four and five represent in the array. Display $20 \div 5 = 4$. Have students tell what the five and four represent.</p> 

NN Metric 2G: Materials include learning objectives that are visibly shaped by CCSSM cluster headings.

i-Ready Classroom Mathematics includes standards Focus and Lesson Objectives side-by-side to support teachers in seeing how objectives are visibly shaped by CCSSM cluster headings. Lesson Objectives include both **Content Objectives**, that define what students will learn, and **Language Objectives**, that describe what students will do to show understanding.

See the Lesson Overview on *Teacher's Guide* pages at the beginning of each lesson. For specific examples, see:

- Grade K – Lesson 12, page 227a
- Grade 1 – Lesson 18, page 399a
- Grade 2 – Lesson 10, page 241a
- Grade 3 – Lesson 8, page 181a
- Grade 4 – Lesson 13, page 267a
- Grade 5 – Lesson 14, page 269a

i-Ready Classroom Mathematics lessons and tasks advance student learning with clear purpose written in standards-based, student-friendly language. On the first page of the first session, students are presented with a **Learning Target** for each lesson in the *Student Worktext*. Students engage in low-threshold, high-ceiling tasks that are clear and standards-based. *i-Ready Classroom Mathematics* also provides instruction and practice to help students acquire and develop vocabulary. For examples, see any Lesson's Overview in the *Teacher's Guide* for **Language Objectives** and **Lesson Vocabulary**.

Purpose In this session, students use place-value charts and expanded form to deepen understanding about place-value concepts. They then compare the models and practice writing numbers in expanded form.

Lesson Overview

LESSON 8

Use Order and Grouping to Multiply

CCSS Focus

Domain
Operations and Algebraic Thinking

Cluster
B. Understand properties of multiplication and the relationship between multiplication and division.

Standard
3.OA.B.5 Apply properties of operations as strategies to multiply and divide. Examples: If $6 \times 4 = 24$ is known, then $4 \times 6 = 24$ is also known. (Commutative property of multiplication.) $3 \times 5 \times 2$ can be found by $3 \times 5 = 15$, then $15 \times 2 = 30$, or by $5 \times 2 = 10$, then $3 \times 10 = 30$. (Associative property of multiplication.) Knowing that $8 \times 5 = 40$ and $8 \times 2 = 16$, one can find 8×7 as $8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56$. (Distributive property.) (Note: Students need not use formal terms for these properties.)

Additional Standards
3.OA.A.1, 3.OA.A.3 (See Standards Correlations at the end of the book for full text.)

Lesson Objectives

Content Objectives

- Understand that numbers can be multiplied in any order and the product will be the same (commutative property of multiplication).
- Apply the commutative property of multiplication as a strategy to solve multiplication problems.
- Understand that three or more factors in a problem can be grouped in different ways and the product will be the same (associative property of multiplication).
- Apply the associative property of multiplication as a strategy to solve problems.

Language Objectives

- Rewrite a multiplication problem with the order of the factors reversed and solve.
- Rewrite a multiplication problem with parentheses in a different position and solve.

Prerequisite Skills

- Understand multiplication of whole numbers as finding the total number of objects in some number of equal groups.
- Know basic multiplication facts for 0 through 10.
- Use a multiplication equation to represent and solve a word problem.

Standards for Mathematical Practice (SMP)

SMPs 1, 2, 3, 4, 5, and 6 are integrated in every lesson through the Try-Discuss-Connect routine.*

In addition, this lesson particularly emphasizes the following SMPs:

- 5 Use appropriate tools strategically.
- 6 Attend to precision.
- 7 Look for and make use of structure.
- 8 Look for and express regularity in repeated reasoning.

*See page 11 to see how every lesson includes these SMPs.

Learning Progression

In previous lessons students learned the multiplication facts for 0–10. They were briefly exposed to the commutative and distributive properties of multiplication.

In this lesson students focus on the commutative and associative properties of multiplication. Students gain an understanding of the properties, but do not need to know the formal terms for these properties. These properties can be used as strategies for multiplying, which helps students build fluency in single-digit multiplication, a key goal in Grade 3.

To explore the commutative property, students use pictures of equal groups and arrays to see that factors multiplied in any order result in the same product. For example, $6 \times 3 = 18$, and $3 \times 6 = 18$.

Lesson Vocabulary

There is no new vocabulary. Review the following key terms.

- **array** a set of objects arranged in equal rows and equal columns.
- **factor** a number that is multiplied.
- **multiplication equation** an equation with a multiplication symbol and an equal sign. For example, $3 \times 5 = 15$.
- **multiply** to repeatedly add the same number a certain number of times. Used to find the total number of items in equal-sized groups.
- **product** the result of multiplication.

181a Lesson 8 Use Order and Grouping to Multiply

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At the beginning of each session in the *Teacher's Guide*, a **Purpose** statement lays the foundation and roadmap of what students will be learning and doing across the session. For examples, see the beginning of any session in the *Teacher's Guide*.

NN Metric 2H: Materials include problems and activities that serve to connect two or more clusters in a domain, or two or more domains in a grade, in cases where these connections are natural and important.

i-Ready Classroom Mathematics materials include problems and activities that were designed to connect two or more clusters in a domain, or two or more domains in a grade by design. Lessons in *i-Ready Classroom Mathematics* are built to be multiple sessions, enabling students the time needed to make connections within and between standards and digest clustered content.

Connections between two or more domains or clusters occur naturally throughout *i-Ready Classroom Mathematics*. Each grade-level **Table of Contents** shows the aligned standards for each lesson, the embedded Standard(s) for Mathematical Practice and indicator of Major (M), Supporting (S) or Additional (A) focus. An excerpt shown from Grade 3, Unit 3.

For all grades, see **Correlations by Lesson** in the back of the *Teacher's Guide*. The same pages can be found on the Program Implementation Tab on the *Teacher Toolbox*. On these pages reviewers will see how standards from different clusters are combined into a lesson. The following excerpt is from Grade 3, page B14. Reviewers may also see the following in the *Teacher's Guide* –

- Grade K – pages B9–B15
- Grade 1 – pages B9–B14
- Grade 2 – pages B9–B14
- Grade 3 – pages B9–B16
- Grade 4 – pages B9–B15
- Grade 5 – pages B9–B15

Unit Opener	299
Build Your Vocabulary	300
Lesson 14 Understand Area	301a
3.MD.C.5a, 3.MD.C.5b, 3.MD.C.6	
Focus: M SMP 1, 2, 3, 4, 5, 6	
Lesson 15 Multiply to Find Area	313a
3.MD.C.7a, 3.MD.C.7b, 3.OA.A.3, 3.MD.C.6	
Focus: M SMP 1, 2, 3, 4, 5, 6, 7, 8	
Lesson 16 Add Areas	335a
3.MD.C.7c, 3.MD.C.7d, 3.OA.A.3, 3.OA.B.5, 3.MD.C.7a, 3.MD.C.7b	
Focus: M SMP 1, 2, 3, 4, 5, 6, 7	
Mid-Unit Assessment	356c
Lesson 17 Solve One-Step Word Problems Using Multiplication and Division	357a
3.OA.A.3, 3.OA.A.4, 3.OA.B.6, 3.OA.C.7, 3.MD.C.7a, 3.MD.C.7b	
Focus: M SMP 1, 2, 3, 4, 5, 6, 7	

19	Scaled Graphs	Focus: 3.MD.B.3	Supporting
		Applied: 3.OA.A.1	Major
		Applied: 3.OA.A.3	Major

Reviewers will find example descriptions of how multiple domains connect in *i-Ready Classroom Mathematics* by grade level:

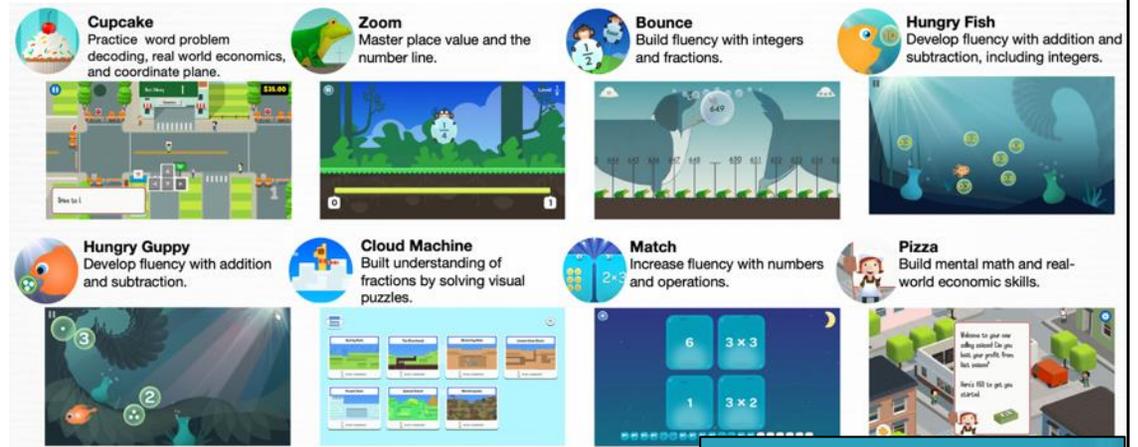
- **Grade K** – Lessons 5, 10, 11, 16 connect the standards in the Number and Operations domain to clusters in the Counting and Cardinality domain. In Lesson 9, students are using counting skills from previous lessons to sort objects in the Measurement and Data domain. In Lessons 26 and 28 students are connecting Counting and Cardinality understanding to decompose numbers in the Number and Operations In Base Ten domain.
- **Grade 1** – In Lessons 13, 15, 28 and 29 students use properties, place value and composition/decomposition to connect clusters in Operations and Algebraic Thinking with clusters in Number and Operations In Base Ten. In Lesson 18 students are applying Operations and Algebraic Thinking skills in a Measurement and Data standard. In Lesson 23, students are connecting time from a Measurement and Data standard with the partitioning shapes in a Geometry cluster.
- **Grade 2** – In Lesson 25 students apply what they have learned about skip counting and adding within 100 from the Number and Operations domain to concepts in the Measurement and Data domain. In Lesson 9, students connect computational skills from Numbers and Operations in Base Ten to problem-solving standards in Operations and Algebraic Thinking. Lesson 11 connects skip counting from Number and Operations in Base Ten to telling time in Measurement and Data

NN Metric 2H: Materials include problems and activities that serve to connect two or more clusters in a domain, or two or more domains in a grade, in cases where these connections are natural and important.

(continued)

- **Grade 3** – Lesson 19 addresses topics in the Measurement and Data domain and connects these standards to those in the Operations and Algebraic Thinking domain from earlier in the year.
- **Grade 4** – Lesson 28 addresses topics in the Measurement and Data domain and connects these standards to those in the Operations and Algebraic Thinking and Number and Operations in Base Ten domains, as well as other Measurement and Data standards. Lesson 29 addresses topics in the Measurement and Data domain and connects these standards to those in the Operations and Algebraic Thinking, Number and Operations in Base Ten, and Number and Operations – Fractions domains, as well as other Measurement and Data standards.
- **Grade 5** – Lessons 25 and 26 address topics in the Measurement and Data domain and connects these standards to those in Numbers and Operations in Base Ten and Numbers and Operations – Fractions.

Digital, adaptive **Learning Games** require students to use skills and understanding from different clusters and domains across the grade. There are currently eight Learning Games and each includes numerous levels that support students at varying ability levels. Two of the games, Pizza and Cupcake, are complex simulation games that require students to run a business, set prices, compare ingredients and interpret diverse word problems. Through the games students will budget, take orders and perform mental math.



Math in Action lessons connect standards, clusters and domains from the unit as well as previous units, as appropriate. In Grades 2–5, the end of each unit includes a Math in Action lesson that teaches students how to approach more complex, multi-step problems, such as those that would be on multi-part Performance Tasks. Students are exposed to rich tasks and possible complete solutions and are then guided to develop complete responses and solutions to these problems of their own.

Math in Action lessons can be found after the last numbered lesson of each unit in Grades 2–5.

- Grade 2 – Unit 2, pages 290a-297
- Grade 3 – Unit 2, pages 284a-291
- Grade 4 – Unit 2, pages 214a-221
- Grade 5 – Unit 2, pages 292a-299



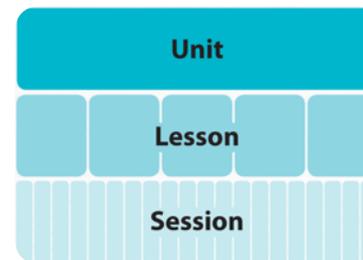
Alignment Criterion 1: Materials must reflect the balances in the Standards and help students meet the Standards' rigorous expectations.

AC Metric 1A: The materials support the development of students' conceptual understanding of key mathematical concepts, especially where called for in specific content Standards or cluster headings.

i-Ready Classroom Mathematics is divided into units that balance standards in a way that students can develop deep conceptual understanding, attain a high degree of procedural skill and fluency, and learn to apply this knowledge to solve real-world problems. The unique **Instructional Design** of the curriculum helps students meet the rigorous expectations found in the standards. Units are divided into lessons. Lessons are intentionally built to ensure deep conceptual understanding by providing students an opportunity to examine topics in depth and make connections across strategies during discussion with classmates. There are three types of lessons in *i-Ready Classroom Mathematics*: Understand lessons, Strategy lessons and Math in Action lessons.

- **Understand** lessons focus on **why** mathematics works the way it does and relate closely to the standards that have the word “understand” or are conceptual in nature. These lessons are the conceptual start for students. Understand lessons foster conceptual understanding and help students connect new concepts to familiar ones as they learn new skills and strategies.
- In **Strategy** lessons students focus on **how** mathematics works and promote reasoning, reflection and making connections between the concepts from the Understand lessons and new skills or strategies. Students persevere in problem solving, discuss solution strategies and compare multiple representations to solve application problems while developing skills, procedures and conceptual understanding.
- In Grades 2–5, **Math in Action** lessons bring all the learning from the unit together, with open-ended problems with many points of entry and more than one possible solution. Students apply what they have learned to solve complex problems that integrate multiple standards.

i-Ready Classroom Mathematics teaches through application and contexts that help students make sense of the mathematics and build understanding. Rich tasks promote meaningful discourse and multiple solution strategies accessible to a wide variety of students. Each multi-day lesson helps students connect new concepts to familiar ones as they learn new skills and strategies. Every lesson is broken down into multiple sessions: Explore, Develop, and Refine sessions. The number of each session type depends on lesson type and the grade level.



Lesson 10	Understand the Meaning of Division	225a
	3.OA.A.2, 3.OA.B.5	
Focus: M	SMP 1, 2, 3, 4, 5, 6	
Lesson 11	Understand How Multiplication and Division Are Connected	237a
	3.OA.B.6	
Focus: M	SMP 1, 2, 3, 4, 5, 6, 7	
Lesson 12	Multiplication and Division Facts	249a
	3.OA.A.4, 3.OA.C.7, 3.OA.A.3, 3.OA.B.5, 3.OA.B.6	
Focus: M	SMP 1, 2, 3, 4, 5, 6, 7, 8	
Lesson 13	Understand Patterns	271a
	3.OA.D.9	
Focus: M	SMP 1, 2, 3, 4, 5, 6, 7, 8	
Math in Action	Solve Multiplication and Division Problems ..	284a
	3.NBT.A.3, 3.OA.A.1, 3.OA.A.2, 3.OA.A.3, 3.OA.B.5, 3.OA.B.6, 3.OA.C.7	
Focus: M	SMP 1, 2, 3, 4, 5, 6, 7	

Day 1	Day 2	Day 3	Day 4	Day 5
Explore SESSION	Develop SESSION	Develop SESSION	Develop SESSION	Refine SESSION
Make connections to prior knowledge and explore new concepts.	Develop strategies and understanding through discourse, problem solving, differentiated instruction, and practice.			Practice, deepen understanding, and differentiate.

There are 1–3 Develop sessions per lesson.

AC Metric 1A:
The materials support the development of students' conceptual understanding of key mathematical concepts, especially where called for in specific content Standards or cluster headings.

(continued)

Within Strategy lessons, each Explore and Develop session utilizes the **Try–Discuss–Connect** instructional routine.

- During **Try It**, students spend time making sense of the problem presented, thinking about what they need to find, what information is important and develop initial strategies students might use to solve the problem.
- During **Discuss It**, students develop greater understanding of mathematical representations and solution strategies using partner talk and whole class discourse.
- In **Connect It**, students deepen understanding and make further connections between models and representations. Students then apply what they have learned in the **Apply It** portion of each lesson session. Teachers encourage students to solve the problems in more than one way to build flexibility in their thinking.

Try–Discuss–Connect Routine
For Engaging Students in Productive Mathematical Practices

<div style="background-color: #c8e6c9; border: 1px solid #81c784; border-radius: 10px; padding: 5px; margin-bottom: 10px;"> <p style="text-align: center; margin: 0;">TRY IT</p> </div> <div style="background-color: #c8e6c9; border: 1px solid #81c784; border-radius: 10px; padding: 5px; margin-bottom: 10px;"> <p style="text-align: center; margin: 0;">DISCUSS IT</p> </div> <div style="background-color: #c8e6c9; border: 1px solid #81c784; border-radius: 10px; padding: 5px;"> <p style="text-align: center; margin: 0;">CONNECT IT</p> </div>	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <ol style="list-style-type: none"> 1 Make sense of the problem. 2 Solve and support your thinking. <ol style="list-style-type: none"> 3 Share your thinking with a partner. 4 Compare class strategies. <ol style="list-style-type: none"> 5 Make connections and reflect on what you have learned. 6 Apply your thinking to new problems. </td> <td style="width: 50%; vertical-align: top; padding-left: 10px;"> <p>Try It provides low-entry, high-ceiling problems and builds on students' prior knowledge of mathematical concepts.</p> <p>Discuss It offers multilevel opportunities to discuss their learning prompts in a sociocultural context.</p> <p>Connect It makes ample use of multiple modes of communication and representations.</p> </td> </tr> </table>	<ol style="list-style-type: none"> 1 Make sense of the problem. 2 Solve and support your thinking. <ol style="list-style-type: none"> 3 Share your thinking with a partner. 4 Compare class strategies. <ol style="list-style-type: none"> 5 Make connections and reflect on what you have learned. 6 Apply your thinking to new problems. 	<p>Try It provides low-entry, high-ceiling problems and builds on students' prior knowledge of mathematical concepts.</p> <p>Discuss It offers multilevel opportunities to discuss their learning prompts in a sociocultural context.</p> <p>Connect It makes ample use of multiple modes of communication and representations.</p>
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Some examples that illustrate where students build **conceptual understanding** while developing procedural skills:

- **Grade K** – Connect It questions link conceptual understanding of the problem with computation practice in a real-world context. For example, see Lesson 21 (pages 407–408). In the Develop session part of each lesson, an engaging picture provides the context for problem solving and fluency. For example, see Lesson 17 (pages 335–338). The Refine sessions of a lesson provide opportunities for students to show mastery of the lesson concept combined with application and/or computation. See Lesson 18 (pages 363–364). In Lesson 28 (pages 549–566), decomposition skills from earlier lessons are presented conceptually with concrete models and are connected to abstract representations to build procedural skill to make teen numbers.
- **Grade 1** – In Explore, concepts are introduced in a situation, so students see mathematics in application. For example, see Lesson 2 (pages 29–30). With Connect It questions in the Develop sessions students connect conceptual understanding to procedures and numerical representations, in application situations. For example, see Lesson 2 (pages 33–38). In the Refine sessions students combine conceptual understanding with fluency and application. See Lesson 28 (pages 659–660). In Lesson 28 (pages 639–660), students connect the prior knowledge of making tens with concrete models and procedures to adding larger numbers, conceptually and with procedures.
- **Grade 2** – In the Develop sessions of Lessons 6 (pages 141–162) and 7 (pages 165–186), students use concrete models, number lines and place value charts to develop conceptual understanding of adding and subtracting two-digit numbers in application situations. Throughout the lessons these models are connected to procedures. Students then apply what they have learned to add and subtract three-digit numbers and several two-digit numbers in Lesson 16 (pages 391–412), Lesson 17 (pages 415–436), and Lesson 18 (pages 439–460).
- **Grade 3** – In Lessons 21 (pages 471–480) and Lesson 22 (pages 483–492), students first build conceptual understanding of equivalent fractions and then use what they have learned to complete computation and application problems with equivalent fractions in Lesson 23 (pages 495–520) and compare fractions in Lesson 24 (pages 523–532) and Lesson 25 (pages 535–548).
- **Grade 4** – In Lesson 19 (pages 401–410), students relate what they know about adding and subtracting whole numbers to understand the concept of adding and subtracting fractions. They then use what they have learned to continue building conceptual understanding while doing computation and related applications while they add and subtract fractions between 0 and 1 in Lesson 20 (pages 413–438) and then to add and subtract Mixed Numbers Lesson 21 (pages 441–460). This is then extended to adding and subtracting fractions in line plots in Lesson 22 (pages 463–488).
- **Grade 5** – In Lesson 6, students first build conceptual understanding of place value to the hundredths (pages 121–130) and then use what they have learned to complete computation and application problems to read and write decimals in Lesson 8 (pages 145–164) and compare and round decimals in Lesson 9 (pages 167–186).

AC Metric 1B:
The materials are designed so that students attain the fluencies and procedural skills required by the Standards.

i-Ready Classroom Mathematics materials are designed so that students attain the fluencies and procedural skills required by the standards. *i-Ready Classroom Mathematics* is careful to devote at least one full multi-day lesson to every fluency standard and in some cases, *i-Ready Classroom Mathematics* provides multiple lessons designed around a single fluency standard. It is important to think of fluency standards as having a conceptual underpinning first.

Students gain a deep conceptual understanding of “the why” in Understand lessons before establishing “the how” of productive and correct strategies in the Strategy lessons. Many of those sessions begin with a Start activity called Develop Fluency where students specifically practice and apply a procedure. Since building fluency requires a deep understanding of both strategies and algorithms, and the ability to be flexible to select appropriate and efficient methods, *i-Ready Classroom Mathematics* is designed with multi-day lessons broken down into sessions that enable students to Explore, Develop and Refine their learning. **Students must know what they are practicing in order for the practice to be effective.** Similarly, students cannot be fluent in something they do not understand. *i-Ready Classroom Mathematics* provides learning opportunities for developing understanding, learning strategies, and practice for fluency and procedural skills.

Each *i-Ready Classroom Mathematics* lesson integrates procedural skills and fluency instruction throughout. During the Explore session students make sense of problems and discuss them with classmates to make connections. During Develop sessions, students develop strategies and begin to analyze their appropriateness for different types of problems. Refine sessions are dedicated to students experiencing multiple problem types, deepening understanding, and practice. See samples of lessons in the *Student Worktext* or *Teacher’s Guide* that support each grade level in building fluency:

- In **Grade K**, students are expected to fluently add and subtract within 5. Students begin this work in Unit 1, where they relate counting to the relationship between numbers and quantities through comparing and composing and decomposing numbers. They then expand that understanding to addition and subtraction concepts. These skills are practiced throughout *i-Ready Classroom Mathematics* to develop fluency. See these examples: Lesson 19 (pages 367–384), Lesson 22 (pages 427–444), and Lesson 25 (pages 487–504).
- In **Grade 1**, students are expected to fluently add and subtract within 10. Students begin this work in Unit 1 where they relate number pairs to addition and subtraction and develop conceptual understanding of subtraction as an unknown addend. These skills are then practiced throughout *i-Ready Classroom Mathematics* to develop fluency. See these examples: Lesson 4 (pages 77–90), Lesson 5 (pages 93–114), and Lesson 11 (pages 241–254).
- In **Grade 2**, students are expected to fluently add whole numbers within 100. Students begin this work in Unit 1 where they develop mental math skills with numbers up to 20. These skills are then practiced and applied to numbers within 100 in Unit 2 and with measurement topics in Unit 4 to develop fluency. See Lesson 3 (pages 53–74), Lesson 7 (pages 165–186), and Lesson 21 (pages 515–536).
- In **Grade 3**, students are expected to fluently add and subtract within 1,000 using various strategies, including the standard algorithm. Students also are expected to multiply and divide within 100 using inverse operation relationships and properties of operations. By the end of Grade 3, students are expected to know their multiplication facts up to 9×9 by memory. See Lesson 2 (pages 27–46), Lesson 3 (pages 49–74), Lesson 5 (pages 105–124), Lesson 6 (pages 127–152), Lesson 7 (pages 155–180), Lesson 12 (pages 251–270), and Lesson 17 (pages 359–384).
- In **Grade 4**, students are expected to fluently add and subtract multi-digit whole numbers using the standard algorithm. Students are also expected to continue developing multiplication and division fluency skills through conceptual practice with various computational

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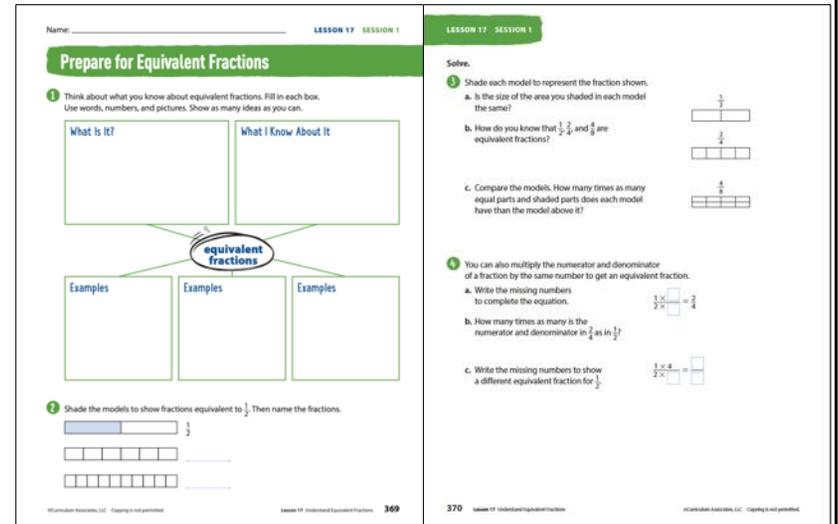
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strategies and models based on place value understanding and properties of operations. See Lesson 4 (pages 49–68), Lesson 5 (pages 71–90), Lesson 11 (pages 231–250), Lesson 12 (pages 253–266), Lesson 14 (pages 291–310), and Lesson 15 (pages 313–326).

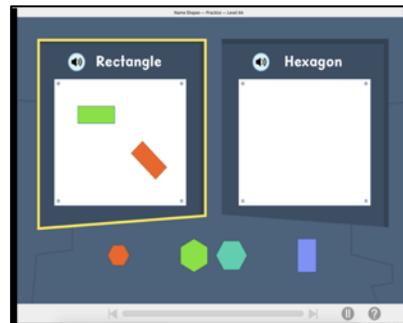
- In **Grade 5**, students are expected to fluently multiply multi-digit whole numbers using the standard algorithm. Beginning in Lesson 4 (pages 55–74) students solidify their learning from grade 4 with multiplying multi-digit whole numbers and build toward fluency. The Unit 1 Math in Action Lesson (pages 104–111) provides extensive application opportunities for students to multiply multi-digit whole numbers.

Additional Practice, in the *Student Worktext* for every Explore and Develop session, provides rigorous practice and vocabulary development, that encourages students to demonstrate flexible use of strategies and solution methods, to explain their thinking about procedures and ideas they are using, and to apply those strategies appropriately and efficiently. See any green page of an Explore or Develop session for examples. For additional examples, see:

- Grade K – Lesson 2, page 31
- Grade 1 – Lesson 2, page 43
- Grade 2 – Lesson 9, pages 221, 227, 233
- Grade 3 – Lesson 6, pages 135, 141, 147
- Grade 4 – Lesson 8, pages 151, 157, 163
- Grade 5 – Lesson 5, pages 85, 91, 97

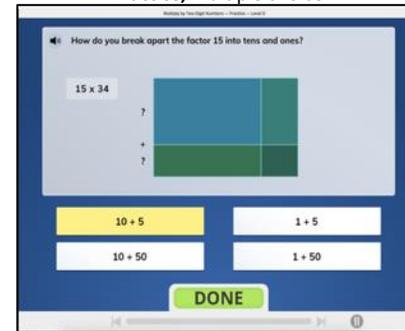


Digital **Interactive Practice** with technology enhanced items helps students build understanding and fluency on the grade-level concepts they struggle with the most using digital practice. Students receive immediate feedback to encourage perseverance and support their development of procedural fluency.



Kindergarten Example Interactive Practice, drag- and-drop

Grade 4 Example Interactive Practice, multiple choice



Grade 3 Example Interactive Practice, short response

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Digital interactive **Learning Games** with reports (accessed through the Student Dashboard of the *Student Digital Experience*) strengthen fluency of standards in a way that is designed to be fun and engaging for students. Challenges within the games develop internal motivation and encourage productive struggle during fluency and skills practice. The format and adaptive nature of the games provide novel ways for students to visualize different procedures and concepts. Students receive subtle and direct feedback that encourages multiple attempts. These games generate reports to support teachers in understanding students' progress towards specific skills and factors of learning, such as confidence and growth mindset.

There are currently eight Learning Games, and each has numerous levels that support students at multiple grade levels and ability levels. A description of each learning game follows.



Hungry Guppy (K–2) & Hungry Fish (K–8): Students combine integer bubbles to feed a fish with a specific target number, reinforcing the concept that there are multiple ways to compose and decompose a number by finding sums and differences.



Zoom (K–5): Students move left and right and zoom in and out of the world's most interactive number line to find missing values, compare numbers, and build number sense. Animals corresponding to each order of magnitude make the concept of place value concrete—from amoebas in the thousandths, to frogs in the ones, and to dinosaurs in the thousands.



Bounce (K–8): Students guide a bouncing ball to compare numbers and find the location of integers, fractions, percentages, decimals, and pie charts on a number line. Scaffolded hints help students build a stronger number sense.



Match (K–8): Students match tiles of equal value and learn to interpret diverse visual and symbolic representations of integers, sums, differences, products, quotients, and fractions while improving working memory in the context of valuable fluency practice.



Pizza (2–5): Students run a virtual pizza store. They set prices, compare vendors for ingredients, and perform quick mental math to calculate the price of customer orders. Adaptive timing gives students challenging fluency practice with addition, multiplication, and multistep problems.



Cupcake (2–8): Students run a cupcake delivery business, in which they need to interpret diverse word problems and engage in practice with basic economics, proportions, and the coordinate system.



Cloud Machine (3–8): Students build a conceptual understanding of fractions by solving visual puzzles.

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Activities and games in *i-Ready Classroom Mathematics* provide targeted practice that teachers can apply flexibly throughout the lesson where a concept is introduced.

- **Math Center Activities** engage students in practice for every lesson as they work collaboratively to apply skills, strategies, and procedures through differentiated activities that approach the same mathematics concept, but are built below-, on- and above-level to make practice accessible to all students.
- **Unit Games** provide practice for every unit as students work collaboratively and use critical thinking to apply skills, strategies and procedures.
- **Grade Level Games (K-2)** are non-digital games that provide students fun fluency and number sense practice.

In addition to procedural exercises in *i-Ready Classroom Mathematics Student Worktext*, there are **Fluency and Skills Practice** pages corresponding to Develop sessions. These Fluency and Skills Practice pages develop number sense and computational fluency, asking students to explain patterns and recognize and make use of repeated reasoning. Fluency Skills and Practice occurs in the second Develop session in Grades K–1, and in every Develop session for Grades 2–8. See the *Teacher’s Guide*:

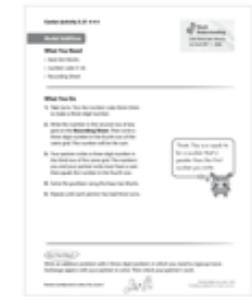
- Grade K – Lesson 2, page 31
- Grade 1 – Lesson 2, page 43
- Grade 2 – Lesson 9, pages 221, 227, 233
- Grade 3 – Lesson 6, pages 135 (shown), 141, 147
- Grade 4 – Lesson 8, pages 151, 157, 163
- Grade 5 – Lesson 5, pages 85, 91, 97



Model Addition
On Level



Model Addition
Below Level



Model Addition
Above Level

Unit Game

Area-Rama

Materials For each pair: 2 copies of the Recording Sheet, 2 number cubes (one labeled 0–4 and “choice”; the other labeled 2–6 and “choice”)

WHY Reinforce finding the area of triangles, rectangles, parallelograms, and other polygons composed of these shapes.

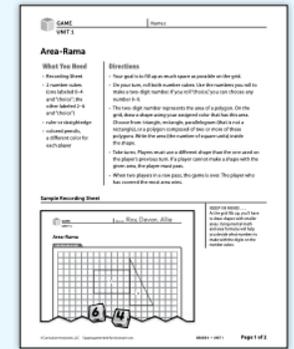
HOW Pairs roll number cubes to form a two-digit number that represents the area of a polygon. They draw a polygon having the given area on grid paper. The goal is to fill up as much space as possible on the grid. After several rounds, the player who has covered the most area wins.

- Tell students that the “0” can only be used in the ones place of the two-digit number.
- Ask students to identify the smallest and largest area they can roll, excluding the “choice” option. [smallest: 12; largest: 64]
- After students finish the game, have them share strategies they used. Ask: *How did you decide which shape to draw? How did you decide on the dimensions of your shape?*

Vary the Game Limit the number of rounds to play and/or the shapes that can be drawn. For example, play three rounds and players can only draw parallelograms (that are not rectangles).

Challenge Each player must make one of each kind of shape—triangle, rectangle, parallelogram, and a polygon composed of two or more of these shapes—before repeating any shape.

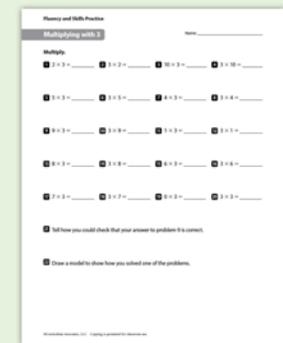
SMP 1, 2, 4, 6, 7



Fluency & Skills Practice Teacher Toolbox

Assign Multiplying with 3

In this activity students practice multiplying numbers by 3. Groups of 3 are common in the real world. Many items, such as tennis balls and T-shirts, are sold in packages of 3. This means students will multiply by 3 in order to find the total number of items in multiple packages. Students will also multiply by 3 when they need to triple a value, such as when purchasing three of the same item.



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In Grade K, Explore session, **Building Fluency** activities provide ongoing fluency practice to support students in developing counting and quantity number sense through repeatable activities. Example shown from Grade K, Lesson 11, page 205.

The first Develop session of each lesson in Grades K–1 includes **Fluency Practice** activities (found in the *Teacher’s Guide*.) These activities provide fluency practice to support students in developing flexible thinking and facility with procedures and computational skills. Example from Grade K, Lesson 21, page 413.

For examples, see:

- Grade K – *Teacher’s Guide* Lesson 2 (page 27) and Lesson 12 (page 235)
- Grade 1 – *Teacher’s Guide* Lesson 2 (page 37) and Lesson 24, (page 547)

Start questions at the beginning of each session for Grades K–2 are referenced in the *Teacher’s Guide* and provided as the first slide in the Lesson Slides. These slides often focus on developing fluency. For examples see:

- Grade K – *Teacher’s Guide* Lesson 16, page 323
- Grade 1 – *Teacher’s Guide* Lesson 6, page 127
- Grade 2 – *Teacher’s Guide* Lesson 1, page 21

Start

Develop Fluency

Materials For display: 10 counters, 1 plastic cup, 3 sticky notes

Why Reinforce that a starting quantity is a number of objects represented by a numeral from which to count on.

How For each problem, choose a child to put the given number of counters in a cup, write the number on a sticky note, and attach it to the cup. Have another child count out the counters to be added and place them beside the cup. Have children count on from the number on the cup to determine the total.

Solution
6, 6, 9

Listen for You can count on from the number on the cup because it tells how many are in the cup.

Use counters to add.

$4 + 2 = \underline{\quad}$

$3 + 3 = \underline{\quad}$

$8 + 1 = \underline{\quad}$

Cumulative Practice is built into each Unit for students to practice skills they learned earlier in the year. Cumulative pages are provided in the back of the *Student Worktext*.

Building Fluency

Show combinations within 5.

Materials none, children use their fingers

While waiting in line, have children use fingers on both hands to show combinations for 5. Ask: *Can you do it another way?* Repeat with other numbers within 5.

Fluency Practice

Practice adding and subtracting within 5.

- Find opportunities throughout the day to use children, objects, or pictures to tell addition and subtraction stories.
- Have children solve the problems.
- Have children say the equation that represents the problem.
- Also give children mental images of subtraction and addition problems within 5 to solve and sounds for children to add.

Practice finding addend pairs for 4–10.

Materials For each pair: Activity Sheet *Dot Cards 1: Small*, Activity Sheet *Number Cards 0 to 10: Small*

- Place dot cards for 1–10 in an array, faceup. Mix up the number cards for 4–10 in a stack facedown.
- One partner turns over a number card. The other partner chooses 2 dot cards that make that total. Partners alternate roles and repeat.

UNIT 1

Cumulative Practice Name: _____

Set 1: Multiply and Divide

Solve the problems. Multiply or divide.

1 $3 \times 5 = \underline{15}$ 2 $4 \times 6 = \underline{24}$ 3 $7 \times 3 = \underline{21}$

4 $36 \div 6 = \underline{6}$ 5 $28 \div 4 = \underline{7}$ 6 $64 \div 8 = \underline{8}$

7 Write 4 equations using the fact family with the numbers 7, 8, and 56.

$7 \times 8 = 56$ $8 \times 7 = 56$

$56 \div 8 = 7$ $56 \div 7 = 8$

Set 2: Use Properties to Multiply

Fill in the blanks to make each equation true.

1 $4 \times 2 \times 5 = \underline{2} \times 4 \times 5$ 2 $8 \times 6 = \underline{6} \times 8$

3 $3 \times (2 \times 4) = 3 \times \underline{8}$ 4 $2 \times (\underline{3} \times 4) = 2 \times 12$

5 $2 \times 18 = 2 \times \underline{9} \times 2$ 6 $\underline{4} \times 7 = (2 \times 2) \times 7$

Set 3: Use Patterns

Solve the problems. Fill in the blanks to complete the patterns. Then finish naming the rule.

1 8, 16, 24, 32, 40, 48, 56 Rule: Add 8

2 3, 6, 9, 12, 15, 18 Rule: Multiply by 3

3 The table shows a pattern in addends that have a sum of 10.

Identify the pattern by completing the statement below.

Write your answers in the blanks.

As one addend increases by 2, the other addend decreases by 2.

Addend	Addend	Sum
0	10	10
2	8	10
4	6	10
6	4	10

CP1

AC Metric 1C:
The materials are designed so that teachers and students spend sufficient time working with engaging applications, without losing focus on the Major Work of each grade.

i-Ready Classroom Mathematics is designed so that students and teachers spend a significant amount of time working with engaging applications that reinforce the grade-level work. The Explore and Develop sessions of the lesson teach through pedagogically appropriate applications. The Refine sessions also provide sufficient time working on engaging applications. Additionally, the curriculum includes multiple differentiation options to further student engagement with grade level content, such as Math Center Activities, Unit Games, Grade Level Games (K–2), Learning Games and Hands-On Activities. In *i-Ready Classroom Mathematics*, every student has a voice and an opportunity to engage with the content in a way that is meaningful to them.

Strategy lessons have a strong focus on problem-solving using the **Try–Discuss–Connect** instructional routine. Try It provides time for students to work with peers on a low-entry, high-ceiling problem that builds on prior knowledge. Discuss It time offers multilevel opportunities for students to discuss their learning prompts in a sociocultural context. Connect It makes ample use of multiple modes of communication and representations. Material throughout the *Student Worktext*, combined with the questions within the Try–Discuss–Connect instructional routine, engage students in thinking about contextual problems.

Try It provides time for students to work with peers on a low-entry, high-ceiling problem that builds on prior knowledge. Try It promotes productive struggle and perseverance. With plenty of blank space on the page, students are provided the opportunity to think and make sense of the problem and experience productive struggle.

Discuss It promotes purposeful discourse. Students are encouraged, through Discuss It prompts and discourse supports and tools, such as Discourse Cards or Discourse Cube, to engage in conversations with partner(s) and then the whole class. The *Teacher’s Guide* supports class discussion with specific question prompts that encourage students to compare, connect, picture and model the problem.

Connect It promotes making connections, reflections, and applications. The *Student Worktext* provides ample space for students to journal, write, apply, and self-reflect on what they have learned and then to apply it to new problems.

LESSON 8 SESSION 3

Develop Using Grouping to Multiply

Read and try to solve the problem below.

Nycole decorates a pair of gloves with plastic jewels. She glues 3 jewels onto each finger, including thumbs. How many jewels does she use?



TRY IT

DISCUSS IT

Ask your partner: Do you agree with me? Why or why not?

Tell your partner: I am not sure how to find the answer because ...

PICTURE IT

You can use a picture to help you understand the problem.

There are 5 fingers with 3 jewels on each: $5 \times 3 = 15$.
She has 15 jewels on each glove. There are 2 gloves.
 $15 \text{ jewels} \times 2 \text{ finds how many jewels are on both gloves altogether.}$



You could also multiply another way. There are 2 gloves with 5 fingers each: $2 \times 5 = 10$. There are 3 jewels on each finger: 10×3 also finds how many jewels she uses.

MODEL IT

You can write a multiplication problem: $2 \times 5 \times 3$.

You can use parentheses to show which two numbers you will multiply first.

$(2 \times 5) \times 3 \rightarrow 10 \times 3 = 30$

You could also choose to multiply different numbers first.

$2 \times (5 \times 3) \rightarrow 2 \times 15 = 30$

CONNECT IT

Now you will use the problem from the previous page to help you understand how to group factors in different ways.

- Use parentheses to show one way to group $2 \times 5 \times 3$.
- Use parentheses to show a different way to group $2 \times 5 \times 3$.

APPLY IT

Use what you just learned to solve these problems.

- Use parentheses to show two different ways to group $7 \times 2 \times 4$. Then choose one of the ways and show the steps to finding the product. Show your work.

REFLECT

Look back at your **Try It**, strategies by classmates, and **Picture It** and **Model It**. Which models or strategies do you like best for showing that you can change the grouping of the factors in a multiplication problem and still get the same product? Explain.

AC Metric 1C:
The materials are designed so that teachers and students spend sufficient time working with engaging applications, without losing focus on the Major Work of each grade.

(continued)

Application problems occur throughout *i-Ready Classroom Mathematics* to give students grade-level appropriate engaging contexts in which to better understand numerical concepts as students gain confidence with mathematical symbolism. In addition, some standards call for specific application. For example, see the *Teacher’s Guide* for the applicable grade level:

- **Grade K** – In Lesson 4 (pages 61–78) students count and make comparison statements about objects, compare pictorial representations of objects, then count objects and compare the count to a number.
- **Grade 1** – In Lesson 27 (pages 615–636), and in Lesson 28 (pages 639–660) students first add tens to any number and then apply what they have learned to add tens and ones.
- **Grade 2** – In Lesson 6 (pages 141–162) and in Lesson 7 (pages 165–186) students first practice modeling addition and subtraction of two-digit numbers and then apply what they have learned to add and subtract three-digit numbers and several two-digit numbers in Lessons 16, 17, 18 and 19 (pages 391–478).
- **Grade 3** – In Lesson 17 (pages 359–384) students solve problems involving multiplication and division. In Lesson 18 (pages 387–412), students first practice modeling solving two-step word problems, they then apply what they have learned to solve two-step word problems using the four operations.
- **Grade 4** – In Lesson 10 (pages 193–212), students first practice modeling solving multi-step word problems and then apply what they have learned to solve multi-step word problems. See also Lesson 28 (pages 579–598), for application of problem-solving models in time and money situations.
- **Grade 5** – In Lesson 25 (pages 509–528), students first practice converting measurement units and then apply what they have learned to solve world problems involving conversions in Lesson 26 (pages 531–550).

i-Ready Classroom Mathematics offers a complete suite of application options for students to experience and reinforce grade-level content in engaging ways:

- **Digital Math Tools** allow students to explore mathematics concepts using multiple models. Students are able to explore the tools and recognize relationships they may not have discovered on paper. Teachers will find the tools provide immediate and accurate models.
- Digital Interactive **Learning Games** with reports help students gain a rich conceptual understanding of mathematics concepts, improve fluency, and develop a positive relationship to challenges. Reports for teachers include Time on Task, Performance on Standards, Growth Mindset, Confidence, Productive Strategy, Self-Regulation.
- **Hands-On Activities** and **Visual Model** activities are built-in at hinge points in the lesson, where students experience a hands-on or visual approach to learning the mathematics concept of the session. **Deepen Understanding** is a consistent opportunity to build conceptual understanding of a key lesson concept by extending mathematical discourse.
- **Math Center Activities, Unit Games** and **Grade Level Games** (K–2) focus on students working collaboratively on critical thinking activities to apply strategies, skills and procedures.
- **Real-World Connections** in the *Teacher’s Guide* provide educators with discussion ideas to show connections between the mathematics the students are learning and the real world.
- **Literacy Connection, Reading Passage & Problems** are informational texts and engaging problems where students make cross-curricular connections to the mathematics they are learning in class.



Real-World Connection

Ask students to identify a situation in which they need to use subtraction to compare 2 three-digit numbers. Responses might include figuring out change from a purchase of more than \$100, pages left to read in a book, or comparing the size of an audience at two school play performances or sporting events.

Alignment Criterion 2: Materials must demonstrate authentic connections between content Standards and practice Standards.

AC Metric 2A: Materials address the practice Standards in such a way as to enrich the Major Work of the grade; practices strengthen the focus on Major Work instead of detracting from it, in both teacher and student materials.

i-Ready Classroom Mathematics instructional materials identify and utilize the Standards for Mathematical Practice (SMPs) to enrich mathematics content. All practice standards are embedded into content instruction and teacher support throughout each grade level. The **Try–Discuss–Connect** instructional routine and lesson design allows for almost every lesson of the *Student Worktext* to encourage students to make sense of problems, persevere in solving them, choose appropriate tools and models to represent problem situations, explain their reasoning, and attend to precision. SMPs are highlighted in the *Student Worktext* as appropriate to the content with all SMPs being addressed multiple times throughout each grade level.

As a quick reference, the **SMPs** are included in the **Table of Contents** in the front of the *Teacher’s Guide* and in the detailed **Correlations** in the back of *Teacher’s Guide*. These resources can also be found on the Program Implementation Tab of the *Teacher Toolbox*. Examples from the Grade 3 Table of Contents and Correlations are included here. Reviewers may also see:

- Grade K – pages A4–A9 and pages B16–B17
- Grade 1 – pages A4–A11 and pages B15–B16
- Grade 2 – pages A4–A9 and pages B15–B17
- Grade 3 – pages A4–A11 and pages B17–B19
- Grade 4 – pages A4–A9 and pages B16–B17
- Grade 5 – pages A4–A9 and pages B16–B17

Lesson 10	Understand the Meaning of Division	225a
3.OA.A.2, 3.OA.B.5		
Focus: M	SMP 1, 2, 3, 4, 5, 6	
Lesson 11	Understand How Multiplication and Division Are Connected	237a
3.OA.B.6		
Focus: M	SMP 1, 2, 3, 4, 5, 6, 7	
Lesson 12	Multiplication and Division Facts	249a
3.OA.A.4, 3.OA.C.7, 3.OA.A.3, 3.OA.B.5, 3.OA.B.6		
Focus: M	SMP 1, 2, 3, 4, 5, 6, 7, 8	

Correlations by Ready Classroom Mathematics Lesson (continued)

Lesson	Lesson Name	SMPs
Unit 4		
20	Understand What a Fraction Is	1, 2, 3, 4, 5, 6
21	Understand Fractions on a Number Line	1, 2, 3, 4, 5, 6, 7
22	Understand Equivalent Fractions	

To support educators, practice standards in each lesson are listed with the content standards on the **Lesson Overview**, the first page of each lesson in the *Teacher’s Guide*. In this SMP focus box, there are a group of practice standards that are embedded naturally because of the instructional routine. Also listed, are additional SMPs that receive focus during the lesson. For example, see:

- Grade K – Lesson 19, page 365a
- Grade 1 – Lesson 20, page 449a
- Grade 2 – Lesson 17, page 413a
- Grade 3 – Lesson 25, page 533a (shown)
- Grade 4 – Lesson 20, page 411a
- Grade 5 – Lesson 18, page 373a

Standards for Mathematical Practice (SMP)

SMPs 1, 2, 3, 4, 5, and 6 are integrated in every lesson through the *Try-Discuss-Connect* routine.*

In addition, this lesson particularly emphasizes the following SMPs:

- 5** Use appropriate tools strategically.
- 7** Look for and make use of structure.

*See page 455i to see how every lesson includes these SMPs.

Practice Standards 1, 2, 3, 4, 5, and 6 are infused through *i-Ready Classroom Mathematics’* unique lesson design and emphasized by the Try–Discuss–Connect instructional routine found in the Explore and Develop sessions. Also featured within the instructional routine and Fluency and Skills Practice, students may engage with SMPs 7 and 8 as they are encouraged to find patterns, use relationships and construct methods.

- **Try It** focuses on students making sense of a problem and then making models or building strategies of their choice to think through the problem. (SMPs 1, 2, 4, 5, 6)
- In **Discuss It** students share their thinking with a partner, which teachers use to guide o the whole class discussion. (SMPs 2, 3, 6)

AC Metric 2A: Materials address the practice Standards in such a way as to enrich the Major Work of the grade; practices strengthen the focus on Major Work instead of detracting from it, in both teacher and student materials.

(continued)

- In **Connect It** students make connections among multiple strategies and reflect on their learning before they apply their learning to new problems. (SMPs 2, 4, 5, 7, 8)
- **Fluency and Skills Practice**, found in the *Teacher Toolbox*, are for brief and targeted practice of a session’s content and focus on repeated reasoning to build number sense and mental mathematics skills. (SMPs 7)

For specific examples, see:

- **Standards for Mathematical Practice in Every Lesson**, in the *Teacher’s Guide*: For Grades K and 2–5, see pages 1i-1l; for Grade 1, see pages 1m-1p; for Grades 6–8, see pages 1q–1t.
- Also see the **Lesson 0** on the *Teacher Toolbox* for more detailed information on how the routine integrates most of the SMPs into daily instruction.

SMPs in the Try–Discuss–Connect Instructional Routine

<p>Try</p> <ul style="list-style-type: none"> • Make sense of problems and persevere in solving them. (SMP 1) • Reason quantitatively and abstractly. (SMP 2) • Model with mathematics. (SMP 4) • Use appropriate tools strategically. (SMP 5) • Attend to precision. (SMP 6) 	<p>Discuss</p> <ul style="list-style-type: none"> • Reason quantitatively and abstractly. (SMP 2) • Construct arguments and critique the reasoning of others. (SMP 3) • Attend to precision. (SMP 6) • Make use of structure. (SMP 7)* • Look for and express regularity in repeated reasoning. (SMP 8)* 	<p>Connect</p> <ul style="list-style-type: none"> • Reason quantitatively and abstractly. (SMP 2) • Model with mathematics. (SMP 4) • Use appropriate tools strategically. (SMP 5)
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*Students may engage with these SMPs as they find patterns, use relationships, and construct general methods.

Deepening Understanding, within Strategy lessons, gives educators an entire activity devoted to a SMP. Found in the *Teacher’s Guide*, Deepen Understanding highlights specific SMPs, providing mathematics discourse that goes beyond the lesson level questioning. The Ask/Listen For questions within the Deepen Understanding activity provide critical thinking questions to engage students’ in discussions about the topic using the highlighted SMP. Each opportunity builds conceptual understanding of key lesson concepts by extending the SMPs.

Every unit in grades 2–8 ends with a **Math in Action** lesson that combines numerous standards in a robust problem-solving task. In each of these lessons, students are specifically asked to reflect on the Standards for Mathematical Practices. See any Math in Action lesson at the end of any unit grades 2–5 in the *Student Worktext* or *Teacher’s Guide*. For examples see:

- Grade 2 – Unit 1, pages 124a–131
- Grade 3 – Unit 2, pages 284a–291
- Grade 4 – Unit 2, pages 214a–221
- Grade 5 – Unit 1, pages 104a–111

Deepen Understanding
Find Area of Combined Rectangles
SMP 7 Look for structure.

When discussing the model shown in *Picture It*, prompt students to compare this method to breaking apart arrays.

Ask Think of the whole garden as an array. What multiplication expression could model it? Fill in the blanks to show how you could rewrite the expression using $5 + 4 = 9$ to break apart the array: $__ \times (__ + __)$.

Listen for The garden array could be modeled by 3×9 or $3 \times (5 + 4)$.

Ask Look at the way the rectangle is broken into two parts. Fill in the blanks to write an expression for the area of the rectangle: $__ \times (__ + __)$.

Listen for The area of the rectangle is $3 \times (5 + 4)$.

Ask How is this way of finding area like breaking apart arrays? How is it different?

Listen for We broke apart a large array into two smaller arrays. Here, we begin with two small rectangles that share a side and join them together to make one large rectangle. The same expression, $3 \times (5 + 4)$, can be used for both cases.

REFLECT

- **Persevere** Students should recognize that this problem is about area because it concerns covering an amount of space. **SMP 1**
- **Argue and Critique** Students should recognize that they cannot build a porch where one side is longer than the lawn, which is only 10 feet. **SMP 3**

In grades 1–5, rubrics in the *Teacher’s Guide* for the **Unit Review Performance Tasks** highlight different SMPs used in the task. See the following examples in the *Teacher’s Guide*:

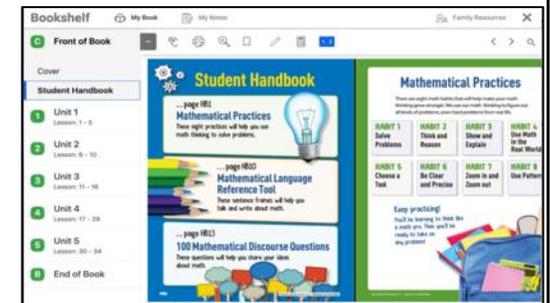
- Grade 1 – Unit 2 Put It Together, pages 564–564a
- Grade 2 – Unit 2 Unit Review Performance Task, pages 300–300a
- Grade 3 – Unit 3 Unit Review Performance Task, pages 452–452a
- Grade 4 – Unit 1 Unit Review Performance Task, pages 102–102a
- Grade 5 – Unit 1 Unit Review Performance Task, pages 114–114a

AC Metric 2B:
Materials
attend to the
full meaning of
each practice
Standard.

Within *i-Ready Classroom Mathematics*, careful and purposeful attention has been paid to the full meaning of each Standard for Mathematical Practice (SMP); each is attended to thoughtfully and individually, with their application embedded within the Try–Discuss–Connect instructional routine. Many SMPs are highlighted in the Deepen Understanding feature in the *Teacher’s Guide*, and in the reasoning built into the Fluency and Skills Practice found in the Develop sessions (on the *Teacher Toolbox*). For example,

- **SMP 1:** In the Try It part of the instructional routine, students make sense of problems and often persevere in solving these problems that require new thinking. See Try It in any Develop session.
- **SMP 2:** Students are asked to reason both abstractly and quantitatively as they think through problems and critical-thinking questions in each lesson. This occurs through the partner and classroom conversations that prompt students to make connections between multiple representations. In addition, the Connect It questions in Develop sessions frequently ask students to analyze representations abstractly and quantitatively. See Discuss It and Connect It questions in any Develop session.
- **SMP 3:** Throughout each lesson, students are asked to construct viable arguments and critique the reasoning of others with a partner and the whole class, particularly during the Discuss It portion of the Try–Discuss–Connect instructional routine. Students also have the opportunity to develop SMP3 routinely in answer error-analysis problems in the Refine sessions, and when using the Discourse Cards, Cube or 100 Mathematical Discourse Questions. See Discuss It in the *Teacher’s Guide* for any lesson.
- **SMP 4:** Students are given a variety of situations that require them to model with mathematics. Try It, Model It and Picture It activities throughout each lesson provide scenarios that range from basic computations that can be modeled in many ways, to more complex real-world situations, particularly in Math in Action lessons that require students to truly think about how to best represent the situation mathematically.
- **SMP 5:** Students are encouraged to use appropriate tools strategically by self-selecting a tool to support their thinking. Strategic use of tools is highlighted in whole class conversations and in the *Teacher’s Guide* Selecting and Sequencing feature to help all students make strategic and efficient decisions. Digital Math Tools, available in the Student Digital Experience, support concepts becoming clearly defined and support depth of understanding as students explore the dynamic models and representations.
- **SMP 6:** Students naturally attend to precision during partner and small group discussions and learn from peers’ explanations and questions. The Try–Discuss–Connect instructional routine prompts teachers to guide students to attend to precision, not only in terms of mathematical accuracy, but in precision of language. As students describe strategies and respond to questions in oral and written form, questions provided in the *Teacher’s Guide* ask students to think of other ways to express ideas using more precise mathematical language.
- **SMP 7:** Questions in both the *Student Worktext* and *Teacher’s Guide* encourage students to not only look for structure but use structure to be more efficient or better understand an idea. This is also true in the Fluency and Skills Practice corresponding to each Develop session.
- **SMP 8:** Look for and express regularity in repeated reasoning requires students to use patterns to arrive at mathematical ideas and insights. This is particularly evident through questions in the *Student Worktext* and *Teacher’s Guide*, as well as questions in the Fluency and Skills Practice questions corresponding to the Develop sessions.

i-Ready Classroom Mathematics includes a **Student Handbook** that provides a description of all of the SMPs in student-friendly language. For educators, the Student Handbook is available on the *Teacher Toolbox* under the Program Implementation tab. For students, the Student Handbook is located in the online Bookshelf found in the Student Digital Experience.



AC Metric 2C:
Materials
support the
Standards’
emphasis on
mathematical
reasoning.

i-Ready Classroom Mathematics is built on a foundation of student discourse and sharing of mathematical reasoning. Throughout each lesson, students construct viable arguments verbally and in writing, and analyze the arguments of others using grade-level mathematics. This is guided in the *Student Worktext* as well as through partner and whole class discussions as described below. *i-Ready Classroom Mathematics* uses appropriate vocabulary to refer to mathematical concepts, tools, and practice standards. The specialized language of mathematics is frequent, consistent, and accurate throughout student-facing and teacher-facing materials and is based on the standards in the lesson.

The **Try–Discuss–Connect** instructional routine used throughout *i-Ready Classroom Mathematics* (presented in Lesson 0 on the *Teacher Toolbox*) and explained further in the Try–Discuss–Connect instructional routine Resources section under the Program Implementation tab of the *Teacher Toolbox*, establishes classroom behaviors that promote mathematical discourse as well as guide students to construct viable arguments and critique the reasoning of others. Students construct arguments as they engage in partner talk and whole-class discussions comparing models and strategies explained by one another as well as the multiple approaches presented in the *i-Ready Classroom Mathematics* curriculum.

Questions appear throughout each lesson in the *Student Worktext* to engage students in explaining their thinking and critiquing the reasoning of others. These questions present themselves in a pedagogically appropriate way in each grade-level. In the *Teacher’s Guide*, these questions are followed by an expected response, language to listen for in student responses, and ideas that should come out of the discussion.

- **Connect It** questions in all Develop sessions always include an item for students to explain their reasoning or make connections to a standards-aligned strategy in the book.
- **Reflect** questions in the Explore and Develop sessions of each lesson provide opportunities for students to first talk about the question with a partner and then record their response. Students are encouraged to explain their thinking and critique the reasoning of others.
- **Pair/Share** questions in the Refine sessions encourage student discussion; in addition, every Refine session concludes with a mathematics journal question that asks students to solve the problem and then explain their thinking. This encourages students to construct viable arguments as they analyze and critique the reasoning of others.
- Reflect questions in the **Math in Action** lessons (Grades 2–5) at the end of each unit prompt students to think about the SMPs in problem-specific contexts.

Whether students are thinking about conceptual ideas, working on procedural processes, or applying their learning to real-world problems, they will have opportunities to find structure, patterns, relationships and construct reasoning. As students make connections between multiple strategies, they may make use of **structure** (SMP 7) as they find patterns and use relationships to solve particular problems. Students may also use repeated **reasoning** (SMP 8) as they construct and explore general methods for procedural processes. SMP 7 and 8 may be emphasized in selected problems thought the lesson. As students look for patterns and discover general methods, they are always encouraged to consider the reasonableness of their work.



AC Metric 2C:
Materials
support the
Standards'
emphasis on
mathematical
reasoning.

(continued)

The *i-Ready Classroom Mathematics* authors have written a range of **whitepapers** to explain how to promote and elicit mathematical reasoning from students. The authors approach it from various angles, including teacher moves that promote mathematical thinking and how to select and sequence student solutions to facilitate productive mathematics discourse. These whitepapers assist teachers, coaches and administrators in establishing strategies for engaging students in constructing viable arguments and analyzing the arguments of others. These can be found at [i-ReadyCentral.com/Classroom-Math](https://www.i-ready.com/Classroom-Math) and titles include:

- *Integrating Effective Teaching Practices: Teacher Moves that Engage Students in Discourse and Mathematical Thinking* by Grace Kelemanik and Amy Lucenta
- *Fostering Student Engagement in the Mathematical Practices: Using Instructional Routines that Develop Productive Habits for Success* by Mark Ellis
- *Orchestrating Mathematical Discourse to Enhance Student Learning* by Gladis Kersaint
- *Selecting and Sequencing Student Solutions: Facilitating Productive Mathematics Discussions in the Classroom* by Gladis Kersaint
- *Culturally Responsive Mathematics Teaching*, by Mark Ellis
- *Recognizing Misconceptions as Opportunities for Learning Mathematics with Understanding*, by Mark Ellis

The curriculum provides a mathematical Discourse Cube, Discourse Cards, and a Student Handbook with 100 Mathematical Discourse Questions and Mathematical Language Reference tool, to help support teacher's in engaging students in constructing viable arguments and asking questions to understand and critique the reasoning of others. These questions can be used in multiple ways:

- The **Discourse Cube** provides 6 questions using simpler language to support younger students in explaining their reasoning and critiquing the reasoning of others. In addition to the three questions shown at the right, other sides pose these questions:
 - "Do you agree? Why?"
 - "Who did it like you?"
 - "?" (for "What questions do you want to ask?")
- The **Discourse Cards** (shown below) provides questions and conversation starters grouped into four clusters organized around the mathematical practices: Make Sense of Problems and Persevere; Reason, Explain, and Critique; Reflect and Connect; and Sentence Starters. The Discourse Cards are available in English and Spanish. A digital version of the cards can be found under the Program Implementation Tab of the *Teacher Toolbox*. Examples follow:



AC Metric 2C: Materials support the Standards' emphasis on mathematical reasoning.

(continued)

Student Handbook, located in the Student Digital Experience (Bookshelf) and Teacher Digital Experience (*Teacher Toolbox*), includes resources such as **Mathematical Practices** and **100 Mathematical Discourse Questions** to serve as reference tools for students. **Mathematical Language Reference Tool** lists sentence frames by unit for students to use when speaking and writing about the mathematics concepts they are learning.

i-Ready Classroom Mathematics integrates language and mathematics instruction to support all students in learning. Understanding mathematics and engaging in mathematical discussions require students to communicate ideas using both academic and math-specific vocabulary and language.

i-Ready Classroom Mathematics provides instruction and practice to help students acquire and develop vocabulary.

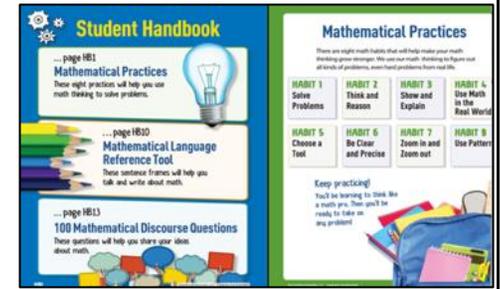
See any Lesson Overview in the *Teacher's Guide* for **Language Objectives** and **Lesson Vocabulary**:

- Grade K – Lesson 5, page 79a
- Grade 1 – Lesson 8, page 163a
- Grade 2 – Lesson 3, page 51a
- Grade 3 – Lesson 2, page 25a
- Grade 4 – Lesson 10, page 191a
- Grade 5 – Lesson 14, page 269a

Develop Language instructional support in the *Teacher's Guide* for Develop sessions, provides targeted vocabulary and language support to ensure mathematics content is accessible to all students. For examples see the *Teacher's Guide*:

- Grade K – Lesson 5, page 85
- Grade 1 – Lesson 2, page 39
- Grade 2 – Lesson 5, page 105
- Grade 3 – Lesson 10, page 231 (shown)
- Grade 4 – Lesson 3, page 37
- Grade 5 – Lesson 5, page 87

Teachers are provided with examples of what English Learners can do based on their English language proficiency levels in connection with the standards. For examples, see the Unit Overview **Language Expectations** in the *Teacher's Guide*. Example shown is from Grade 3, Unit 3.



Develop Language
Why Clarify the idiom to *change one's mind*.
How Read problem 2 aloud and focus on the first sentence. Ask: *What does changes his mind mean?* Have students provide explanations in their own words. Reinforce that *to change your mind* is an idiom, a phrase that has a special figurative meaning. In this case it means that Marc decided not to do what he first thought, but to try a new arrangement of oranges into bags.

Language Expectations
 Standard 3.MD.C.7 Relate area to the operations of multiplication and addition.

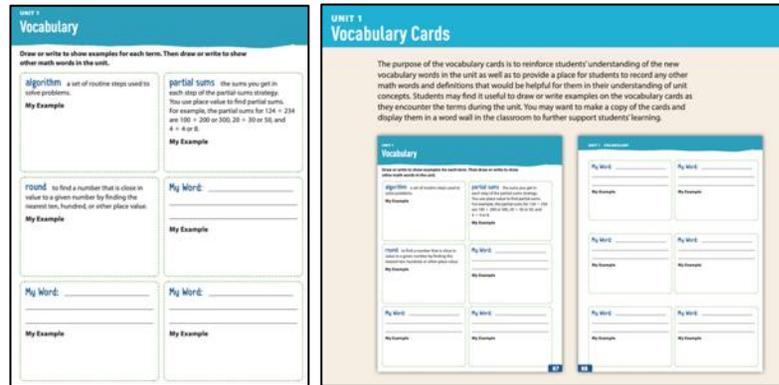
LANGUAGE DOMAINS	Beginning Level 1	Intermediate Level 2	Level 3	Advanced/Advanced High Level 4	Level 5
LISTENING	Follow simple oral directions to decompose a figure into two non-overlapping rectangles using a geoboard and color tiles.	Follow simple oral directions to decompose a figure into two non-overlapping rectangles using a geoboard.	Follow oral directions to decompose a figure into two non-overlapping rectangles using grid paper.	Follow detailed oral directions to decompose a figure into non-overlapping rectangles using grid paper.	Follow complex oral directions to decompose a figure into non-overlapping rectangles using grid paper.
SPEAKING	State real-world examples of area using pictures, photographs, or realia.	State real-world examples of area using sentence starters, word banks, or illustrations.	Explain how the area of a rectangle is found, using color tiles, grid paper, or geoboards.	Explain how multiplication can be used to find the area of a rectangle, by using a word bank.	Explain in detail why multiplication can be used to find the area of a rectangle, by using a word bank.
READING	Match labels signifying length and width that are provided in a word problem to a rectangular figure using grid paper.	Match labels signifying length and width that are provided in a word problem to rectangular figures using grid paper.	Locate words related to area in real-world word problems using a graphic organizer.	Recognize area in a real-world word problem and solve with a partner.	Interpret real-world word problems to determine the area of rectangular figures using a picture or grid paper.
WRITING	Illustrate the area described in a simple word problem with a partner.	Illustrate the areas described in real-world word problems with a partner.	Illustrate and label areas described in real-world word problems with a partner.	Describe the process for finding the area of a rectangular figure using color tiles, a geoboard, or grid paper.	Detail the process for finding the additive area of a rectangular figure through decomposing using grid paper.

AC Metric 2C: Materials support the Standards' emphasis on mathematical reasoning.

(continued)

Build Your Vocabulary occurs at the beginning of each unit to provide opportunities for students to activate prior knowledge. See the Beginning of the Unit section for examples. *Teacher's Guide* support for Build Your Vocabulary activities includes suggestions for interactive implementation ensuring that students build on prior understandings and refine their knowledge of key terms. It also provides an Academic Vocabulary Routine with Cognate Support for ELs. The *Teacher's Guide* helps teachers actively engage their students with mathematical and academic vocabulary in ways that encourage precise and accurate use.

The end of every unit (in grades 1–5) contains **Vocabulary Cards** in the *Student Worktext* and in the *Teacher's Guide*. These include opportunities for students to create cards with additional words that they want to remember. See *Student Worktexts*, *Teacher's Guides*, or the Instruction & Practice column for the End of Unit Resources on the *Teacher Toolbox* for Grades 1–5.



The Teacher Toolbox provides K–8 access to materials that support students organize their thinking before writing, speaking, reading or listening.

- **Activity Sheets** premade resources, such as graphic organizers, one-inch grid paper, ten frames, and hundreds charts, to reduce prep time and support learning.
- **Graphic Organizers** are available in PowerPoint format for educators to display for the class during whole-group or small-group think time and during discussions.

Students and teachers have access to an academic vocabulary **Glossary** in English and Spanish with visuals as well as a **Multilingual Glossary**. The Multilingual Glossary includes an English mathematical glossary with the corresponding words provided in **Arabic, Chinese, French, Haitian Creole, Portuguese, Russian, Spanish, Tagalog, Urdu, and Vietnamese**. The English/Spanish Glossary is available in the back of the *Student Worktext*.

Build Your Vocabulary

Math Vocabulary

- Display, point to, and read each Review word aloud. Have students repeat chorally.
- Read the directions aloud.
- Play "I'm Thinking of a Word" with the Review words. Stress that answers are not to be said aloud. Read each clue aloud. When you get to the blank, snap or clap as a signal to students to write the word you are thinking of in the table. As in the first clue, begin each clue with "I'm thinking of a word. Find each clue with: What is the word? Write it."

1. I'm thinking of a word. It is what you do when you want to know how long something is or how tall something is. The word I'm thinking of is measure. What is the word? Write it in the table.

2. This is a way to record data using pictures. The word I'm thinking of is picture graph.

3. It means how long something is. The word I'm thinking of is length.

4. This is what you use to record data using bars. The word I'm thinking of is bar graph.

5. It describes a standard of measurement. An inch and a meter are examples. The word I'm thinking of is unit.

Write the Word	Describe the Word

Academic Vocabulary

Put a check next to the academic words you know. Then use the words to complete the sentences.

collect interesting disagree strategy

1. To complete the bar graph, I need to collect more data.

2. I disagree with the answer. I have a different answer and can prove my solution.

3. I used addition as a strategy to find the results.

4. I enjoy reading, especially when the story or article is interesting.

Academic Vocabulary	Spanish Cognates	Haitian Creole Cognates
collect	colectar	kolekte
interesting	interesante	entresan
strategy	estrategia	estratesaj

Academic Vocabulary Routine

See Connect Language Development to Mathematics at the start of Unit 1 for the full routine.

1. Assess prior knowledge.
2. Pronounce the words.
3. Define the words.
4. Use the words.

Cognate Support

- Ask students if any of the academic words sound similar to a word in their language. Have students circle those words.

UNIT 2 Build Your Vocabulary

Review more content on plus sign

My Math Words

Write the words that are related to the symbol. Then use one of the words in a sentence.

+

When I add, I _____

My Academic Words

Use the academic words to complete the sentences.

choose solve sort

1. When you _____ a problem, you find the answer.

2. I can _____ the ducks into red and blue ducks.

3. You can _____ a partner to work with.

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Alignment Criterion 3: Materials must provide supports for English Language Learners and other special populations.

AC Metric 3A: Support for English Language Learners and other special populations is thoughtful and helps those students meet the same Standards as all other students. The language in which problems are posed is carefully considered.

i-Ready Classroom Mathematics provides closely knit connections between language and content supports for all students especially English Learners and special populations throughout the *Student Worktext*, Student Digital Experience, *Teacher’s Guide* and Teacher Digital Experience.

Language Routines are integrated at appropriate places throughout lessons in the *i-Ready Classroom Mathematics Try–Discuss–Connect* instructional routine (see the Language Routines to the right of the Try–Discuss–Connect map). These research-based language routines support students as they use the specialized language of mathematics and academic language. The language routines promote opportunities for students to speak, listen, read and write about mathematical concepts, situations and ideas. References to the Language Routines are inserted into key places in the *Teacher’s Guide*.

• This is a good opportunity to have students use the *Turn and Talk* routine to discuss the important quantities or relationships in the problem. [There are more than 200 shells.] Then have students share with the class.

Try–Discuss–Connect Routine		Language Routines
TRY IT  <ol style="list-style-type: none"> 1 Make sense of the problem. 2 Solve and support your thinking. 		<ul style="list-style-type: none"> • Three Reads • Turn and Talk • Co-Craft Questions and Problems <i>Optional</i>
DISCUSS IT  <ol style="list-style-type: none"> 3 Share your thinking with a partner. 4 Compare class strategies. 		<ul style="list-style-type: none"> • Turn and Talk • Collect and Display • Say It Another Way • Compare and Connect
CONNECT IT  <ol style="list-style-type: none"> 5 Make connections and reflect on what you have learned. 6 Apply your thinking to new problems. 		<ul style="list-style-type: none"> • Collect and Display • Turn and Talk • Say It Another Way

At the beginning of every unit in the *Teacher’s Guide*, the chart titled **Language Expectations** for differentiation provides teachers with examples of what Beginning, Intermediate, and Advanced Language Learners can do based on their English Language Proficiency Level as it pertains to a focus standard in the unit for each language domain. See the **Connect Language Development to Mathematics** section in the Beginning of the Unit in the *Teacher’s Guide*.

Language Objectives appear in the Lesson Overview of every lesson. These objectives give explicit guidance to educators on how students can demonstrate mastery of the lesson content through communication, using the vocabulary from the lesson. For examples, see the Lesson Overview in the *Teacher’s Guide* at the beginning of any lesson.

Language Objectives

- Read the division symbol (\div) as *divided by*.
- Write and interpret division equations.
- Explain division as sharing equally.
- Tell stories or describe contexts for a given division expression.

ELL Language Expectations

Standard 3.NF.A.3 Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.

LANGUAGE DOMAINS	Beginning		Intermediate		Advanced/Advanced High	
	Level 1	Level 2	Level 3	Level 4	Level 5	
LISTENING	Follow simple oral directions to divide a rectangular whole into equal parts.	Follow simple oral directions to divide a rectangular or circular whole into equal parts.	Follow oral directions to divide rectangular or circular whole figures into equal parts to compare the resulting fractions.	Follow oral directions to build sets of equivalent fractions from visual models.	Follow detailed oral directions to build sets of equivalent fractions from visual models.	
SPEAKING	State two equivalent fractions using a number line or area model.	State equivalent fractions by partitioning a number line or area model.	Describe how two fractions are equivalent using a word bank and number line or area model.	Describe simple equivalent fractions using a number line or visual model.	Generate equivalent fractions and explain why the fractions are equivalent.	
READING	Match words associated with fractions (e.g., <i>numerator, denominator, part</i>) to illustrated word cards with a partner.	Find word cards to complete sentences explaining the steps used to find equivalent fractions with a partner.	Sequence sentences explaining how to find equivalent fractions with a partner.	Identify the mistake in a paragraph explaining how to find equivalent fractions with a partner.	Compare two explanations for finding equivalent fractions with a partner.	
WRITING	Fill in the blank given an equation expressing an equivalence between two fractions with one of the numbers missing, using a picture.	List an equivalent fraction given a visual representation of a fraction.	List equivalent fractions given a visual representation of a fraction.	Compare fractions with the same denominator using pictures, words, and numbers.	Compare fractions with the same numerator using pictures, words, and numbers.	

AC Metric 3A: Support for English Language Learners and other special populations is thoughtful and helps those students meet the same Standards as all other students. The language in which problems are posed is carefully considered.

(continued)

Develop Academic Language instructional support in the *Teacher's Guide* for Develop sessions, provides targeted vocabulary and language support to ensure mathematics content is accessible to all students. For examples, see the *Teacher's Guide*:

- Grade K – Lesson 5, page 85
- Grade 1 – Lesson 2, page 39
- Grade 2 – Lesson 5, page 105
- Grade 3 – Lesson 10, page 231
- Grade 4 – Lesson 3, page 37
- Grade 5 – Lesson 5, page 87

Before every session of each lesson, **Differentiated Instruction** language support and scaffolds are provided in a chart format. These Language Development charts provide content-specific guidance for the different language proficiency levels, so teachers can address language needs throughout the lesson and provide strategic scaffolds for different language domains. These charts appear on the *Teacher's Guide* page immediately preceding the applicable session, with a yellow arrow noting specific parts of the session where the scaffolds will be used.

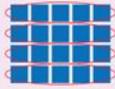
- Grade K – Lesson 5, page 84
- Grade 1 – Lesson 2, page 38
- Grade 2 – Lesson 5, page 104
- Grade 3 – Lesson 10, page 230
- Grade 4 – Lesson 3, page 36
- Grade 5 – Lesson 5, page 86

Each unit in the *Student Worktext* provides a **Build Your Vocabulary** page that provides a review of previously-taught mathematics vocabulary and activities that develop the use of academic vocabulary and how both academic and mathematical terms work together to communicate understanding of mathematics ideas. These pages are supported in the *Teacher's Guide* with additional guidance on language development, including **cognate support** and suggestions for educators to use with students during the lesson. See the Build Your Vocabulary pages in the Beginning of the unit section in the *Teacher's Guide*. The full academic language routine is found in the Professional Learning section of Unit 1 for all grades.

Develop Language

Why Clarify the idiom *to change one's mind*.
How Read problem 2 aloud and focus on the first sentence. Ask: *What does changes his mind mean?* Have students provide explanations in their own words. Reinforce that *to change your mind* is an idiom, a phrase that has a special figurative meaning. In this case it means that Marc decided not to do what he first thought, but to try a new arrangement of oranges into bags.

ELL English Language Learners: Differentiated Instruction Prepare for Session 2 Use with *Model It*.

Levels 1–3	Levels 2–4	Levels 3–5
<p>Listening/Speaking Read <i>Model It</i> problem 3 aloud. Give 20 unit tiles to pairs. Review rows and columns. Have students build an array of four rows of five tiles. Display the same. Ask: <i>What multiplication fact is represented by the array?</i> Record: $4 \times 5 = 20$. Explain that the same array can also represent division. Represent the groups as shown. Display: $20 \div 4 = 5$. Ask: <i>What does the four represent in the array—the groups or the size of the group? What does the five represent—the groups or the size of the group?</i> Display $20 \div 5 = 4$. Repeat the same two questions.</p> 	<p>Listening/Speaking Read <i>Model It</i> problem 3 chorally with students. Give 20 unit tiles to pairs. Have pairs build an array of four rows of five tiles. Display the same. Ask: <i>What multiplication fact is represented by the array?</i> Guide students to answer with words or phrases. Record: $4 \times 5 = 20$. Explain that the same array can also represent division. Draw the groups as shown. Display $20 \div 4 = 5$. Ask: <i>What does the four represent in the array? What does the five represent?</i> Display $20 \div 5 = 4$. Repeat the same two questions.</p> 	<p>Speaking/Writing Have students read <i>Model It</i> problem 3 independently. Give 20 unit tiles to pairs. Have pairs build an array of four rows of five tiles. Display the same. Ask: <i>What multiplication fact is represented by the array?</i> Record: $4 \times 5 = 20$. Explain that the same array can also represent division. Draw the groups as shown. Display $20 \div 4 = 5$. Have students use complete sentences to tell what the four and five represent in the array. Display $20 \div 5 = 4$. Have students tell what the five and four represent.</p> 

Academic Vocabulary	Spanish Cognates	Haitian Creole Cognates
arrange	<i>no Spanish cognate</i>	ranje
critical	crítico	kritik
discuss	discutir	diskite
estimate	estimar	estime

AC Metric 3A: Support for English Language Learners and other special populations is thoughtful and helps those students meet the same Standards as all other students. The language in which problems are posed is carefully considered.

(continued)

Visual Models and representations are included throughout the curriculum, whether to support understanding of problem contexts or to represent mathematical ideas of lessons. Review any lesson in the *Teacher’s Guide* or *Student Worktext* for visual representations and examples. Visual Model activities in the *Teacher’s Guide* occur frequently and provide other visual strategies to use with diverse student populations.

- Grade K – Lesson 25, page 496
- Grade 1 – Lesson 22, page 503
- Grade 2 – Lesson 18, page 451
- Grade 3 – Lesson 5, page 111 (shown)
- Grade 4 – Lesson 14, page 297
- Grade 5 – Lesson 9, page 168

Students and teachers have access to an academic vocabulary **Glossary** in English and Spanish with visuals as well as a Multilingual Glossary. The **Multilingual Glossary** includes an English mathematical glossary with the corresponding words provided in Arabic, Chinese, French, Haitian Creole, Portuguese, Russian, Spanish, Tagalog, Urdu, and Vietnamese. The English/Spanish Glossary is available in the back of the *Student Worktext*. Both glossaries are available on the Bookshelf of the Student Digital Experience and in the Program Implementation tab of the *Teacher Toolbox*.

Numerous *i-Ready Classroom Mathematics* resources are available in Spanish. These resources are available on the *Teacher Toolbox* and can be used to further support Spanish-speaking students and families, particularly in bilingual or dual language programs. The student and teacher materials listed below are provided in Spanish, including suggested student answers, responses to discourse questions, vocabulary, problems and solution strategies, and teaching support. See the *Teacher’s Guide* Program Overview pages (front of *Teacher’s Guide*) for complete chart.

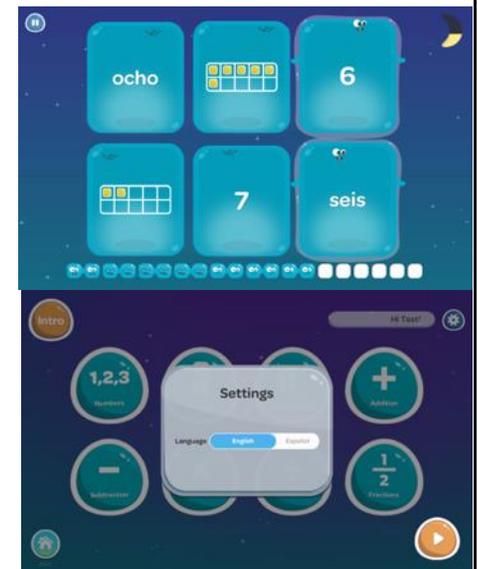
Student Resources available in Spanish:

- *Student Worktext*
- Family Letters (also in English, Spanish, Tagalog, Russian, Arabic, Mandarin, Korean, Vietnamese. Portuguese, Somali and Amharic will be available back-to-school 2022.)
- Fluency and Skills Practice
- Math Center Activities
- Enrichment Activities
- Interactive Learning Games
- Unit Games
- Literacy Connections (passages and activities)
- Discourse Cards and Discourse Cubes
- Adaptive Diagnostic Assessment
- Cumulative Practice
- Assessment Practice

Visual Model
 Illustrate reordering factors in the robot problem.

If . . . students have trouble understanding why $6 \times 2 = 2 \times 6$,
 Then . . . use drawings to group the antennas differently.

- Draw six rectangle “robots” in a vertical column as shown. Draw two antennas on each robot.
- Explain that if we group the antennas by which robot they belong to, there are six groups of two with twelve in all. Point to the drawing as you explain: *These two antennas belong to this robot, these antennas belong to this robot, and so on.*
- Explain that another way to organize all the antennas is to group the left antennas together and the right antennas together. Label each of the antennas “L” or “R” as shown. Then draw a circle around each of the two groups.
- Elicit that the drawing represents $2 \times 6 = 12$. Ask: *How many groups are there now? How many antennas in each group? How many antennas are there in all?*



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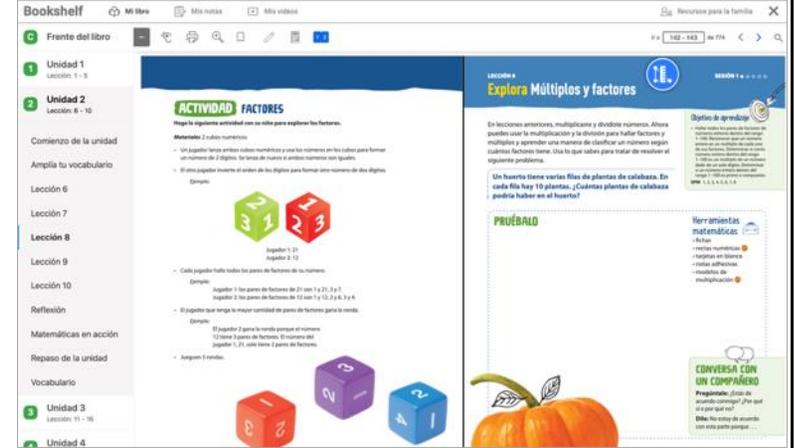
- Multilingual Glossary
- Bilingual Glossary
- Unit Flow and Progression Videos (closed-captioned in English and Spanish and are available to parents)
- Lesson Quizzes
- Assignable Comprehension Checks
- Mid-Unit and Unit Assessments

Teacher Resources available in Spanish:

- *Teacher’s Guide* – including instructional teacher talk, small group activities, vocabulary support and activities (see examples)
- Lesson Slides
- Activity Sheets
- Tools for Instruction (reteaching)
- Prerequisite Lessons
- Math Background Notes
- Unit Flow and Progression Videos (closed-captioned in English and Spanish and are available to parents)
- Lesson 0 resources (Try–Discuss–Connect instructional routine)
- Multilingual Glossary
- Bilingual Glossary

Teachers have access to all content presented to students in Spanish to ensure they are equipped with the tools needed to be successful, including direct instruction in the form of teacher talk, assessments, activity sheets, and small group differentiation. Please see print Spanish *Teacher’s Guides* for examples.

The districts we support have a diverse group of teachers that work with biliteracy/dual language programs. Their level of Spanish is very diverse; therefore, the math background will be available



Support Whole Class Discussion

Engage children in a discussion about the skills with questions such as:

- *¿Qué destrezas parecen relacionarse con algo que ya saben?*
- *¿Qué destrezas creen que usarían en su vida diaria? ¿Por qué?*

Support Vocabulary Development

1 Antes de presentar el organizador gráfico, haga cuatro modelos que repliquen las respuestas anotadas en los recuadros que usan fichas y marcos de 10. Colóquelos en cuatro puestos diferentes del salón.

Pida a los niños que lean en voz alta a la vez que usted lee. Pídales que señalen la frase *decenas y unidades* que está en el centro del organizador gráfico. Pida a los niños que vayan a cada puesto y observen cómo se muestran las decenas y las unidades en los modelos. Los niños pueden anotar los ejemplos en sus organizadores gráficos mientras van a cada puesto. Anime a los niños a comentar cómo el número de fichas (10 o 20) es el mismo en los dos recuadros, pero que hay diferencias en los dibujos y en las maneras de escribir los números.

Lesson Vocabulary

- **centésimas (decimales)/centésimos (fracciones)** partes que se forman cuando un entero se divide en 100 partes iguales.
- **décimas (decimales)/décimos (fracciones)** partes que se forman cuando se divide un entero en 10 partes iguales.

Repase los siguientes términos clave.

- **denominador** número que está debajo de la línea de una fracción. Dice cuántas partes iguales hay en el entero.
- **fracción** número que nombra partes iguales de un entero. Una fracción nombra un punto en una recta numérica.
- **fracciones equivalentes** dos o más fracciones diferentes que nombran la misma parte de un entero y el mismo punto en una recta numérica.
- **numerador** número que está encima de la línea de una fracción. Dice cuántas partes iguales se describen.

AC Metric 3A: Support for English Language Learners and other special populations is thoughtful and helps those students meet the same Standards as all other students. The language in which problems are posed is carefully considered.

(continued)

in Spanish. Key terms and ideas are clearly stated in Spanish, allowing non-native Spanish speakers or teachers who need to refresh their Spanish with the tools they need to be successful.

All teacher talk, such as Ask and Listen For (Pregunte/Respuestas deben incluir), are in Spanish. This provides teachers correct mathematical and academic language for the day-to-day instruction.

Support Whole Class Discussion and Common Misconceptions provide Spanish Teacher prompts to support instruction.

Common Misconception If children are confused by the words and numerals (1, ones and 10, tens), then explain the idea using different phrases as you refer to models. For example: *Un grupo de diez se llama "decena" y se forma usando diez unidades. Cuando se juntan 10 de las unidades se forma un grupo llamado "decena".* Encourage children to explain the concept using their own words as they refer to the models.

Support Whole Class Discussion
Compare and connect the different representations and have students identify how they are related.

Pregunte ¿Cómo muestra su modelo la cantidad de dinero que tiene Carmen? ¿Y la cantidad que tiene Troy? ¿Y la cantidad que tienen entre los dos?
Respuestas deben incluir Los estudiantes deben darse cuenta de que una respuesta precisa incluirá fracciones con denominadores de 10 y 100 y representaciones que muestren $\frac{4}{10}$, $\frac{50}{100}$ y la suma de $\frac{4}{10}$ más $\frac{50}{100}$ para mostrar el total.

PICTURE IT & MODEL IT
If no student presented these models, connect them to the student models by pointing out the ways they each represent:

- $\frac{4}{10}$ of a dollar
- $\frac{50}{100}$ of a dollar
- the sum of $\frac{4}{10}$ and $\frac{50}{100}$

Pregunte ¿Cómo representa cada modelo 4 décimos? ¿Cómo representa cada modelo 50 centésimos? ¿Y la suma de 4 décimos y 50 centésimos?
Respuestas deben incluir $\frac{4}{10}$ está representado por 4 monedas de 10¢ o por 4 partes sombreadas de un modelo de décimos; $\frac{50}{100}$ está representado por 5 monedas de 10¢ o por 4 partes sombreadas de un modelo de centésimos. La suma está representada por el número total de monedas de 10¢ y por la combinación de las áreas sombreadas en un modelo de centésimos.

For a picture of coins, prompt students to identify how the picture represents the problem.

- ¿Cómo se usan las monedas de 10¢ para mostrar $\frac{4}{10}$ y $\frac{50}{100}$?
- ¿Qué representa cada número de monedas de 10¢?

For an area model, prompt students to identify how each of the fractions and the sum is represented.

- ¿Por qué el primer modelo está dividido en un número de partes iguales diferente del segundo modelo?
- ¿Qué representa la parte sombreada de rojo? ¿Qué representa la parte sombreada de azul?
- ¿Cómo representa este modelo la parte total de un dólar que tienen Carmen y Troy juntos?

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Lesson 25 Fractions as Tenths and Hundredths **524**

LECCIÓN 25 DESARROLLA

Explora diferentes maneras de entender cómo sumar fracciones con denominadores de 10 y 100.

Carmen tiene $\frac{4}{10}$ de un dólar. Troy tiene $\frac{50}{100}$ de un dólar. Juntos, ¿qué fracción de un dólar tienen?

HAZ UN DIBUJO
Puedes usar un dibujo para ayudarte a sumar fracciones con denominadores de 10 y 100.

Sabes que $\frac{4}{10}$ de un dólar son 4 monedas de 10¢ y $\frac{50}{100}$ de un dólar son 5 monedas de 10¢.

Dinero de Carmen Dinero de Troy

Juntos, Carmen y Troy tienen 9 monedas de 10¢.

HAZ UN MODELO
Puedes usar un modelo para ayudarte a sumar fracciones con denominadores de 10 y 100.

Dinero de Carmen Dinero de Troy Dinero en total

524

Deepen Understanding
Models of Tenths and Hundredths
SMP 3 Construct arguments and critique reasoning.

Provide an opportunity for students to practice presenting their reasoning and critiquing the reasoning of others. Have several students present their reasons for representing Carmen and Troy's money as they did.

Pregunte ¿Por qué su modelo o estrategia es una buena manera de mostrar la suma de fracciones con denominador 10 o 100?
Respuestas deben incluir Las respuestas deben incluir las ventajas o fortalezas específicas del modelo o la estrategia que haya elegido el estudiante.

Pregunte ¿Qué preguntas tienen sobre el modelo o la estrategia de [nombre del estudiante]? ¿Qué aspectos del modelo o la estrategia de [nombre del estudiante] les parecen más útiles? ¿Qué aspectos del trabajo de [nombre del estudiante] pueden resultar confusos o poco claros con ese modelo o estrategia?
Respuestas deben incluir Las respuestas deben incluir preguntas para clarificar y una identificación fundamentada de las fortalezas y/o debilidades del modelo o la estrategia de los estudiantes.

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UNIT 3 Math Background

Modelos, progresiones y consejos de enseñanza
Cuando planifiques las lecciones, usa esta información para desarrollar las progresiones de aprendizaje y establecer conexiones entre los conceptos clave.

Temas de la unidad
Los temas principales de esta unidad son:
• Los números de dos dígitos están formados de unidades y decenas. Saber cómo leer un número en términos de unidades y decenas ayuda a comprender el valor de ese número.
• Se puede usar lo que se sabe sobre las decenas y las unidades en números de dos dígitos para comparar sus valores.

Conocimientos previos
Los niños desarrollarán su capacidad partiendo de su habilidad para contar hasta 100 y de su comprensión de los números del 11 al 19. Deberán:
• poder contar de memoria hasta 100 de uno en uno y de 10 en 10.
• comprender que los números del 11 al 19 están compuestos de una decena y varias unidades.

Teacher Toolbox

UNIT FLOW AND PROGRESSION

¡Mire el video! Vea cómo cobran vida el flujo y la progresión de conceptos matemáticos en esta unidad con consejos e ideas sobre el uso de modelos y como establecer conexiones. Subtítulos disponibles en español.

Números después del 20 y valor posicional

Los niños ven patrones en la estructura de los números.

Observaciones sobre: Contar

- ✓ Un indicador de que el niño comprende los patrones de contar es su capacidad de decir qué número viene después o antes de un número dado, sin tener que empezar desde 0 o incluso a partir de un múltiplo de diez.
- ✓ Dé a los niños muchas oportunidades de contar en voz alta hacia delante y hacia atrás, de uno en uno y de diez en diez.
- ✓ Para desarrollar una comprensión significativa sobre cómo contar los números, los niños cuentan grupos de objetos.
- ✓ A medida que dibujan o cuentan, los niños comienzan a agrupar de diez en diez y luego a contar de uno en uno y de diez en diez, y observan que el resultado es el mismo que cuando se cuenta de uno en uno.

Números después del 20 y valor posicional (continuación)

Los niños aprenden a pensar que 10 unidades es lo mismo que 1 decena.

36 puede verse como 3 decenas y 6 unidades, 2 decenas y 16 unidades, 1 decena y 26 unidades o 36 unidades.

Observaciones sobre: Valor posicional

- ✓ Anteriormente, en kindergarten, los niños aprendieron que los números del 11 al 19 son 10 unidades y algunas unidades más.
- ✓ En primer grado, los niños comienzan a utilizar y a considerar un grupo de 10 unidades como 1 decena, lo cual es la base para comprender el valor posicional.
- ✓ Brinda a los niños muchas oportunidades de formar conjuntos de 10 unidades para cambiarlos por una barra de decena.
- ✓ Los niños aprenden a representar los números de muchas maneras. Por ejemplo, 36 es 3 decenas y 6 unidades, 2 decenas y 16 unidades, 1 decena y 26 unidades o 36 unidades.
- ✓ Descomponer de manera flexible los números es esencial para sumar y restar números de dos dígitos.

Observaciones sobre: Mayor y menor que

- ✓ Los niños no deben usar los símbolos >, < o = hasta que puedan expresar de manera significativa las comparaciones "mayor que", "menor que" e "igual a".
- ✓ Cuando los niños estén preparados para comenzar a usar los símbolos >, < o =, animelos a leer el enunciado en voz alta y a explicar por qué su comparación es correcta con base en el valor posicional.

Los modelos concretos ayudan a los niños a comparar números.

21 es mayor que 13.
21 > 13

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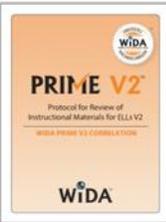
Unit 3 Tens and Ones **431F**

AC Metric 3A: Support for English Language Learners and other special populations is thoughtful and helps those students meet the same Standards as all other students. The language in which problems are posed is carefully considered.

(continued)

Students and teachers have access to an academic vocabulary **Glossary** in English and Spanish with visuals as well as a **Multilingual Glossary**. The Multilingual Glossary includes an English mathematical glossary with the corresponding words provided in **Arabic, Chinese, French, Haitian Creole, Portuguese, Russian, Spanish, Tagalog, Urdu, and Vietnamese**. The English/Spanish Glossary is available in the back of the *Student Worktext*. Both glossaries are available on the Bookshelf of the Student Digital Experience and in the Program Implementation tab of the *Teacher Toolbox*.

For every lesson, **Family Letters and Activities** provide a home-school connection. Family Letters are in the following languages digitally: English, Spanish, Tagalog, Russian, Arabic, Mandarin, Korean, Vietnamese. Portuguese, Somali and Amharic will be available back-to-school 2022. Caregivers are able to review the content students are exploring at school and are also able to take part in a suggested home activity. See the *Student Worktext* or *Teacher's Guide* at the beginning of any lesson for an example. The *Teacher's Guide* also provides suggested mathematics talk and conversation starters students can use with their families.



The **WIDA Protocol** for Review of Instructional Materials for ELLS (PRIME) V2 correlations can be found on the Program Implementation tab of the *Teacher Toolbox* and provide more detailed information about how *i-Ready Classroom Mathematics* supports English Learners and other special populations.

Resources to **Connect to Community and Cultural Responsiveness** are provided at the beginning of each lesson in the *Teacher's Guide*. These activities connect with and leverage the diverse backgrounds and experiences of all students. See the beginning of any lesson in the *Teacher's Guide*. For examples, see:

- Grade K – Lesson 8, page 142a
- Grade 1 – Lesson 4, page 76a
- Grade 2 – Lesson 5, page 100a
- Grade 3 – Lesson 8, page 182a (shown)
- Grade 4 – Lesson 7, page 120a
- Grade 5 – Lesson 7, page 132a

Professional Learning articles for educators appear after the Language Expectations table, in *Teacher's Guides* for all grade levels, and include numerous articles to support English Learners and special populations. See the Content Language Development section in the Beginning of the Unit (for any unit) in the *Teacher's Guide*, especially:

- Unit 3 article: "Knowing and Valuing Every Learner: Culturally Responsive Mathematics Teaching"
- Unit 4 article: "The Process of English Language Learning and What to Expect"

Math Talk at Home

Encourage students to talk with their family members about reading and interpreting scaled graphs. The last paragraph of the Family Letter activity provides specific suggestions on where family members can find scaled graphs. Have students circle this paragraph or place a star next to it to alert family members of its importance.

Conversation Starters Below are additional conversation starters students can write in their Family Letter or math journal to engage family members:

- Do we receive utility bills with scaled graphs? If so, what do the graphs represent?
- Is a picture graph or a bar graph easier for you to read? Why?

Connect to Community and Cultural Responsiveness

Use these activities to connect with and leverage the diverse backgrounds and experiences of all students.

Session 1 Use with Connect It problem 2.

- Change the context of the problem to reflect the cultural backgrounds and diets of your students. Ask students to share food items that they are familiar with that can be purchased in packs or boxes; for example, different types of rice, falafel, samosas, and tamales. Guide students to come to a consensus as to what the packages in the problem will represent.

Session 2 Use with Try It.

- Ask students if they enjoy visiting the school's library and why. Remind students that school libraries are sometimes called media centers because items other than books are also available. Ask students if they have been to the public library. Ask students to share what items can be checked out from a library other than books. Students may share items such as DVDs, CDs, and magazines. Add that different libraries around the United States have unusual items that can be borrowed. Metal detectors, telescopes, microscopes, and musical instruments are among the unusual items that can be checked out from some libraries. Ask students to share something they wish they could check out from the library.

Session 3 Use with Try It.

- Ask students to share any jewelry that they own or are currently wearing. Explain that jewelry is a way for people to express themselves and is a way of decorating oneself like the gloves are decorated in the problem. Explain that many different cultures like to decorate their clothing to reflect colors and designs they feel are special. Have students look at their own clothing for decorative designs. Explain that different cultures may use embroidery, beads, shells, or ribbon, in addition to jewels like rhinestones, to decorate their clothing.

Session 4 Use with Try It.

- Discuss with students fruits or vegetables that they have seen that can be purchased in multiples. Record students' suggestions. After brainstorming, review each suggestion for the presence or absence of equal groups. For instance, if grapes are suggested, discuss whether each bunch has the same number of grapes. Ask students to share why the number of bananas in the problem can be found using multiplication.

AC Metric 3B: Materials provide appropriate level and type of scaffolding, differentiation, intervention, and support for a broad range of learners with gradual removal of supports, when needed, to allow students to demonstrate their mathematical understanding independently.

Every *i-Ready Classroom Mathematics* lesson uses an instructional flow that allows all students the support they need to learn the content and eventually become independent thinkers and learners. Each lesson is taught over multiple days, which enables teachers to scaffold learning across the different sessions of each lesson. *i-Ready Classroom Mathematics* has numerous resources in the *Teacher’s Guide* and the online *Teacher Toolbox* to support teachers in meeting the needs of a range of learners. Content within the *Student Worktext*, Student Digital Experience, *Teacher’s Guide*, and the Teacher Digital Experience provide scaffolded materials with multiple entry-points. *i-Ready Classroom Mathematics* encourages students to look at different ways of solving problems and use a variety of solution strategies and representations. Multiple strategies are discussed by students in pairs and with the whole class, and connections between multiple strategies and representations are described by students.

Every multiday lesson opens with an **Explore** session to help students connect to prior learning and use what they already know to bridge to the new learning. The **Develop** session(s) give students multiple opportunities using various modalities to develop their thinking about new concepts. The **Refine** session gives additional time for educators to use provided resources for differentiation and also provides students time to deepen their understanding of the concepts and skills by comparing and discussing different answers and strategies to fluency and application problems they work on independently and discuss in pairs. Questions are carefully sequenced and scaffolded throughout *i-Ready Classroom Mathematics*. The number of each session type depends on lesson type and the grade level.

Instructional Routine

The *i-Ready Classroom Mathematics Try–Discuss–Connect* instructional routine supports teachers in sequencing the lesson using standards-aligned strategies. This routine provides teachers with strategies and materials to sequence and scaffold instruction, beginning with students making sense of problems and persevering in attempting solution strategies.

The Try–Discuss–Connect instructional routine supports multiple entry points and an analysis of a variety of solution strategies and representations. The routine promotes flexibility in solving problems in the *Student Worktext* and while doing the Hands-On Activities found in the *Teacher’s Guide*.

Day 1	Day 2	Day 3	Day 4	Day 5
Explore SESSION	Develop SESSION	Develop SESSION	Develop SESSION	Refine SESSION
Make connections to prior knowledge and explore new concepts.	Develop strategies and understanding through discourse, problem solving, differentiated instruction, and practice.			Practice, deepen understanding, and differentiate.
<i>There are 1–3 Develop sessions per lesson.</i>				

Differentiation Resources			
	How to Determine Student Needs	Differentiation Resources	Where to Find It
Before and throughout a Unit/Lesson	Identify student learning needs, groups, and recommended resources from the Prerequisites report, based on the Diagnostic.	Prerequisite Lessons and Corresponding Resources	• Teacher Digital Experience
During a Lesson (Explore and Develop sessions)	Informal observations and evidence of student work based on the Try–Discuss–Connect routine, including the Start activity and Close: Exit Ticket	Hands-On Activity or Visual Model	• Teacher’s Guide
		Fluency and Skills Practice	• Teacher Digital Experience > Ready Classroom Mathematics Teacher Toolbox
		Deepen Understanding	• Teacher’s Guide
		ELL Differentiated Instruction	• Teacher’s Guide
End of a Lesson (Refine session)	Evidence of student work based on the Start activity and Apply It	Hands-On Activity	• Teacher’s Guide
		Apply It	• Student Worktext • Teacher’s Guide
		Interactive Practice (when applicable)	• Teacher Digital Experience
		Challenge Activity	• Teacher’s Guide
After a Lesson	Item response analysis and class results information from the Comprehension Check Results report (based on lesson-level Comprehension Checks) OR Evidence of student work on the Lesson Quizzes	Tools for Instruction	• Teacher Digital Experience > Ready Classroom Mathematics Teacher Toolbox
		Math Center Activity	• Teacher Digital Experience > Ready Classroom Mathematics Teacher Toolbox
		Enrichment Activity	• Teacher Digital Experience > Ready Classroom Mathematics Teacher Toolbox
Ongoing	Data from assessments and reports, as well as informal observations	Grade Level Games (K–2 only)	• Teacher Digital Experience > Ready Classroom Mathematics Teacher Toolbox
		Learning Games	• Student Digital Experience • Teacher Digital Experience
		Digital Math Tools	• Student Digital Experience • Teacher Digital Experience

AC Metric 3B: Materials provide appropriate level and type of scaffolding, differentiation, intervention, and support for a broad range of learners with gradual removal of supports, when needed, to allow students to demonstrate their mathematical understanding independently.

(continued)

i-Ready Classroom Mathematics supports teachers in anticipating student strategies and **Selecting and Sequencing Student Solutions** so that the content is accessible to all learners. Suggestions for what type of students' solutions should be shared and in what order during a class discussion are provided for each session in the *Teacher's Guide*. For example, see **Selecting and Sequencing Student Solutions** and **Ask/Listen** For in the *Teacher's Guide* on pages:

- Grade K – Lesson 5, pages 89–90
- Grade 1 – Lesson 6, pages 121–122
- Grade 2 – Lesson 7, pages 175–176
- Grade 3 – Lesson 9, pages 215–216 (shown)
- Grade 4 – Lesson 12, pages 257–258
- Grade 5 – Lesson 12, pages 231–232

Support Whole Class Discussion
Compare and connect the different strategies and have students identify how they are related.

Ask How does each model show that there are 4 boxes of caps? How does each model show that each box has 40 caps?

Listen for Equal-group models show 4 groups of 40. Number lines show 4 jumps of 40. Equations show 4 multiplied with 40 or 40 added 4 times.

Select and Sequence Student Solutions
 One possible order for whole class discussion:

- base-ten blocks to model the problem
- drawings of equal groups or arrays
- number lines to model repeated addition
- written expressions and equations

Within each lesson of the *Teacher's Guide*, **Hands-On Activities**, **Visual Models**, and **Deepen Understanding** features provide strategies for meeting the needs of a range of learners. The Hands-On Activities and Visual Models are strategically placed at hinge points in each lesson, between whole group discussion time and independent learning time, to provide flexible differentiation activities for educators to pull students into small groups for support while the rest of the class moves forward to independent learning. In addition, the Deepen Understanding connects the concepts of the lesson to specific targeted SMPs. These allow the teacher to support students in making deeper connections and developing greater understanding of a topic. See the *Teacher's Guide* for examples:

- Grade K – Lesson 5, page 90
- Grade 1 – Lesson 6, pages 122, 129, 137
- Grade 2 – Lesson 5, pages 102, 106, 107
- Grade 3 – Lesson 7, pages 156, 160, 161
- Grade 4 – Lesson 11, pages 242, 243, 249
- Grade 5 – Lesson 12, pages 232, 233, 239

In the Refine session of each lesson, teachers can use the Start Question to evaluate student prior understanding. An **Error Alert** table shows possible incorrect answers with information about what students likely did, followed by a suggestion for helping address the error or misunderstanding. Resources in the *Teacher's Guide* provide activities to further differentiate instruction: **Reteach**, **Reinforce**, and **Extend** learning. See examples:

- Grade K – Lesson 9, pages 176, 179–180
- Grade 1 – Lesson 3, pages 70, 73–74
- Grade 2 – Lesson 5, pages 118, 121–122
- Grade 3 – Lesson 8, pages 205–208
- Grade 4 – Lesson 13, pages 285–288
- Grade 5 – Lesson 11, pages 221–224

If the error is ...	Students may ...	To support understanding ...
26	have multiplied 2×4 and 2×9 and added the products.	Remind students that the three numbers are being multiplied and that there is no addition sign in this problem.
even numbers near but not equal to 72	have multiplied 4×9 to get 36 and tried to multiply by 2 by counting by twos but lost track.	Remind students that they can reorder and group to avoid trying to find products involving two-digit factors. Provide digit cards 2, 4, and 9 and ask them to try different products.
sum of regrouped 2 ones.	Reca ea	Reca ea

RETEACH

Hands-On Activity
 Create a model to show order and grouping of factors.

Students struggling with multiplying three factors
Will benefit from modeling expressions with a partner.

Materials For each pair: 15 counters, Activity Sheet 1-Inch Grid Paper

- Write the problem $2 \times 3 \times 2$ on the board and ask students for ways they could order or group the factors.
- Choose one expression from the list and walk through how to model the problem with arrays. For example, for $(2 \times 3) \times 2$, have pairs model the expression in parentheses with a 2×3 array on the grid paper. Elicit that the $\times 2$ means they have to create this array twice on their grids. You may wish to also model $3 \times (2 \times 2)$: create a 2×2 array 3 times.
- Have students work in pairs to model $2 \times (3 \times 2)$.

EXTEND

Challenge Activity
 Multiply four factors.

Students who have achieved proficiency
Will benefit from deepening understanding of using grouping and ordering to make multiplication easier.

- Ask students to think about how they would multiply 4 numbers, such as $5 \times 5 \times 2 \times 2$. Explain that they can use parentheses to group factors into pairs. Ask: Which pairs of factors might be easiest to multiply?
- Instruct students to work in groups or pairs and use what they know about ordering and grouping factors to find at least two different ways to multiply the factors in the problem. Have students share the ways they found. Work together as a class to find the product. [100]

REINFORCE

Problems 4–8
 Use order and grouping to multiply.

All students will benefit from additional solving with using order and grouping to multiply by solving problems in a variety of formats.

- Have students work on their own or with a partner to solve the problems.
- Encourage students to show their work.

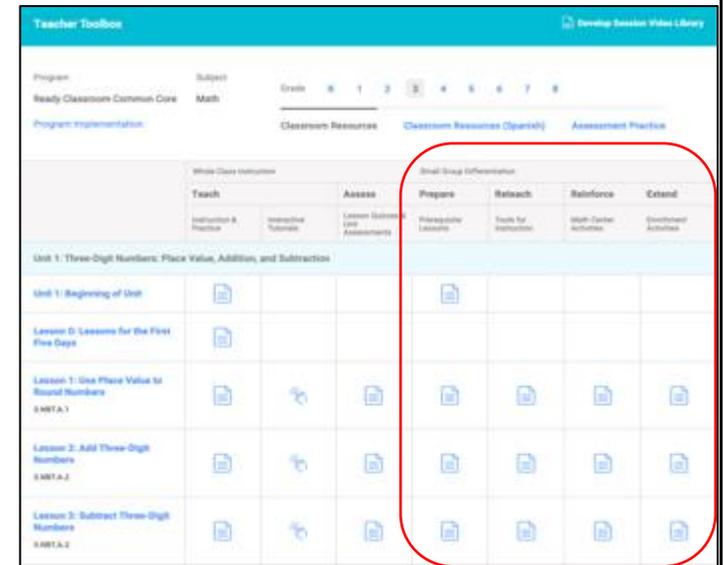
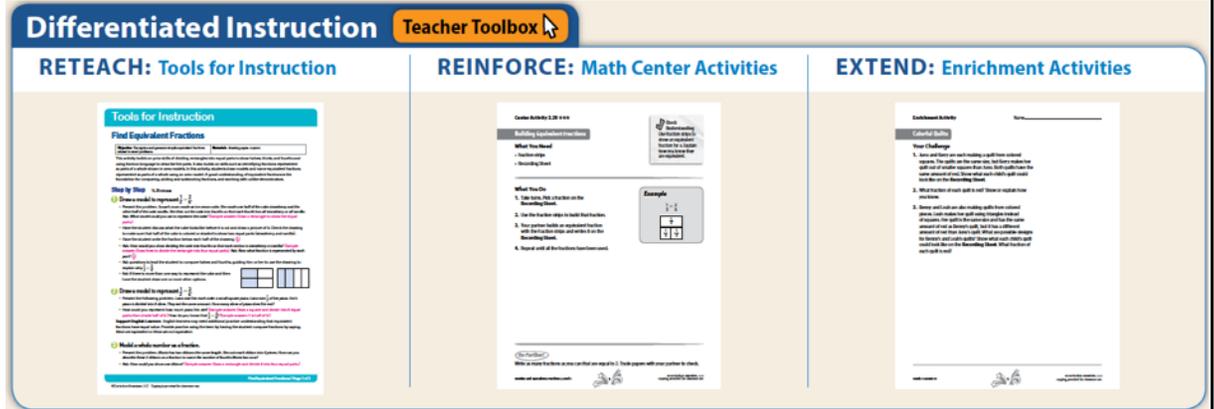
AC Metric 3B: Materials provide appropriate level and type of scaffolding, differentiation, intervention, and support for a broad range of learners with gradual removal of supports, when needed, to allow students to demonstrate their mathematical understanding independently.

(continued)

Multiple differentiation and intervention opportunities are provided on the *Teacher Toolbox*, for educators to use with students after they take the Lesson Quiz, or comparable Comprehension Check. Options include **Reteach: Tools for Instruction**, **Reinforce: Math Center Activities** (below-, on- and above-level), and **Extend: Enrichment Activities**. For examples of differentiation options, see any *Teacher's Guide* on the Lesson Quiz pages.

Through the Teacher Digital Experience, the *Teacher Toolbox* provides educators access to all K–8 content digitally, providing numerous resources and strategies to differentiate instruction and support a range of learners, including Interactive Tutorials, Develop Session Video Library, Digital Math Tools, Tools for Instruction, Math Center Games, Unit Games, Grade Level Games, Prerequisite Lessons, and Enrichment Activities. In addition to on-level resources, the *Teacher Toolbox* provides all resources and instructional support for prior grades and lessons as well as opportunities for extension. Teachers can use the Lesson Progression chart in their *Teacher's Guide* at the beginning of the unit, or the lessons identified in the Prerequisite Lesson column of the *Teacher Toolbox*, to easily access prerequisite topics related to a specific lesson.

Districts that adopt *i-Ready Classroom Mathematics* also have the option to use the **Diagnostic** assessment. The *Diagnostic* provides teachers and administrators with easy-to-manage individual, class and school reports including the Prerequisites report highlighting student understanding of prerequisite concepts for each unit of *i-Ready Classroom Mathematics*. These reports identify students' strengths and weaknesses, highlights what they know and what they are ready to learn. The report also provides grouping recommendations for differentiated instruction. These reports all support teachers in addressing students' various needs. Learn more about the *Diagnostic* and applicable reports at <https://www.curriculumassociates.com/products/i-Ready/i-Ready-assessment/diagnostic>.



AC Metric 3C: Design of Lessons recommends and facilitates a mix of instructional approaches for a variety of learners such as using multiple representations (e.g., including models, using a range of questions, checking for understanding, flexible grouping, pair-share).

i-Ready Classroom Mathematics was built with a unique lesson design, allowing teachers to reach all learners through mathematics discourse, multiple representations and models, using a wide variety of questions, checks for understanding and flexible grouping. While teaching a lesson, teachers may group students by proximity, by the method the students used to solve a particular problem, or by instructional needs. *i-Ready Classroom Mathematics* supports teachers with grouping strategies.

Each lesson of *i-Ready Classroom Mathematics* exposes students to a variety of solution strategies and representations. The Develop sessions include **Picture It** and **Model It** sections where students see numerous representations, including pictorial, visual, numeric, and more abstract representations. In addition, **Connect It** questions ask students to think critically about different representations, articulate their understanding of different strategies, and make connections between strategies. **Connect It** questions in every lesson ask students to explain their understanding of the models and representations used in solving a problem, as well as show their conceptual understanding of key ideas. Students frequently use manipulatives or other concrete objects to solve problems and show their understanding, within *i-Ready Classroom Mathematics*.

Students are asked to demonstrate understanding in a variety of ways, including acting out mathematical problems, drawing pictures and using mathematical models to represent situations, answering questions orally with a partner or in discussions with the whole class and providing written responses to record their thinking in the *Student Worktext*.

- **Grade K** – Lesson 17 (pages 331–348): Students act out the problem, work with concrete objects, pictorial representations, five-frame representations, complete corresponding equations, and listen to and critique the reasoning of others.
- **Grade 1** – Lesson 12 (pages 257–278): Students connect concrete and pictorial representations to visual representations (ten frames and number bonds) to numeric representations.
- **Grade 2** – Lesson 6 (pages 141–162): Students connect concrete and pictorial representations to visual representations (base-ten blocks, quick drawings, number lines) to place value charts and numeric representations.
- **Grade 3** – Lesson 8 (pages 183–208), Lesson 23 (pages 495–520) and Lesson 24 (pages 523–532): Students work with models, bar models, and number lines to represent fractions.
- **Grade 4** – Lesson 24 (pages 503–516), Lesson 27 (pages 557–576) and Lesson 29 (pages 601–626): Students use regional models, number lines, fractions and place value charts to compare decimal numbers.
- **Grade 5** – Lesson 21 (pages 425–434), Lesson 22 (pages 437–456), and Lesson 30 (pages 625–644): Students use bar models, area models and number lines to multiply fractions.

LESSON 13 DEVELOP

Explore different ways to understand writing three-digit numbers.

Ryan has a collection of 284 shells. What is another way to write 284 using numbers? What is another way to write 284 using words?

PICTURE IT
You can use base-ten blocks to show hundreds, tens, and ones. Then write the number in expanded form and in words.



200 + 80 + 4
two hundred eighty four

MODEL IT
You can show hundreds, tens, and ones in a chart. Then write the values in numbers and words.

Hundreds	Tens	Ones
2	8	4

2 hundreds + 8 tens + 4 ones
two hundred + eighty + four



330 Lesson 13 Read and Write Three-Digit Numbers ©Curriculum Associates, LLC. Copying is not permitted.

AC Metric 3C: Design of Lessons recommends and facilitates a mix of instructional approaches for a variety of learners such as using multiple representations (e.g., including models, using a range of questions, checking for understanding, flexible grouping, pair-share).

(continued)

The *i-Ready Classroom Mathematics Try-Discuss-Connect* instructional routine provides numerous opportunities for partner work. This work can be done by proximity, or the teacher could pair students after seeing which strategies students used to solve a problem. Teachers may want to pair students who used different strategies or may want to pair students who approached the problem in a similar way to compare their thinking and discuss other approaches. **Discussion Questions** are provided for educators to guide small group and full class discussions.

Math discourse questions appear in the *Student Worktext* (**Discuss It** in the **Develop** sessions and **Pair/Share** in the **Refine** sessions) as well as in the *Teacher's Guide* (**Ask/Listen For**). All of these questions provide opportunities for students to fully articulate their thinking verbally in partner and whole class conversations. These prompts provide effective alternatives for students for whom written reasoning would impose limitations on their ability to express their thinking.

- Grade K – Lesson 6 (pages 115–116) and Lesson 15 (pages 293–294)
- Grade 1 – Lesson 16 (pages 363–364) and Lesson 28 pages (643–644)
- Grade 2 – Lesson 3 (pages 63–64) and Lesson 19 (pages 473–476)
- Grade 3 – Lesson 6 (pages 143, 144 and 149)
- Grade 4 – Lesson 5 (pages 75, 76 and 87)
- Grade 5 – Lesson 3 (pages 43, 44 and 49)

i-Ready Classroom Mathematics offers multiple opportunities for educators to check for student understanding.

- After the **Start Questions** in the Refine session, a possible error and suggested remediation strategy is provided.
- After potential remediation and the practice of the Refine session, an **Exit Ticket** question is then provided to check for understanding.
- An **Error Alert** chart give insight to misconceptions that can lead to errors in calculation and provides on-the-spot remediation.
- **Lesson Quizzes** and digital **Comprehension Checks** provide a snapshot in to student mastery of the content of the lesson.

In **Math in Action** (grades 2–5) lessons at the end of each unit, students are given a robust, multi-step problem and a possible model solution to evaluate. This is followed by a section called Try Another Approach, which has students solve the same problem a different way— to broaden their understanding of how problems can be approached and solved in a variety of ways. Students are then asked to provide solutions to more rich tasks, approaching the problems using multiple entry points and strategies. Example from Grade 3, Unit 2 Math in Action, page 286.

PAIR/SHARE

What is another model you could have used to show how to break apart the number?



DISCUSS IT

Ask your partner: Do you agree with me? Why or why not?

Tell your partner: At first, I thought ...

Try Another Approach

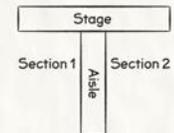
There are many ways to solve problems. Think about how you might solve the Seat Set-Up problem in a different way.

Seat Set-Up

Brandi is planning how to set up seats for a play.

My Notes

- Use between 80 and 100 seats.
- Make 2 seating sections.
- The number of seats in each section can be the same or different.
- Use equal rows of seats in a section.



Help Brandi set up the chairs.

- Decide the number of chairs to use.
- Tell how many seats to put in each section.
- Tell the number of rows and the number of seats in each row.



Indicators of Quality

1. Lessons are thoughtfully structured and support the teacher in leading the class through the learning paths at hand, with active participation by all students in their own learning and in the learning of their classmates.

i-Ready Classroom Mathematics is thoughtfully structured and supports teachers in leading the class to own their own learning. With a multi-day lesson, students make meaningful connections and retain what they learn when they are given time to develop and refine their mathematical understanding, rather than being rushed to learn a completely new topic.

Lesson Design *i-Ready Classroom Mathematics* recognizes that in order to learn a concept and have students own their learning, adequate time is needed. Lessons have a unique multiple day lesson design, with each lesson (Understand and Strategy) lasting approximately a week. Each lesson is divided into Explore, Develop, and Refine sessions, with each session lasting 45–60 minutes. The number of each session type depends on lesson type and the grade level. With a multi-day lesson, students make more meaningful connections and retain what they learn when they are given time to develop and refine their mathematical understanding, rather than being rushed to learn a completely new topic.

Day 1	Day 2	Day 3	Day 4	Day 5
Explore SESSION	Develop SESSION	Develop SESSION	Develop SESSION	Refine SESSION
Make connections to prior knowledge and explore new concepts.	Develop strategies and understanding through discourse, problem solving, differentiated instruction, and practice.			Practice, deepen understanding, and differentiate.

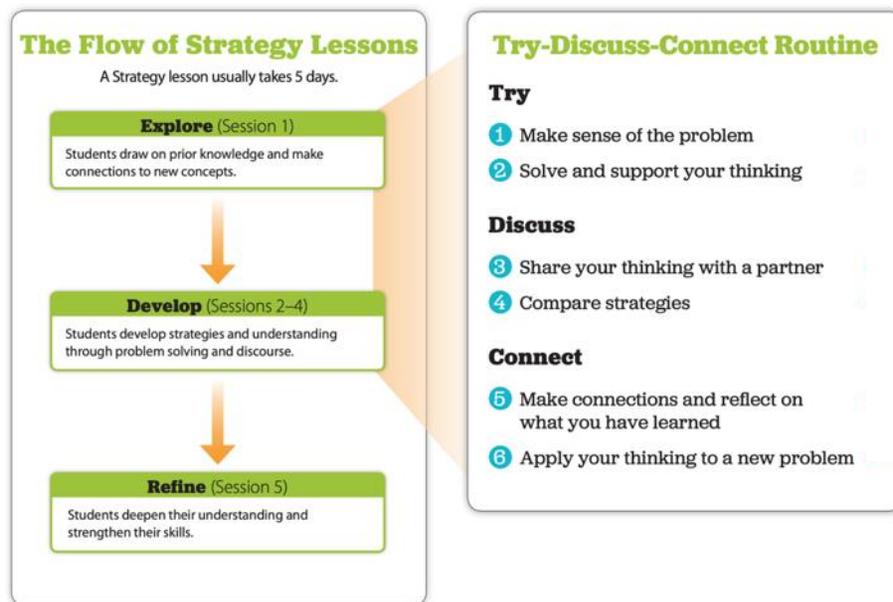
There are 1–3 Develop sessions per lesson.

Session Design

Explore Sessions focus on students making connections to prior knowledge and exploring a new concept through problem solving. Students begin to build an understanding of new mathematical concepts and how they can be applied to different strategies, procedures, and problem types. Students are simultaneously learning about new procedures and connecting them to previous ones.

Develop Sessions focus on students developing strategies and mathematical understanding through the Try–Discuss–Connect routine. Here, students apply concepts and procedures they have learned previously to practice new ideas they are beginning to learn. The last step of the Try–Discuss–Connect routine is an Apply It section, where students apply strategies they have learned to new problems. This is one of the key places where students engage in meaningful problem-based practice instead of more traditional practice problem sets.

Refine Sessions are the final session of every lesson, entirely devoted to deepening understanding and practicing skills. The Refine session is also an opportunity for students to work together to apply what they have learned over several days to problems that are cumulative in nature. This reiterates the interconnectedness of mathematics and ensures students do not see each day as an isolated event.



1. Lessons are thoughtfully structured and support the teacher in leading the class through the learning paths at hand, with active participation by all students in their own learning and in the learning of their classmates.

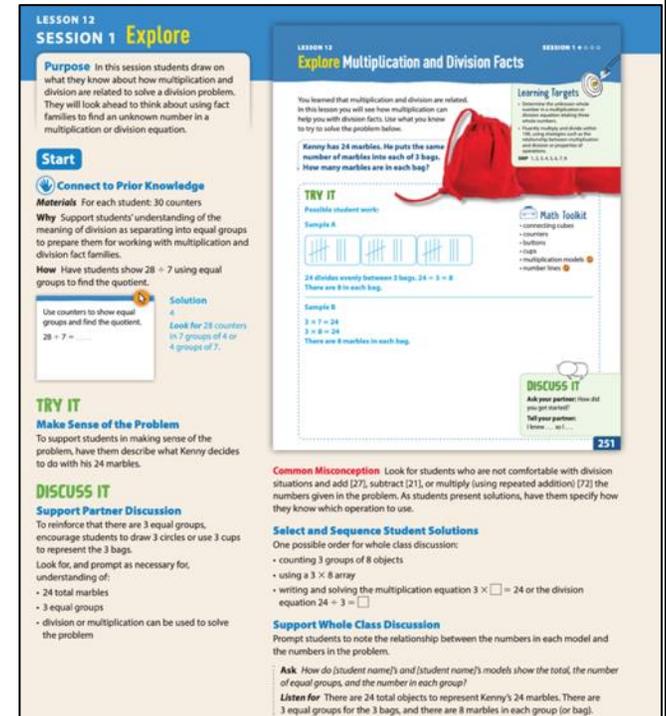
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Students are heavily involved in every session and are leaders in their own learning and understanding. In *i-Ready Classroom Mathematics*, students do the thinking and talking with the Try–Discuss–Connect discourse-based routine.

- **Try It** promotes productive struggle and perseverance. Students engage with a real-world problem to support understanding through context and are allowed to choose their own tools, representations and strategies. With plenty of blank space on the page, students are provided the opportunity to think and make sense of the problem and experience productive struggle.
- **Discuss It** promotes purposeful discourse. Students are encouraged, through Discuss It prompts and discourse supports and tools, such as Discourse Cards, to engage in conversations with partner(s) and then the whole class. The *Teacher’s Guide* supports class discussion with specific question prompts that encourage students to compare, connect, picture and model the problem.
- **Connect It** promotes making connections through reflections and applications. The *Student Worktext* provides ample space for students to journal, write, apply and self-reflect on what they have learned and then to apply it to new problems. Hands-On Activities occur consistently at strategic points in the lesson for teachers to use with students who may need another way to view the mathematics.

Teacher’s Guides are the main resource for embedded instructional support during each session. See any lesson in the *Teacher’s Guide* for the following wrap-around guidance:

- **Connect to Prior Knowledge** gives clear entry points for each session while engaging students mathematically with prerequisite content.
- **Develop Language** provides targeted vocabulary and language support to ensure mathematics content.
- **Support Partner Discussion** are educator prompts to help students engage in meaningful peer discourse.
- **Common Misconception** identifies misconceptions that lead to errors in understanding, which can then be addressed in whole class discussion as students are prompted to explain their reasoning.
- **Select and Sequence Student Solutions** gives a range of possible strategies – from concrete to representational to abstract – and advice to educators to help them make decisions on which models and strategies to have students share with the class.
- **Support Whole Class Discussion** prompts are a series of related discourse questions that illuminate the mathematical ideas of the lesson.
- **Deepen Understanding** focuses on a Standard for Mathematical Practice and provides Ask/Look For suggestions to extend mathematical conversations of key lesson concepts.
- **Monitor and Confirm** is a way to ensure that students have made sense of learning goals.
- Discourse support resources provide a way to engage all students in meaningful mathematical conversations. **Sentence starters** and **discourse questions** enable educators to support and facilitate whole class conversations with mathematics discourse questions as students share their thinking.



2. The underlying design of the materials includes both problems and exercises. (In solving problems, students learn new mathematics, whereas in working exercises, students apply what they have already learned to build mastery.) Each problem or exercise has a purpose.

NOTE: This Criterion does not require that the problems and exercises be labeled as such.

i-Ready Classroom Mathematics is designed to ensure students understand and make connections through rich tasks and meaningful practice. Every lesson begins with a problem that all students work on and investigate together, followed by discussing strategies. The main source of learning new mathematics is problem-solving using a real-world context problem and having students engage in deep mathematics discourse around the strategies and methods to solve the problem through the Try–Discuss–Connect instructional routine. Practice in *i-Ready Classroom Mathematics* is structured to be purposeful and mirror the rigor required by the standards and focuses on quality over quantity.

Instructional design (problems):

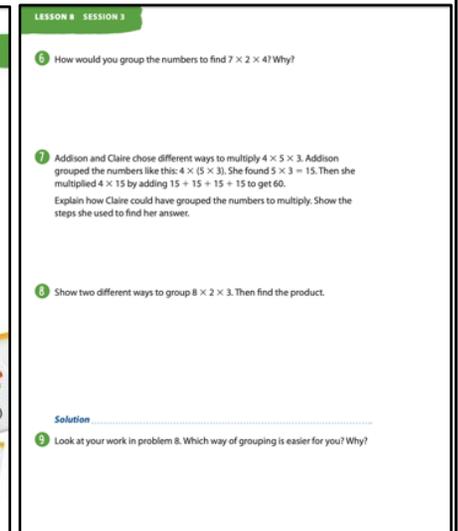
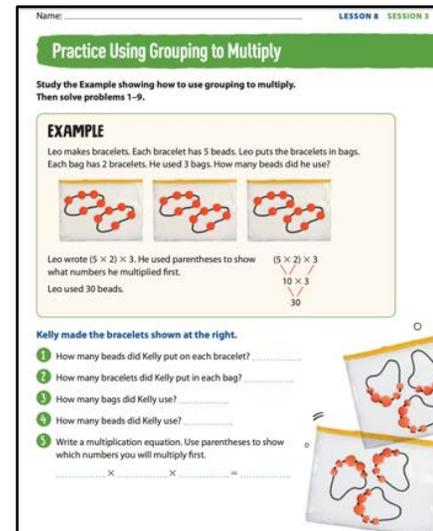
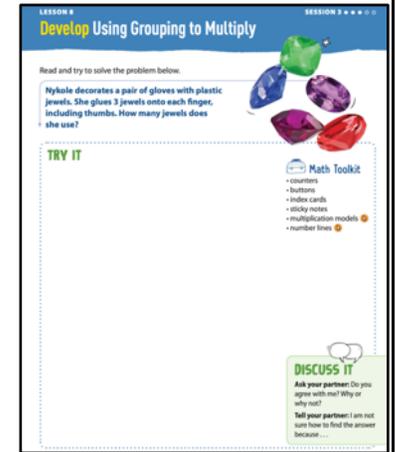
- The instructional sessions of *i-Ready Classroom Mathematics* are primarily the **Explore** and **Develop** sessions. These sessions use a student-centered approach to learn new mathematics and expose students to multiple approaches and engage students in discourse about the problems. Questions in the *Student Worktext* and *Teacher’s Guide* ask students to think critically about the models, representations, and concepts within the lesson. By exploring the problems and new concepts of the lesson using the *i-Ready Classroom Mathematics* Try–Discuss–Connect instructional routine, teachers are able to maximize engagement and student understanding.
- During **Apply It**, students are given the opportunity to apply strategies they have just learned to new problems. This is one of the key places where students engage in meaningful problem-based practice instead of more traditional practice problem sets.

Practice design (exercises):

- The **Additional Practice** portions of the Explore and Develop sessions, are carefully developed to provide purposeful practice and reinforce understanding. The Explore Additional Practice activities are centered around a graphic organizer and vocabulary. Students can select to work with hands-on objects wherever concrete objects and manipulatives are pictured, whether in instruction or practice sections of the lessons.

For examples: see the instructional pages in any Explore or Develop sessions of any lesson and the corresponding Additional Practice within those sessions, the Refine sessions, as well as the Fluency and Skills Practice in each Develop session.

- Grade K – Lesson 2, page 31
- Grade 1 – Lesson 2, page 43
- Grade 2 – Lesson 9, pages 221, 227, 233
- Grade 3 – Lesson 6, pages 135, 141, 147
- Grade 4 – Lesson 8, pages 151, 157, 163
- Grade 5 – Lesson 5, pages 85, 91, 97

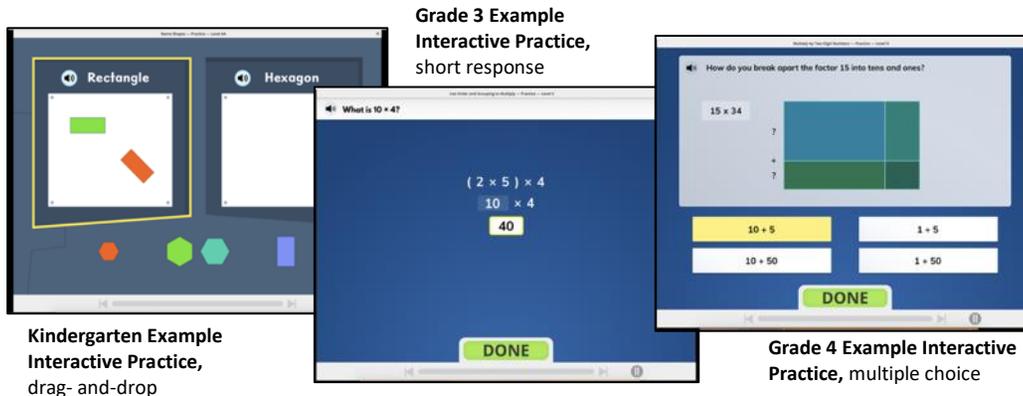


2. The underlying design of the materials includes both problems and exercises. (In solving problems, students learn new mathematics, whereas in working exercises, students apply what they have already learned to build mastery.) Each problem or exercise has a purpose.

NOTE: This Criterion does not require that the problems and exercises be labeled as such.

(continued)

- Additional **Fluency and Skills Practice**, in all Develop sessions, is available on the *Teacher Toolbox*. These pages have been carefully developed to engage students in critical thinking, repeated reasoning, and looking for patterns to develop number sense and computational fluency.
- In Grade K, Explore session, **Building Fluency** activities provide ongoing fluency practice to support students in developing counting and quantity number sense through repeatable activities.
- Refine sessions were developed as a full session (two sessions in Grade K) of rich **Apply It** exercises, to give students time to practice and apply what they have learned.
- **Cumulative Practice** is built into each unit for students to practice skills they learned earlier in the year.
- Digital **Interactive Practice** with technology enhanced items helps students build understanding and fluency on the grade-level concepts they struggle with the most using digital practice. Students receive immediate feedback to encourage perseverance and keep them on track.



UNIT 1
Cumulative Practice Name: _____

Set 1: Multiply and Divide
Solve the problems. Multiply or divide.

1 $3 \times 5 = \underline{15}$ 2 $4 \times 6 = \underline{24}$ 3 $7 \times 3 = \underline{21}$
 4 $36 \div 6 = \underline{6}$ 5 $28 \div 4 = \underline{7}$ 6 $64 \div 8 = \underline{8}$
 7 Write 4 equations using the fact family with the numbers 7, 8, and 56.
 $7 \times 8 = 56$ $8 \times 7 = 56$
 $56 \div 8 = 7$ $56 \div 7 = 8$

Set 2: Use Properties to Multiply
Fill in the blanks to make each equation true.

1 $4 \times 2 \times 5 = \underline{2} \times 4 \times 5$ 2 $8 \times 6 = \underline{6} \times 8$
 3 $3 \times (2 \times 4) = 3 \times \underline{8}$ 4 $2 \times (\underline{3} \times 4) = 2 \times 12$
 5 $2 \times 18 = 2 \times \underline{9} \times 2$ 6 $\underline{4} \times 7 = (2 \times 2) \times 7$

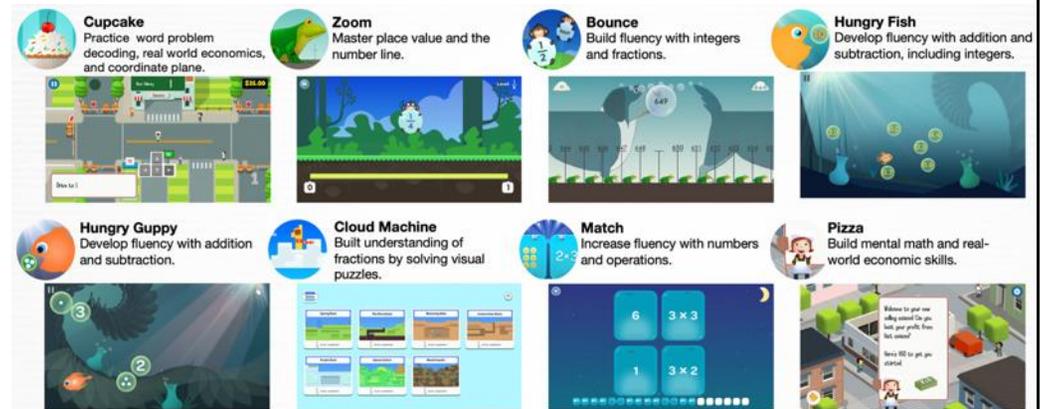
Set 3: Use Patterns
Solve the problems. Fill in the blanks to complete the patterns. Then finish naming the rule.

1 8, 16, 24, 32, 40, 48, 56 Rule: Add 8
 2 3, 6, 9, 12, 15, 18 Rule: Multiply by 3
 3 The table shows a pattern in addends that have a sum of 10. Identify the pattern by completing the statement below. Write your answers in the blanks. As one addend increases by 3, the other addend decreases by 3.

Addend	Addend	Sum
0	10	10
2	8	10
4	6	10
6	4	10

CP1

- Digital adaptive **Learning Games** with reports, which are provided on the Student Dashboard of the Student Digital Experience, merges gameplay and learning to provide engaging digital fluency practice across a wide range of content.



3. Design of assignments is not haphazard: exercises are given in intentional sequences in order to strengthen students' mathematical understanding.

i-Ready Classroom Mathematics lessons follow a carefully developed and intentional sequence for instruction and practice. Each lesson is completed in approximately four to six days, with practice carefully selected for each day based on the concepts or skills addressed. Practice often progresses from concrete and visual representations before transitioning to representing problems with mathematical models before finally connecting these representations to numeric, symbolic and abstract representations.

See the sequence of problems in any lesson in the *Student Worktext*, *Teacher's Guide*, as well as the Fluency and Skills Practice. For example, see the set of exercises that follow from Grade 3, Lesson 10: Understand the Meaning of Division, Explore session items 4 through 7:

LESSON 10 EXPLORE **SESSION 1** ● ○ ○

MODEL IT
Complete the models below.

4 Now imagine Rosi has 10 cookies. She wants to put 2 cookies on each plate. Draw 10 cookies in groups of 2 on plates.

DISCUSS IT

- How did you know how many plates to draw?
- I think the total is always in front of the division sign in a division equation because ...

5 Rosi divided 10 by 2. How much is 10 divided by 2?

6 Another way to use **division** is to find the number of groups. Fill in the blanks to complete the **division equation** for the problem.

There are in all. There are in each group. There are equal groups.

..... ÷ =

7 REFLECT

How is finding the number of groups in a division problem like finding the number in each group? How is it different?

.....

.....

.....

For additional grade-level examples, see:

- Grade K – Lesson 10 (pages 187–188) and Lesson 17 (pages 335–336)
- Grade 1 – Lesson 3 (pages 57–60) and Lesson 13 (pages 285–288)
- Grade 2 – Lesson 1 (pages 9–12) and Lesson 6 (pages 151–154)
- Grade 3 – Lesson 1 (pages 9–12) and Lesson 5 (pages 109–112)
- Grade 4 – Lesson 4 (pages 53–56), Lesson 14 (pages 301–304), and Lesson 15 (pages 317–320)
- Grade 5 – Lesson 5 (pages 87–90), Lesson 12 (pages 231–234), Lesson 13 (pages 259–262)

4. There are separate teacher materials that support and reward teacher study including, but not limited to: discussion of the mathematics of the units and the mathematical point of each Lesson as it relates to the organizing concepts of the unit, discussion on student ways of thinking and anticipating a variety of students responses, guidance on Lesson flow, guidance on questions that prompt students thinking, and discussion of desired mathematical

i-Ready Classroom Mathematics includes a variety of Professional Learning Resources built in to the beginning of every unit to support educators with concepts within in the unit and to help understand the research from which the curriculum was built. In addition to unit level mathematics support, best practice teaching support for every lesson is embedded to allow ongoing opportunities to encourage student understanding and monitor student progress. The materials are responsive to varied teacher needs and include materials to support educators in planning and asking quality questions to help guide students' mathematical development.

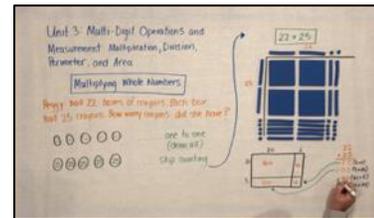
Math Background, located at the beginning of each unit in the *Teacher's Guide* shows the flow of the standards and models taught within in a unit, provides teaching insight about those models, and connects the models to both prior knowledge and future learning.

Unit Flow and Progression videos are provided for educators on the Toolbox that show the progression of the mathematics concepts in each unit and include insights for using the models and making connections across grade levels.

Professional Learning articles appear for all grade levels, in the *Teacher's Guides*, at the beginning of every unit to help educators support students of varying needs. These articles are available anytime for Professional Learning Communities and Grade Level Team Learning.

- Unit 1 article: "Supporting Math and Academic Vocabulary Development"
- Unit 2 article: "Establishing Classroom Environments that Support Mathematical Discourse for ALL Learners"
- Unit 3 article: "Knowing and Valuing Every Learner: Culturally Responsive Mathematics Teaching"
- Unit 4 article: "The Process of English Language Learning and What to Expect"
- Unit 5 article: "Bridging Funds of Knowledge to the Mathematics Classroom" (Bridging Out of School Experiences to the Mathematics Classroom)
- Unit 6 article: "Engaging Every Student in Mathematical Discourse"

Lesson Overviews in the *Teacher's Guide* at the beginning of for use in planning whole class instruction, small group opportunities. In the Lesson Overview:



Professional Learning
Supporting Math and Academic Vocabulary Development

Understanding mathematics and engaging in mathematical discussions requires students to communicate ideas using both academic and math-specific vocabulary and language. Formal academic mathematical language can be challenging for many students. Exposure to and integrated practice with academic language is critical for all students' success.

Academic language falls into two categories:

- Intrinsic, discipline-specific words and phrases used in the area of mathematics (such as hypothesis, prime numbers, rational numbers, base ten, "yes" and "no" only)
- All-purpose academic words—such as analyze and structure—that transcend the discipline of mathematics (Council of the Great City Schools, 2016)

Build Your Vocabulary

At the beginning of each unit the Build Your Vocabulary activities make math and academic vocabulary accessible to all learners.

Math Vocabulary that students were exposed to in previous grade levels provides access to prior knowledge and understanding of critical math words and phrases through teacher-guided activities.

Academic Vocabulary presents an early entry point to those all-purpose academic words students will engage with throughout their study of mathematics. Use the Academic Vocabulary Routine to provide explicit instruction and active engagement.

Academic Vocabulary Routine
Use with Build Your Vocabulary.

- Assess prior knowledge.**
 - Assess prior knowledge by asking students to place a check mark next to any vocabulary words they know or are familiar with.
 - Have students work in pairs to briefly discuss how and when they have used the words. Listen to assess if perceived knowledge is correct.
 - If you have Spanish speakers or speakers of other Latin-based languages, use the Cognate Support Routine.
- Pronounce the words.**
 - Review the Academic Vocabulary.
 - Say each of the words aloud and then have students repeat to ensure correct pronunciation.
- Define the words.**
 - Call on volunteer pairs to provide meanings of the words they know.
 - Note which words need more direct instruction and modeling.
 - Model the usage of the words in context, using traps that connect with students in a meaningful way.
 - Provide the meaning of the words in the Academic Vocabulary Glossary on the Teacher Toolbox.
- Use the words.**
 - Have students write the words, their own descriptions or examples, and a picture, symbol, or graphic representation in their math journal.
 - Review the activity as a whole class and remediate where needed.

UNIT 3 Math Background

Models, Progressions, and Teaching Tips
As you plan lessons, use this information to support the learning progression and make connections between key concepts.

Unit Themes

- The major themes of this unit are area and shape.
- You can use what you know about multiplication to find the area of a rectangle. This can also be used to find the area of complex shapes.
- You can use what you know about area to help you model and solve multiplication and division problems.
- The scale on a graph can stand for values greater than 1. Knowing how to multiply will help you use the scale to solve problems about data more efficiently.

Prior Knowledge

- Students will build on prior understanding of linear measurement, using rectangles, solving word problems, and using graphs. They should:
 - understand the meaning of multiplication.
 - be able to find the products of one-digit numbers.
 - be able to use a ruler to measure length to the nearest inch.
 - interpret a bar graph and picture graph with a scale of 1.

UNIT FLOW AND PROGRESSION

Watch the video! See the flow and progression of math concepts in this unit come to life with tips and insights on using models and making connections.

Area

Insights on Understanding Area

- Students study shapes that have been partitioned into congruent square units so that they count unit squares to find area. This is an opportunity for students to see that, as with units of length, the units must have no gaps and no overlaps.
- Looking back, in second grade students used repeated addition to find the total number of squares in an array. In third grade, students will recognize that when a rectangle is covered by rows and columns of square units, the rows (and all columns) are equal, the square units do not need to be counted individually, it can be easier to use repeated addition or multiplication to find the total.

You can count the square units that cover the space inside a shape to find its area.

1	2	3	
4	5	6	
7	8	9	

UNIT 3 Math Background

Multiplication Problems in Context

Insights on Solving Word Problems

- Students use array models to help them solve word problems that depict multiplication situations.
- Students solve two-step word problems using visual models and equations. Creating a good model helps the student to determine which operation(s) are necessary to find the solution.

Students use arrays to model word problems.

Kate has 20 footballs. She wants to give the same number of footballs to 5 football teams. How many footballs should each team get?

Scaled Graphs

Insights on Solving Problems Based on a Scaled Graph

- Looking back, in second grade students interpreted graphs with single-unit scales. In third grade, students will interpret data from scaled bar graphs and picture graphs. Encourage students to consider why scale is helpful and provide those with opportunities to share appropriate scales.
- In this grade, the numbers presented will only be whole-number multiples of the scale.
- Students will use multiplication to interpret scaled data.
- **Common Error:** Students may choose a scale that does not work for all their numbers. For example, a scale of 5 when their data includes numbers that are not multiples of 5. Instruct students to look carefully at all data points before choosing scales for their graphs.

Students use multiplication to help interpret a scaled graph.

Favorite Zoo Animals

Snakes	4
Apes	12
Lions	4

Each stands for 4 students.

$3 \times 4 = 12$
12 students chose lions.

every lesson provide information differentiation and independent

behaviors being elicited among students.

(continued)

- The standards **Focus** sets the expectation for students understanding and how they will demonstrate that understanding.
- **Lesson Objectives** include Content Objectives that identify the mathematical learning goals for the lesson, and Language Objectives that identify how students will show their understanding of those goals.
- **Prerequisite skills** are listed as an opportunity to monitor and identify students who have unfinished learning.
- New **Vocabulary** for the Lesson and academic definitions are provided, as well as vocabulary that is prominent in the lesson that might need review.
- **Learning Progressions** offer educators a look at coherence of the lesson, how it connects to what students have learned and where the content will lead in future lessons or grades.

Teacher's Guides are the main resource for embedded instructional support during each session. See any lesson in the *Teacher's Guide* for the following wrap-around guidance (example Grade 3, Lesson 12, page 251):

- **Connect to Prior Knowledge** gives clear entry points for each session while engaging students mathematically with prerequisite content.
- **Develop Language** provides targeted vocabulary and language support to ensure mathematics content.
- **Support Partner Discussion** are educator prompts to help students engage in meaningful peer discourse.
- **Common Misconception** identifies misconceptions that lead to errors in understanding, which can then be addressed in whole class discussion as students are prompted to explain their reasoning.
- **Select and Sequence Student Solutions** gives a range of possible strategies – from concrete to representational to abstract – and advice to educators to help them make decisions on which models and strategies to have students share with the class.
- **Support Whole Class Discussion** prompts are a series of related discourse questions that illuminate the mathematical ideas of the lesson.
- **Deepen Understanding** focuses on a Standard for Mathematical Practice and provides Ask/Look For suggestions to extend mathematical conversations of key lesson concepts.
- **Monitor and Confirm** is a way to ensure that students have made sense of learning goals.

Lesson Overview LESSON 8
Use Order and Grouping to Multiply

CCSS Focus
Domain
Operations and Algebraic Thinking
Cluster
8. Understand properties of multiplication and the relationship between multiplication and division.
Standard
3.OA.A.3 Apply properties of operations as strategies to multiply and divide.
Example: If $6 \times 4 = 24$ is known, then $4 \times 6 = 24$ is also known. (Commutative property of multiplication.)
Example: If $3 \times 5 = 15$, then $15 \div 3 = 5$ or $15 \div 5 = 3$.
Example: If $3 \times 10 = 30$, then $3 \times 10 = 30$. (Associative property of multiplication.)
Example: Knowing that $8 \times 5 = 40$ and $8 \times 2 = 16$, one can find 8×7 as $8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56$. (Distributive property.)
(Note: Students need not use formal terms for these properties.)
Additional Standards
3.OA.A.1, 3.OA.A.2 (See Standards Correlations at the end of the book for full text.)
Standards for Mathematical Practice (SMP)
SMPs 1, 2, 3, 4, 5, and 6 are integrated in every lesson through the "Try-Discuss-Connect" routine.
In addition, this lesson particularly emphasizes the following SMPs:
1 Use appropriate tools strategically.
4 Attend to precision.
7 Look for and make use of structure.
8 Look for and express regularity in repeated reasoning.
*See page 1 to see how every lesson includes these SMPs.

Lesson Objectives
Content Objectives
• Understand that numbers can be multiplied in any order and the product will be the same (commutative property of multiplication).
• Apply the commutative property of multiplication as a strategy to solve multiplication problems.
• Understand that three or more factors in a problem can be grouped in different ways and the product will be the same (associative property of multiplication).
• Apply the associative property of multiplication as a strategy to solve problems.
Language Objectives
• Rewrite a multiplication problem with the order of the factors reversed and solve.
• Rewrite a multiplication problem with parentheses in a different position and solve.
Prerequisite Skills
• Understand multiplication of whole numbers as finding the total number of objects in some number of equal groups.
• Know basic multiplication facts for 0 through 10.
• Use a multiplication equation to represent and solve a word problem.
Lesson Vocabulary
There is no new vocabulary. Review the following key terms.
• **array**: a set of objects arranged in equal rows and equal columns.
• **factor**: a number that is multiplied.
• **multiplication equation**: an equation with a multiplication symbol and an equal sign. For example, $3 \times 5 = 15$.
• **multiply**: to repeatedly add the same number a certain number of times. Used to find the total number of items in equal-sized groups.
• **product**: the result of multiplication.

Learning Progression
In previous lessons students learned the multiplication facts for 0–10. They were briefly exposed to the commutative and distributive properties of multiplication. In this lesson students focus on the commutative and associative properties of multiplication. Students gain an understanding of the properties, but do not need to know the formal terms for these properties. These properties can be used as strategies for multiplying, which helps students build fluency in single-digit multiplication, a key goal in Grade 3.
To explore the commutative property, students use pictures of equal groups and arrays to see that factors multiplied in any order result in the same product. For example, $6 \times 3 = 18$, and $3 \times 6 = 18$.

LESSON 12
SESSION 1 Explore

Purpose In this session students draw on what they know about how multiplication and division are related to solve a division problem. They will look ahead to think about using fact families to find an unknown number in a multiplication or division equation.

Start
Connect to Prior Knowledge
Materials For each student: 30 counters
Why Support students' understanding of the meaning of division as separating into equal groups to prepare them for working with multiplication and division fact families.
How Have students show $28 \div 7$ using equal groups to find the quotient.

Solution
4
Look for 28 counters in 7 groups of 4 or 4 groups of 7.

TRY IT
Make Sense of the Problem
To support students in making sense of the problem, have them describe what Kenny decides to do with his 24 marbles.
DISCUSS IT
Support Partner Discussion
To reinforce that there are 3 equal groups, encourage students to draw 3 circles or use 3 cups to represent the 3 bags.
Look for, and prompt as necessary for, understanding of:
• 24 total marbles
• 3 equal groups
• division or multiplication can be used to solve the problem

Common Misconception Look for students who are not comfortable with division situations and add 27; subtract 21; or multiply (using repeated addition) 272 the numbers given in the problem. As students present solutions, have them specify how they know which operation to use.
Select and Sequence Student Solutions
One possible order for whole class discussion:
• counting 3 groups of 8 objects
• using a 3×8 array
• writing and solving the multiplication equation $3 \times \square = 24$ or the division equation $24 \div 3 = \square$
Support Whole Class Discussion
Prompt students to note the relationship between the numbers in each model and the numbers in the problem.
Ask How do (student name)'s and (student name)'s models show the total, the number of equal groups, and the number in each group?
Listen for There are 24 total objects to represent Kenny's 24 marbles. There are 3 equal groups for the 3 bags, and there are 8 marbles in each group (or bag).

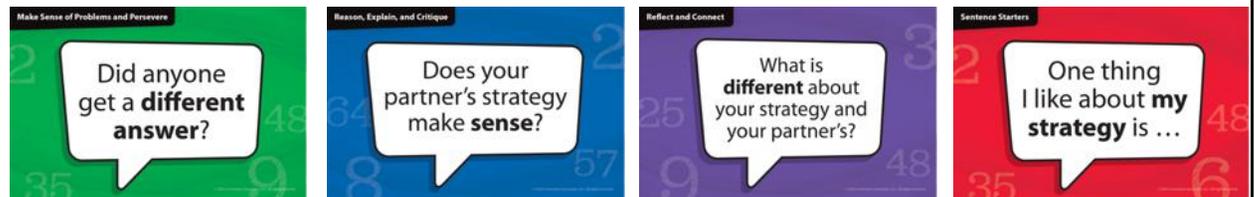
4. There are separate teacher materials that support and reward teacher study including, but not limited to: discussion of the mathematics of the units and the mathematical point of each Lesson as it relates to the organizing concepts of the unit...

(continued)

- Discourse support resources provide a way to engage all students in meaningful mathematical conversations. **Sentence starters** and **discourse questions** enable educators to support and facilitate whole class conversations with mathematics discourse questions as students share their thinking.

The organization of the lessons and the use of the Try–Discuss–Connect instructional routine give teachers a clear and consistent instructional path through each day of a lesson. Teachers are supported in delivering effective learning experiences through Lesson 0, on the *Teacher Toolbox*, where the routine is introduced the first week of school and described in detail. Teachers can also use of the Lesson Slides and *Teacher’s Guide* support for each lesson. Students are guided through Discuss It boxes in their *Student Worktext* to ask one another questions to clarify their own understanding. The discourse-rich questions in the Discuss It and Connect It sections of the *Student Worktext*, as well as the Ask/Listen For questions in the *Teacher’s Guide* provide quality questions to help guide students’ mathematical development.

The curriculum provides Mathematical Discourse Cards, Discourse Cube and 100 Mathematical Discourse Questions to help support teacher’s in asking students questions and teaching students to ask one another questions. These questions can be used in multiple ways to encourage peer conversations, support whole class discussion and can be used with almost all mathematical concepts allowing students to learn from one another and through their own deeper thinking. A printable version of the cards (examples shown), cube and 100 questions can be found under the Program Implementation Tab of the *Teacher Toolbox*.

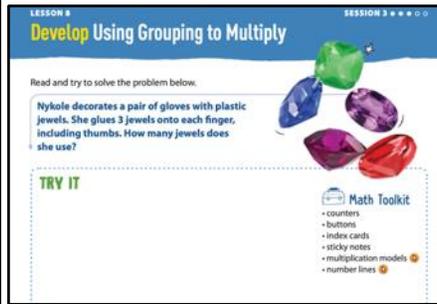


Resources on *i-Ready Classroom Central* provide planning and pacing resources and support, as well as guidance on developing instructional best practices through whitepapers and resources. Some of these whitepapers specifically support asking quality questions to help guide students’ mathematical development, particularly:

- *Integrating Effective Teaching Practices: Teacher Moves that Engage Students in Discourse and Mathematical Thinking* by Grace Kelemanik and Amy Lucenta
- *Fostering Student Engagement in the Mathematical Practices: Using Instructional Routines that Develop Productive Habits for Success* by Mark Ellis
- *Orchestrating Mathematical Discourse* by Gladis Kersaint
- *Selecting and Sequencing Student Solutions: Facilitating Productive Mathematics Discussions in the Classroom* by Gladis Kersaint
- *Culturally Responsive Mathematics Teaching*, by Mark Ellis
- *Recognizing Misconceptions as Opportunities for Learning Mathematics with Understanding*, by Mark Ellis

5. Manipulatives suggested in the materials are faithful representations of the mathematical objects they represent and are connected to written methods.

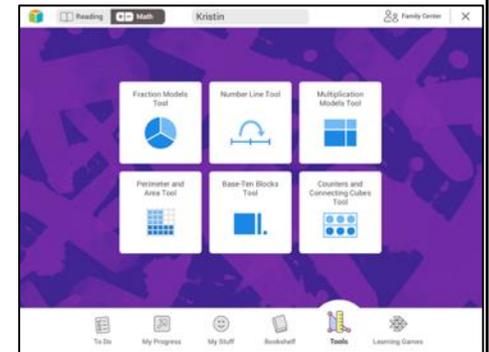
i-Ready Classroom Mathematics encourages the strategic use of concrete, representational and abstract representations (e.g. pictures, symbols, expressions, equations, graphics, models, technology-based tools). *i-Ready Classroom Mathematics* does not demand that students use any particular, tool, model, or representation. Rather, students learn about different models and tools that are commonly used and explore using each tool. Students are frequently asked to make a drawing of the manipulative model and also represent the situation numerically or symbolically.



In Explore and Develop sessions, the **Math Toolkit** provides a list of manipulatives and tools that teachers should make sure are available for students to choose, if they wish, as they develop strategies for the Try It problem. Space is provided in the Try It in the *Student Worktext* for students to record their representations in writing.

Digital Math Tools, including ten frames and base-10 blocks, are provided for students and teachers to use to represent problems. These include numeric and symbolic representations of the mathematical models. Students have access to grade level appropriate Digital Math Tools through their Bookshelf. Teachers have access to all Digital Math Tools, with the most relevant ones highlighted in the *Teacher Toolbox* for each lesson. Students can choose to use manipulatives within sessions to practice and apply what they have learned. For example, students are asked to record their thinking with manipulatives on the student page:

- Grade K – Lesson 10, pages 191–200
- Grade 1 – Lesson 3, pages 61–74
- Grade 2 – Lesson 6, pages 145–160
- Grade 3 – Lesson 2, pages 31–40
- Grade 4 – Lesson 6, pages 109–118
- Grade 5 – Lesson 6, pages 121–130



Often the **Hands-On Activities** in the *Teacher's Guide* use concrete versions of the manipulatives pictured in the student book. **Visual Model** demonstrations provide students with additional ways to think of the mathematical situation. For example, see the Visual Models and Hands-On Activities in the *Teacher's Guide* on these pages:

- Grade K – Lesson 8, page 152 (counters, objects, connecting cubes); Lesson 10, page 192 (10-frames and counters).
- Grade 1 – Lesson 11, page 246 (connecting cubes, 10-Frames); Lesson 13, page 287 two-color counters)
- Grade 2 – Lesson 1, page 17 (counters); Lesson 6, page 142 (connecting cubes) and Lesson 7, page 171 (base-ten blocks)
- Grade 3 – Lesson 3, page 61 (base ten blocks); Lesson 15, page 327 (unit tiles)
- Grade 4 – Lesson 20, page 419 (fraction bars); Lesson 32, page 701 (protractor)
- Grade 5 – Lesson 2, page 29 (unit cubes); Lesson 13, page 250 (fraction tiles)

6. Materials include a variety of curriculum embedded assessments. Examples include pre-, formative, summative, and self-assessment resources.

Curriculum Associates believes that assessment in the classroom is best used when it is used for learning. Assessment should provide useful information to both students and teachers. When teachers have useful information about what students are learning, they can support their students' progress and make informed instructional decisions (NCTM, 2000). The purpose of assessment is to measure student learning and also to support and enhance student understanding. *i-Ready Classroom Mathematics* is careful to assess students with precision and intention. Actionable reports provide teachers with guidance on what to teach and how to differentiate instruction and provide students with the guidance to monitor their own performance.

i-Ready Classroom Mathematics is written to address the Common Core State Standards for Mathematics (CCSSM) and all assessments focus on grade-level content. See the following *Teacher's Guide* pages for a list of each type of assessment available in *i-Ready Classroom Mathematics*: for grades K, 2, 4, 5–8 see pages A32–A33; for grades 1 and 3, see pages A34–A35.

During the Lesson Assessments

Various forms of assessments are included throughout *i-Ready Classroom Mathematics*. There are numerous classroom discourse questions, critical-thinking questions, activities, exit tickets, and practice problems that provide opportunities for educator observation of student understanding during a lesson. Lessons include questions with a range of Depth of Knowledge (DOK) levels and that address the SMPs with a heavy emphasis on mathematical discourse.

Sessions utilize a **Try–Discuss–Connect** instructional routine allowing teachers to informally assess students' understanding throughout the session, including opportunities to evaluate individual work, partner and classroom conversations, and student explanations of multiple student strategies. The *Teacher's Guide* supports teachers with additional questions to ask, guidance as to what to look for as they evaluate student responses, including key language to listen for and key concepts that should be in students' responses to illustrate accurate understanding.

- **Start Questions** at the beginning of Explore and Develop sessions serve to connect students' understanding of previously learned topics to what they are about to learn. These questions often reflect back to recent instruction or prerequisite concepts and skills important for the topic to come. These problems help teachers determine which students might need reteaching or additional support as the session progresses. For example, see the *Teacher's Guide* pages and corresponding slides on the *Teacher Toolbox*.

Assessments and Reports			
Assessment	When to Administer It	Where to Find It	Related Digital Assessments Reports
Diagnostic	Three times: • Beginning of the year • Middle of the year • End of the year	• Teacher Digital Experience	• Prerequisites • Diagnostic Results (Class) • Diagnostic Results (Student)
Observations of Student Understanding • Start • Try It • Discuss It • Pair/Share • Ask/Listen For • Common Misconceptions • Error Alert • Reflect • Connect It • Apply It • Interactive Glossary • Support Whole Group/ Partner Discussion • Close: Exit Ticket	Throughout each lesson	• Teacher Digital Experience > Ready Classroom Mathematics Teacher Toolbox • Teacher's Guide	N/A
Lesson Quiz (print) or Comprehension Check (digital)	After each lesson	• Teacher Digital Experience	• Comprehension Check (Class) • Comprehension Check (Student)
Unit Assessment (print) or Comprehension Check (digital)	At the end of a unit	• Teacher Digital Experience	• Comprehension Check (Class) • Comprehension Check (Student)
Assessment Practice Book (Grades 2–8)	Optional: two to three times per year	• Teacher Digital Experience > Ready Classroom Mathematics Teacher Toolbox	N/A

Try-Discuss-Connect Routine

Try

Make sense of the problem
Solve and support your thinking

Discuss

Share your thinking with a partner
Compare strategies

Connect

Make connections and reflect on what you have learned
Apply your thinking to a new problem

6. Materials include a variety of curriculum embedded assessments. Examples include pre-, formative, summative, and self-assessment resources.

(continued)

- **Ask/Listen For** questions and **Discuss It & Connect It** questions require higher order thinking and occur throughout *i-Ready Classroom Mathematics*. Each set of questions is specific to the lesson standard and learning objectives. These questions allow teachers to evaluate students' reasoning and understanding. For example, see the *Student Worktext* or *Teacher's Guide*:
 - Grade K – Lesson 4, pages 65–66
 - Grade 1 – Lesson 9, pages 193–194
 - Grade 2 – Lesson 13, pages 323–325
 - Grade 3 – Lesson 8, pages 193–195
 - Grade 4 – Lesson 7, pages 131–133
 - Grade 5 – Lesson 14, pages 281–283
- **Hands-On Activities** and **Visual Models** occur consistently at strategic points in the lesson and enable teachers to acquire understanding of student's learning through observation. These activities support learning of the lesson objectives and grade-level standards for students who are in need of extra support on the concept. Use of concrete objects lets students access the understanding in a different way. For example, see the *Teacher's Guide*:
 - Grade K – Lesson 6 (page 116) and Lesson 11 (page 220)
 - Grade 1 – Lesson 10 (page 217) and Lesson 27 (page 635)
 - Grade 2 – Lesson 3 (page 59) and Lesson 24 (page 589)
 - Grade 3 – Lesson 5 (page 111) and Lesson 15 (page 333)
 - Grade 4 – Lesson 11 (page 232) and Lesson 14 (page 309)
 - Grade 5 – Lesson 12 (page 239) and Lesson 20 (page 421)
- **Pair/Share prompts** in the Refine sessions for grades 2–5 provide additional opportunities for teachers to listen to and monitor student discussions of their problem solutions. These prompts focus on the lesson standards and give teachers a moment to observe student understanding. For examples see the *Student Worktext*:
 - Grade 2 – Lesson 5, pages 117–118
 - Grade 3 – Lesson 12, pages 267–268
 - Grade 4 – Lesson 12, pages 263–264
 - Grade 5 – Lesson 8, pages 161–162
- **Exit Tickets** at the end of each session serve to monitor understanding of the session content and grade level learning objectives, determine whether reteaching or additional practice is necessary, and can be used to help form groups for differentiated instruction. For example, see *Teacher's Guide*:

- Grade K – Lesson 22, page 428
- Grade 1 – Lesson 28, page 640
- Grade 2 – Lesson 21, page 516
- Grade 3 – Lesson 20, page 460
- Grade 4 – Lesson 28, page 580
- Grade 5 – Lesson 24, page 472

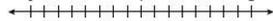
Close: Exit Ticket

8 See Student Worktext page; Area models should show 3 wholes each divided into 6 equal parts. Number lines should go from 0 to 3 and have a tick mark at every sixth.

Students' solutions should indicate understanding that:

- there are 3 wholes
- each whole is divided into 6 equal parts
- there are 18 equal parts in all

Error Alert If students draw a model that shows 6 wholes divided into thirds, then ask them to point out the denominator and the whole number mentioned in the problem and discuss how each of those numbers should be used to create the model.



Solution $\frac{16}{6}$

8 Draw a model to show $3 = \frac{18}{6}$. Show your work.

Possible student model:




508

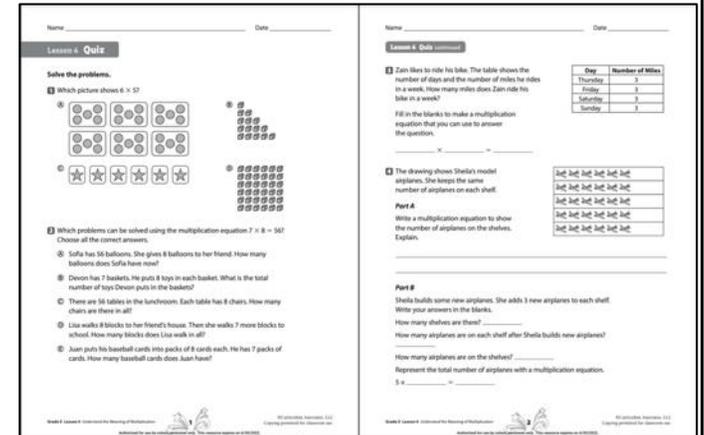
6. Materials include a variety of curriculum embedded assessments. Examples include pre-, formative, summative, and self-assessment resources.

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End of Lesson Assessments

Lesson Quizzes provide grade specific questions with various DOK levels that are presented in different question formats. Quizzes are available in an editable format on the *Teacher Toolbox*. Another option for educators to assess students is a digital Comprehension Check. This digital alternative to the print Lesson Quiz offers educators instant data using alternate question and item types. Educators may edit the digital Comprehension Check using the included item bank. In Grade 2 and above, Lesson Quiz question formats include those that are found on many state assessments. They are available on the *Teacher Toolbox* under the Assess column and on the last two pages of each lesson in the *Teacher's Guide*. For examples see:

- Grade K – Lesson 3, pages 58a–58b
- Grade 1 – Lesson 4, pages 90a–90b
- Grade 2 – Lesson 3, pages 74a–74b
- Grade 3 – Lesson 17, pages 384a–384b
- Grade 4 – Lesson 8, pages 168a–168b
- Grade 5 – Lesson 10, pages 202a–202b



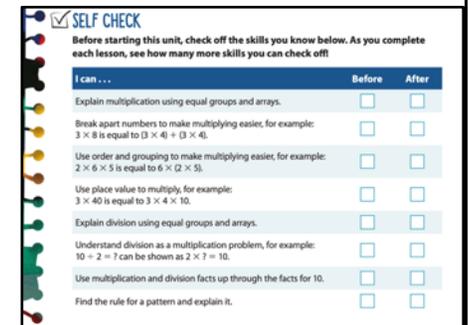
Math In Action lessons at the end of each unit (in grades 2–5) help students develop strong solutions to robust problem-based tasks. The last two pages of these lessons provide Performance Tasks (called Persevere on Your Own in grades 2–5) that combine numerous concepts and skills from earlier in the unit. For example, see the *Teacher's Guide* on the following pages:

- Grade 2 – Unit 2, pages 290a–297
- Grade 3 – Unit 2, pages 284a–291
- Grade 4 – Unit 2, pages 214a–221
- Grade 5 – Unit 2, pages 292a–299

Unit Level Assessments

Self Check: At the beginning of every unit, students evaluate their understanding of key lesson skills using the Self Check and then revisit the list as they work through the lessons to monitor their progress. See the Student Opener pages at the beginning of each unit. Example from Grade 3, Unit 2, page 89.

Show what you know (grade K): At the beginning of every unit, grade K students take a moment to draw what they may know about the upcoming topic. See the Student Opener pages at the beginning of each unit.



6. Materials include a variety of curriculum embedded assessments. Examples include pre-, formative, summative, and self-assessment resources.

(continued)



Self Reflections, at the end of every unit, give students a moment to reflect on their understanding of key lesson concepts from the unit. This allows students to develop self-inventory skills as they assess what they know and can do better at various points in the learning progression of their grade level content. See the end of unit resources in the *Student Worktext* or *Teacher’s Guide*.

Show what you learned (in grade K) gives students a moment to reflect on their learning from the unit. This allows students to begin developing self-inventory skills as they review what they have learned. See end of unit resources in the *Student Worktext* or *Teacher’s Guide*.

Unit Reviews are available in the *Student Worktext* to refine unit understanding. See, for example, these Unit Reviews in the *Teacher’s Guide*:

- Grade K – Unit 2, pages 222–224a
- Grade 1 – Unit 2, pages 424–426a
- Grade 2 – Unit 2, pages 298–300a
- Grade 3 – Unit 2, pages 292–294a
- Grade 4 – Unit 2, pages 222–224a
- Grade 5 – Unit 2, pages 300–302a

Performance Tasks (in the Unit Reviews at the end of each unit (for grades 1–5) provide additional opportunities for students to practice what they have learned in the context of multi-step, rich problems based on the standards from the unit. See, for example, Performance Tasks in the *Teacher’s Guide*.

- Grade 1 – Unit 3 (called “Put it Together”), pages 564–564a
- Grade 2 – Unit 2, pages 300–300a
- Grade 3 – Unit 2, pages 294–294a
- Grade 4 – Unit 2, pages 224–224a
- Grade 5 – Unit 2, pages 302–302a

Cumulative Practice is built into each unit for students to practice skills they learned earlier in the year. Cumulative pages are provided in the back of the *Student Worktext*.

UNIT 2 UNIT REVIEW

Performance Task

Answer the questions. Show all your work on separate paper.

Nicole bakes chocolate and vanilla cupcakes for a party.
Some of the cupcakes have frosting. The rest have no frosting.
Use the clues to find how many of each type of cupcake Nicole bakes.

- There are 34 chocolate cupcakes with frosting.
- There are 11 vanilla cupcakes with no frosting.
- There are 80 cupcakes in all.
- There are 26 fewer chocolate cupcakes with no frosting than with frosting.

	Chocolate Cupcakes	Vanilla Cupcakes	Total
Frosting			
No Frosting			
Total			

Copy and complete the table on a separate piece of paper. Explain why your answer works.

REFLECT
Model with Mathematics Tell how you can use the table to help you check your work. Then check to make sure the numbers in your table are correct.

Checklist

Did you ...

- use place value correctly?
- check your answers?
- explain your answers with words and numbers?

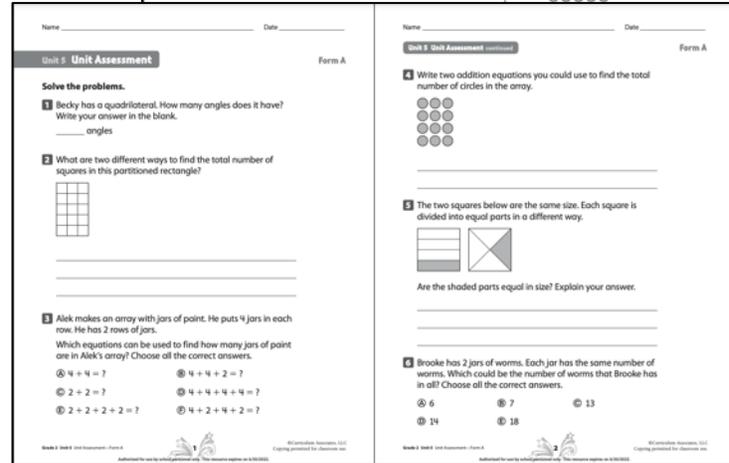
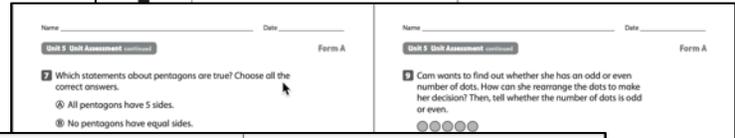
6. Materials include a variety of curriculum embedded assessments. Examples include pre-, formative, summative, and self-assessment resources.

(continued)

Mid-Unit Assessments (when necessary) and Unit Assessments provide opportunities within the middle of a unit and at the end of unit to assess student understanding on the content of the unit. There are editable versions on the *Teacher Toolbox*. Another option for educators to assess during the middle or end of unit is by digital Comprehension Check. This digital alternative to the print Mid- and Unit Assessments offers educators instant data using alternate question and item types. Educators may edit the digital Comprehension Check using the included item bank. For examples of Mid-Unit and Unit Assessments, see:

- Grade K – Unit 2, pages 404c–404f and 508a–508c
- Grade 1 – Unit 3, pages 512c–512f and 564b–564e
- Grade 2 – Unit 2, pages 210c–210f and 300b–300e
- Grade 3 – Unit 2, pages 224c–224f and 294b–294e
- Grade 4 – Unit 2, pages 168c–168f and 224b–224e
- Grade 5 – Unit 2, pages 186c–186f and 302b–302e

Editable Lesson Quizzes, Mid-Unit and Unit Assessments are found in the Assess Column of the *Teacher Toolbox*.



Ready Classroom Math Teacher Toolbox							
Grade K 1 2 3 4 5 6 7 8							
Program Implementation Classroom Resources Assessment Practice							
Unit 1: Three-Digit Numbers: Place Value, Addition, and Subtraction							
	Whole Class Instruction		Small Group Differentiation				
	Teach	Assess	Prepare	Reteach	Reinforce	Extend	
	Instruction & Practice	Interactive Tutorials	Lesson Quizzes & Unit Assessments	Prerequisite Lessons	Tools for Instruction	Math Center Activities	Enrichment Activities
Unit 1: Beginning of Unit							
Lesson 0: Lessons for the First Five Days							
Lesson 1: Use Place Value to Round Numbers 3.NBT.A.1							
Lesson 2: Add Three-Digit Numbers 3.NBT.A.2							

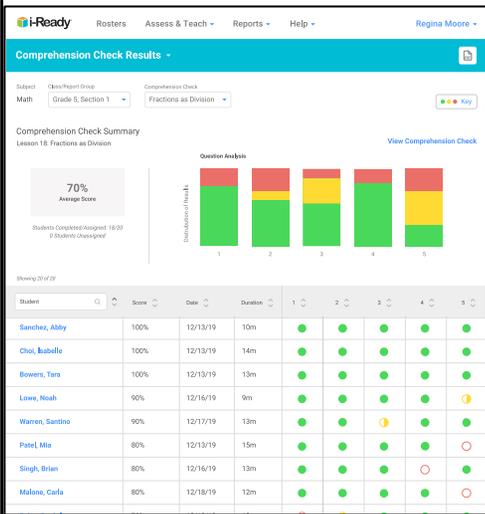
The Assessment Practice (for grades 2–5) provides grade-level standards-based cumulative benchmark tests using question formats similar to those on state assessments. These can be used periodically throughout the year to monitor progress and as an End-of-Year assessment. To access the Assessment Practice online, click the Assessment Practice tab available on the *Teacher Toolbox*.

Ready Classroom Math Teacher Toolbox						
Grade K 1 2 3 4 5 6 7 8						
Program Implementation Classroom Resources Assessment Practice						
National						
Assessment 1						
Assessment 2						
Assessment 3						
Teacher's Guide						

6. Materials include a variety of curriculum embedded assessments. Examples include pre-, formative, summative, and self-assessment resources.

(continued)

Digital Assessments



Digital Comprehension Checks provide an alternative option for Lesson Quizzes, Mid-Unit and Unit Assessments using a variety of questions and item types, including multiple select, yes/no, true/false, multiple choice, fill-in-the-blank, choice matrix, drag and drop, drop-down, and graphing on the coordinate grid. Teachers are able to choose which items to include on assessments and can combine items from multiple assessments.

Digital Comprehension Checks are automatically scored and provide reports to teachers on student progress toward understanding. These reports provide data that allow teachers to purposefully plan their instruction and differentiated groupings.

The theatre club is setting up 32 rows of chairs for a play. They are putting 16 chairs in each row.

Decide if each expression can be used to find the total number of chairs the club is setting up.

Choose Yes or No for each expression.

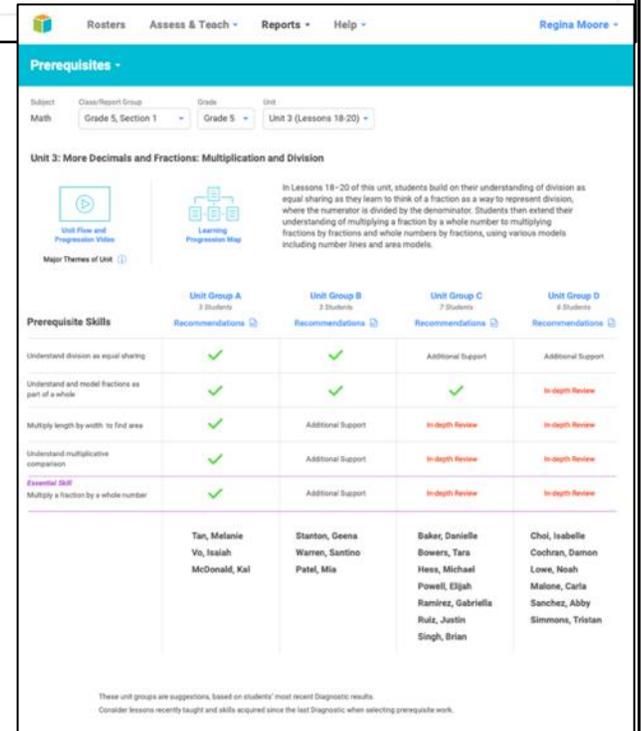
$(16 \times 20) + (16 \times 3)$	<input type="radio"/> Yes	<input type="radio"/> No
$(32 \times 10) + (32 \times 6)$	<input type="radio"/> Yes	<input type="radio"/> No
$(10 \times 30) + (10 \times 2) + (6 \times 30) + (6 \times 2)$	<input type="radio"/> Yes	<input type="radio"/> No
$(16 \times 3) + (16 \times 2)$	<input type="radio"/> Yes	<input type="radio"/> No

The Comprehension Check Results report identifies individual students' overall performance, class standards performance (skills details), class summary by item number, as well as common misconceptions and errors. Specific differentiation recommendations are provided to meet the needs of all learners.

The **Diagnostic** assessment provides opportunities to assess students' overall understanding of K–12 standards in a digital format. Teachers receive detailed reports, including the Prerequisites report, which identify students' understanding of prerequisite concepts needed for each unit of *i-Ready Classroom Mathematics*. These reports also connect to targeted resources to support teachers in helping students strengthen the skills and concepts across the unit.

The Prerequisite report (shown) provides direct links to recommended resources for use with groups of students based on their results.

i-Ready Classroom Mathematics users can use the **Diagnostic** assessment to receive access to detailed diagnostic data and reports including the prerequisite report described. The **Diagnostic** is recommended to be given three times a year: at the beginning of the year, mid-year, and near the end of the year. These reports are updated each time students take the diagnostic.



7. Assessments contain aligned rubrics, answer keys, and scoring guidelines that provide sufficient guidance for interpreting student performance.

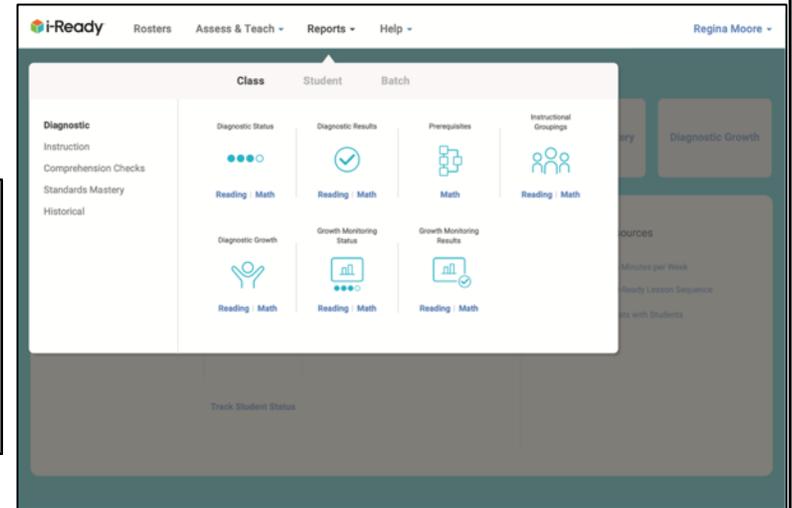
i-Ready Classroom Mathematics provides numerous rubrics and scoring guidelines to support teachers in interpreting student performance. Often, suggestions or resources are available to follow-up with students needing reteaching or additional support.

Lesson Quizzes and digital Comprehension Checks **assess the standards** of the lesson, as noted in the Lesson Overview. In addition, notes about the tested standards appear on the last two pages of each lesson in the *Teacher's Guide* and in the Assess column of each lesson on the *Teacher Toolbox*.

Tested Skills

Assesses 3.OA.A.1

Problems on this assessment form require students to understand that the \times symbol means *equal groups of*, to be able to write a multiplication equation or expression to represent a problem situation. Students will need to be familiar with repeated addition and the concept of equal groups. Alternately, teachers may assign the **Digital Comprehension Check** online to assess student understanding of this material.



For the Mid-Unit, Unit Assessments, and comparable Comprehension Checks, detailed **correlations** indicating the primary standard assessed in each question, as well as DOK levels, suggested point values, sample rubrics, and correlations to the lesson are provided in the *Teacher's Guide* and in the end of Unit Assess column on the *Teacher Toolbox*. This example is from Grade 3, Unit 2.

Scoring Guide

For the problems in the Unit 2 Unit Assessments (Forms A and B), the table shows:

- depth of knowledge (DOK) level
- points for scoring
- standard addressed
- lesson assessed by each problem

Exit Tickets at the end of each session, particularly in the Refine sessions, offer a quick assessment of each day's learning and serves as an indicator of students' progress. Error Alerts, particularly the **Error Alert** table in the Refine session, give insight into possible incorrect answers, errors and common misconceptions. All appear as appropriate throughout the lesson, providing on-the-spot suggestions for educators.

Error Alert		
If the error is ...	Students may ...	To support understanding ...
14 square meters	have added the length and width.	Review the meaning of multiplication as finding all the items in a set of equal groups. Show 10×4 as 10 rows of 4 squares each for a total of 40 squares.
28 square meters	have added the 4 sides.	Have students draw a rectangle that is 10 squares by 4 squares on grid paper, shade the area, and count the squares to find the area. Have students compare this to the answer they get when they add the lengths of all sides.
40 meters	have used the wrong unit.	Have students draw two squares, one with length 1 inch and the other with length 1 centimeter. Discuss the area of each square as the units "square inch" and "square centimeter," respectively.

Problem	DOK	Points	Standard	Lesson
1	2	1	3.OA.B.5	8
2	2	2	3.OA.C.7	6
3	1	1	3.NBT.A.3	9
4	2	2	3.OA.A.1	4
5	1	1	3.OA.A.4	12
6	2	4	3.OA.B.6	11
7	1	1	3.OA.B.6	11
8	2	4	3.OA.B.5	5
9	1	2	3.OA.A.4	12
10 Part A	2	1	3.OA.D.9	13
10 Part B	3	4	3.OA.D.9	13
11	2	2	3.OA.A.3	7
12	1	1	3.OA.A.2	10
13	2	4	3.OA.A.2	10
14	1	2	3.OA.A.4	12
15	2	2	3.OA.B.5	8
16	2	2	3.OA.B.5	7

7. Assessments contain aligned rubrics, answer keys, and scoring guidelines that provide sufficient guidance for interpreting student performance.

(continued)

The Math in Action lessons (Grades 2–8) that appear at the end of each unit provide instruction and practice with solving more robust, real-world problems. Detailed **sample solutions and scoring rubrics** are given for multiple parts of the lesson. See the *Teacher’s Guide* materials for any Math in Action lesson.

- Grade 2 – Unit 2, pages 290a–297
- Grade 3 – Unit 2, pages 284a–291
- Grade 4 – Unit 2, pages 214a–221
- Grade 5 – Unit 2, pages 292a–299

The Lesson Quizzes, Mid-Unit Assessments, Unit Assessments and comparable Comprehension Checks provide detailed rubrics for various question types, including short and extended response questions and those question types that require more than one answer (such as fill-in-the-blank, multiple select, or choice matrix). Examples are found in the *Teacher’s Guide* at the end of each unit. These pages can also be found on the *Teacher Toolbox* in the Assess column under end of unit resources.

After each Lesson Quiz or digital Comprehension Check, teachers are able to follow-up on student performance using the activities referenced in the *Teacher’s Guide* and provided on the *Teacher Toolbox* (shown) to **Reteach**, **Reinforce**, and **Extend** learning. References to these activities can be viewed in the *Teacher’s Guide* pages of the Lesson Quizzes and the activities are available on the *Teacher Toolbox* in the columns labeled: Tools for Instruction, Math Center Activities, and Enrichment Activities.

Adaptive **Learning Games** provide educator reports of standards performance and factors of learning (e.g. confidence, growth mind set). Students are also able to receive real-time feedback during each game.

Scoring Rubric (4 points)	
Points	Expectations
4	Steps are well organized, clear, and complete. Calculations are correct and student shows all work. The explanation is complete and explains the student’s choices. The total cost is at most \$80 and includes at least 3 items.
3	Steps are well organized and complete but may be somewhat unclear. Calculations may contain a minor error but the total cost is at most \$80. Some work may be missing. The explanation is reasonably clear but may not explain all choices.
2	Steps are not well organized and are incomplete. Calculations contain at least one error, and the total cost may be incorrect or exceed \$80. There may not be at least 3 items. The explanation is incomplete.
1	Steps are incomplete, and many calculations are incorrect. The explanation is incomplete or missing, and the student may not have stated the total cost. The student may not have purchased at least 3 items.

Scoring Rubrics

Short Response Scoring Rubric		Extended Response Scoring Rubric	
Points	Expectations	Points	Expectations
2	Response contains the following: <ul style="list-style-type: none"> • Correct computations, solutions, and/or calculations. (1 point) • Well-organized, clear, and concise work and demonstrates thorough understanding of math concepts and/or procedures. (1 point) 	4	Response contains the following: <ul style="list-style-type: none"> • Correct computations, solutions, and/or calculations. (2 points) • Well-organized, clear, and concise work and demonstrates thorough understanding of math concepts and/or procedures. (2 points)
1	Response contains the following: <ul style="list-style-type: none"> • Mostly correct solution(s). • Shows partial or good understanding of math concepts and/or procedures. 	3	Response contains the following: <ul style="list-style-type: none"> • Mostly correct solution(s). (1 point) • Shows strong understanding of math concepts and/or procedures. (2 points)
0	Response contains the following: <ul style="list-style-type: none"> • Incorrect solution(s). • No attempt at finding a solution. • No effort to demonstrate an understanding of mathematical concepts and/or procedures. 	2	Response contains the following: <ul style="list-style-type: none"> • Shows partial to limited understanding of mathematical concepts and/or procedures.
		1	Response contains the following: <ul style="list-style-type: none"> • Contains incorrect solution(s). • Poorly organized. • Incomplete work and explanations. • Demonstrates limited understanding of mathematical concepts and/or procedures.
		0	Response contains the following: <ul style="list-style-type: none"> • No attempt to find a solution. • No effort to demonstrate an understanding of mathematical concepts and/or procedures.

Fill-in-the-Blank Scoring Rubric		
2 points	1 point	0 points
Response contains the following: <ul style="list-style-type: none"> • Correct computations, solutions, and/or calculations. • Demonstrates correct mathematical procedures and thinking. 	Response contains the following: <ul style="list-style-type: none"> • Calculation error made. • Demonstrates mathematical procedures and/or thinking. 	Response contains the following: <ul style="list-style-type: none"> • Incorrect answers that do not demonstrate the correct mathematical procedures and/or thinking.

Multiple Select and Choice Matrix Scoring Rubric		
2 points	1 point	0 points
All answers are correct	1 incorrect answer	2 or more incorrect answers

	Whole Class Instruction		Small Group Differentiation			
	Teach	Assess	Prepare	Reteach	Reinforce	Extend
Unit 1: Beginning of Unit						
Lesson 0: Lessons for the First Five Days						
Lesson 1: Use Place Value to Round Numbers 3.NBT.A.1						
Lesson 2: Add Three-Digit Numbers 3.NBT.A.2						
Lesson 3: Subtract Three-Digit Numbers 3.NBT.A.2						

Not enough data Medium High
 Low

Sort by: Student Name

Name	Growth Mindset	Confidence	Productive Strategy	Self-Regulation
Aiden				
Bailey				
Camila				
Chloe				
Dylan				
Griffin				
Henry				
Huntley				
Jackson				

7. Assessments contain aligned rubrics, answer keys, and scoring guidelines that provide sufficient guidance for interpreting student performance.

(continued)

The digital **Comprehension Check Results** report helps educators monitor class results for a lesson or unit-level. This report shows students' understanding of concepts and skills covered in a lesson or unit. The report provides a visual overview of how students performed on each question. This can help educators determine which question students struggled with the most and which students may need additional targeted instruction and where misconceptions are among the class. On the *Teacher Toolbox* for Mid- and Unit Assessments, a correlation is provided for each item, listing Standard, Depth-of-Knowledge and referenced lesson. See the *i-Ready Classroom Mathematics Digital Assessment Reports Sampler* for complete samples of reports available.

Prerequisites -

Subject: Math, Class/Report Group: Grade 5, Unit: Unit 3 (Lessons 18-20)

Unit Overview Major Themes of Unit: **Unit 3: More Decimals and Fractions; Multiplication and Division**

Whole Class After familiarizing yourself with the needs of the students based on the data below, you may decide to address these prerequisite skills during whole class instruction.

Prerequisite Groups	Unit Group A 3 Students	Unit Group B 3 Students	Unit Group C 3 Students	Unit Group D 6 Students
Understand division as equal sharing.	Recommendations	Recommendations	Additional Support	In-Depth Review
Understand and model fractions as parts of a whole.	Recommendations	Recommendations	Additional Support	Additional Support
Understand multiplicative comparisons.	Recommendations	Additional Support	In-Depth Review	In-Depth Review
Essential Skill: Multiply a fraction by a whole number.	Recommendations	Additional Support	In-Depth Review	In-Depth Review
Multiply length by width to find area.	Recommendations	Additional Support	In-Depth Review	In-Depth Review
	Tan, Melanie Vo, Isalah McDonald, Kai	Stanton, Geena Warren, Santino Patel, Mia	Baker, Danielle Bowers, Tara Hess, Michael Powell, Elijah Ramirez, Gabriella Ruiz, Justin Singh, Brian	Choi, Isabelle Cochran, Damon Lowe, Noah Malone, Carla Sanchez, Abby Simmons, Triston

Comprehension Checks Mid-Unit and Unit Assessments

The digital comprehension check can be given as an alternative to the print Mid-Unit or Unit Assessment. For each of these assessments, the tables below provide the Depth of Knowledge (DOK), standard(s) assessed, and the corresponding lesson(s) assessed by each problem.

Comprehension Check Mid-Unit Assessment
Grade 3 Unit 3

Problem	DOK	Standard(s)	Lesson(s)
1	2	3.MD.C.7c	15, 16
2	2	3.MD.C.7b	15
3	2	3.MD.C.6	14
4	2	3.MD.C.6	15, 16
5	2	3.MD.C.7d	15
6	2	3.MD.C.7d	14
7	1	3.MD.C.7a	15
8	2	3.MD.C.7b	15
9	2	3.MD.C.5a	15
10	1	3.MD.C.7b	15
11	1	3.MD.C.6	15
12	2	3.MD.C.7d	15

Comprehension Check Results -

Subject: Math, Class/Report Group: Grade 5, Section 1, Comprehension Check: Fractions as Division

Comprehension Check Summary
Lesson 18: Fractions as Division

70% Average Score

Students Completed/Assigned: 18/20
0 Students Unassigned

Question Analysis

Showing 20 of 20

Student	Score	Date	Duration	1	2	3	4	5
Sanchez, Abby	100%	12/13/19	10m	●	●	●	●	●
Choi, Isabelle	100%	12/13/19	14m	●	●	●	●	●
Bowers, Tara	100%	12/13/19	13m	●	●	●	●	●
Lowe, Noah	90%	12/16/19	9m	●	●	●	●	●
Warren, Santino	90%	12/17/19	13m	●	●	●	●	●
Patel, Mia	80%	12/13/19	15m	●	●	●	●	○
Singh, Brian	80%	12/16/19	13m	●	●	●	○	●
Malone, Carla	80%	12/18/19	12m	●	●	●	●	○
Baker, Danielle	70%	12/13/19	12m	○	●	●	●	●
Vo, Isalah	70%	12/13/19	14m	●	○	●	●	●
Ramirez, Gabriella	70%	12/13/19	9m	●	○	●	●	●
Tan, Melanie	60%	12/16/19	11m	○	●	●	●	●
Ruiz, Justin	60%	12/16/19	8m	●	●	○	●	○
Stanton, Geena	50%	12/13/19	13m	○	●	●	●	○
Powell, Elijah	50%	12/13/19	14m	○	○	●	●	●

The **Diagnostic** assessment provides opportunities to assess students' understanding of K-12 standards in a digital format at the beginning, middle and end of the year. Teachers receive detailed reports, including the Prerequisites report, which identify students' understanding of prerequisite concepts needed for each unit of *i-Ready Classroom Mathematics*. These reports also connect to targeted resources to support teachers in helping students strengthen the skills and concepts that need reinforcing.

The Prerequisite report (shown) provides direct links to recommended resources for use with groups of students based on their results. Use this link to see all of the [components of the Prerequisites report](#).

<p>8. Materials assess student proficiency using methods that are accessible and unbiased, including the use of grade level language in student prompts.</p>	<p>Inside <i>i-Ready Classroom Mathematics</i> assessment questions are written and reviewed under strategic writing guidelines that infuse the pathways to accessibility for all students. Questions are also written and vetted to be unbiased in nature and use grade-level appropriate language and context.</p> <ul style="list-style-type: none">• For example, the Comprehension Check writing process for Lesson Quizzes and Unit Assessments starts with Item writing and follows through with the following process:<ol style="list-style-type: none">1. Item writing2. Review and Editing3. Instruction Team Review4. Revision5. Copy Edits6. Teacher Item Review and Meeting Key Verification7. Revision8. Second Key Verification9. Final posting• <i>Diagnostic</i> items are identified and revised based on psychometric data.• <i>i-Ready Classroom Mathematics</i> has guidelines around the appropriate use of non-mathematics vocabulary, to keep items focused for students. <p>See the Accessibility FAQ for the Diagnostic, Student Bookshelf and Comprehension Checks.</p>
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9. Materials are carefully evaluated by qualified individuals, whose names are listed, in an effort to ensure freedom from mathematical errors and grade-level appropriateness

i-Ready Classroom Mathematics provides complete coverage of the CCSSM with comprehensive blended (print and digital) resources to support teachers and students in meeting grade-level expectations. Each grade level of *i-Ready Classroom Mathematics* has a dedicated editor who reviews all of the content—including associated assessments—to ensure consistency between the standards and instructional content. These editors are in frequent communication with one another as they pay careful attention to the consistent long view and alignment of program resources to help students develop mastery of concepts at the appropriate level of rigor and complexity. The expectations communicated in the language of the CCSSM provide a consistent guide for our editors to ensure that tasks, activities, and assessments are aligned and meet grade-level expectations.

i-Ready Classroom Mathematics underwent multiple rounds of review for mathematical accuracy, including an independent quality assurance check that is reconciled by reviewers with grade-level mathematical expertise. To ensure the curriculum is free of mistakes and unrelated facts or information, our curriculum went through four rounds of internal review and editing. In addition to multiple rounds of internal review, the curriculum was also sent out for an external review that included a copy-edit, cold solve, and proofread.

Special Advisors

<p>Sarah Bent Advisory Focus: 3–5 Enrichment Sarah Bent, assistant director of the Mathematics Leadership Programs at Mount Holyoke College, Massachusetts, supports professional learning programs for K–8 mathematics teachers around the country. Sarah is a former third and fourth grade teacher, and videos of her classroom teaching have been used around the country for professional learning.</p> <p>Dinah Chanoeller Advisory Focus: Mathematical Pedagogy Dinah Chanoeller is a professional development consultant and mathematics writer and editor for Exemplars in Underhill, Vermont. She recently coauthored <i>Mathematics in Focus, K–6: How to Help Students Understand Big Ideas and Make Critical Connections</i>. In her home state of Texas, she has been both a teacher and leader in mathematics education.</p> <p>Diane Staehr Fenner, Ph.D. Advisory Focus: English Language Learners (ELL) Diane Staehr Fenner, president of SupportEd, provides ELL professional development, programmatic support, and research to school districts, states, organizations, and the US Department of Education. Diane is an author of four books, a blogger for the <i>ColoIn Colorado</i> website, and a frequent keynote presenter on ELL education at conferences across North America.</p>	<p>Aimee (Dorosz) Fitzpatrick Advisory Focus: Universal Design for Learning Aimee Fitzpatrick has over 20 years' experience in supporting students most at risk of academic failure and exclusion. She spent a decade with the New York City Department of Education as a senior leader in both the special education and technology fields. Aimee has worked with educators in public and charter schools and consults with educational publishers to ensure alignment to the principles of Universal Design for Learning.</p> <p>Michael Flynn Advisory Focus: K–2 Enrichment Mike Flynn, director of the Mathematics Leadership Programs at Mount Holyoke College, Massachusetts, is an active leader in mathematics education. He is the author of numerous publications on mathematics teaching, including <i>Beyond Assessers: Exploring Mathematical Practices with Young Children</i>. Mike is the 2008 Massachusetts Teacher of the Year and received the Presidential Award for Excellence in Mathematics Teaching in 2010.</p> <p>Melinda Mayers Advisory Focus: ELL, WIDA Melinda has served as an elementary educator, K–12 instructional coach, online ESOL course facilitator, and professional development designer/facilitator. Her work includes the effective implementation of research-based instructional strategies and WIDA's Can-Do Philosophy. She supports schools throughout Broward County Public Schools with high-quality instruction and adherence to federal, state, and district ESOL policies.</p>
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Teacher Advisors

<p>Crystal Bailey, Math Impact Teacher, Eastern Guilford Middle School, Guilford County Schools, Gibsonville, NC</p> <p>Max Brand, Reading Specialist, Indian Run Elementary, Dublin City School District, Dublin, OH</p> <p>Helen Comba, Supervisor of Basic Skills & Language Arts, School District of the Chathams, Chatham, NJ</p> <p>Cindy Dean, Classroom Teacher, Mt. Diablo Unified School District, Concord, CA</p> <p>Randall E. Groth, Ph.D., Associate Professor of Mathematics Education, Salisbury University, Salisbury, MD</p>	<p>Bill Laraway, Classroom Teacher, Silver Oak Elementary, Evergreen School District, San Jose, CA</p> <p>Jennifer Lerner, Classroom Teacher, PS 57, New York City Public Schools, New York, NY</p> <p>Susie Legg, Elementary Curriculum Coordinator, Kansas City Public Schools, Kansas City, KS</p> <p>Sarah Levine, Classroom Teacher, Springhurst Elementary School, Dobbs Ferry School District, Dobbs Ferry, NY</p> <p>Nicole Peirce, Classroom Teacher, Eleanor Roosevelt Elementary, Pennsbury School District, Morrisville, PA</p>	<p>Donna Phillips, Classroom Teacher, Farmington R-7 School District, Farmington, MO</p> <p>Maria Rosati, Classroom Teacher, Harwood Elementary School, Warren Consolidated Schools, Warren, MI</p> <p>Kari Ross, Reading Specialist, MN</p> <p>Sunita Sangari, Math Coach, PS/MS 29, New York City Public Schools, New York, NY</p> <p>Eileen Seybuck, Classroom Teacher, PS 57, New York City Public Schools, New York, NY</p> <p>Mark Hoover Thames, Research Scientist, University of Michigan, Ann Arbor, MI</p> <p>Shannon Tsuruda, Classroom Teacher, Mt. Diablo Unified School District, Concord, CA</p>
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Authors

<p>Mark Ellis, Ph.D. Awards and Key Positions</p> <ul style="list-style-type: none"> • Board of Directors, Executive Committee, NCTM • Department Chair and Professor, Education, CSU Fullerton • Distinguished Faculty, College of Education, CSU Fullerton • National Board-Certified Teacher • Research to Practice Award, Mathematics Teaching in the Middle School <p>Publications and Advisory Focus</p> <ul style="list-style-type: none"> • Coauthor of <i>Reimagining the Mathematics Classroom: Creating and Sustaining Productive Learning Environments, K–6</i> • Equitable and inclusive practices in mathematics education • Culturally responsive mathematics teaching and learning • Preparation of teachers of mathematics • History of school mathematics in the United States 	 <p>Gladis Kersaint, Ph.D. Awards and Key Positions</p> <ul style="list-style-type: none"> • Dean and Professor of Mathematics Education, Neag School of Education, University of Connecticut • Professor of Mathematics Education, University of South Florida, 1998–2016 • Board of Directors, NCTM, 2012–2015 • Board of Directors, Association of Mathematics Teacher Educators, 2008–2011 • Mathematics Teacher, Miami-Dade County Public Schools <p>Publications and Advisory Focus</p> <ul style="list-style-type: none"> • Coauthor of <i>Teaching Mathematics to English Language Learners</i>, <i>Mathematical Literacy: Helping Students Make Meaning in the Middle Grades</i> • Equity and discourse in mathematics education • Mathematics teaching and learning • Preparation of teachers of mathematics
<p>Grace Kelemanik, MST Key Positions</p> <ul style="list-style-type: none"> • Cofounder, Fostering Math Practices • National Consultant supporting teachers, coaches, and school leaders • Education Development Center, project director • Boston Teacher Residency Program, Teacher Educator • Urban 6–12 mathematics teacher and leader <p>Publications and Advisory Focus</p> <ul style="list-style-type: none"> • Coauthor of <i>Routines for Reasoning: Fostering the Mathematical Practices in All Students</i> • Teaching with instructional routines and implementing high-leverage pedagogical strategies • Urban education 	 <p>Amy Lucenta, M.Ed Key Positions</p> <ul style="list-style-type: none"> • Cofounder, Fostering Math Practices • National Consultant supporting teachers, coaches, and school leaders • Mathematics teacher and leader (K–12) <p>Publications and Advisory Focus</p> <ul style="list-style-type: none"> • Coauthor of <i>Routines for Reasoning: Fostering the Mathematical Practices in All Students</i> • Teaching with instructional routines and implementing high-leverage pedagogical strategies • Integrating Mathematical Practices into instruction • Supporting all learners

i-Ready Classroom Mathematics cites the authors, special advisors and teacher advisors in the front of each *Teacher's Guide*.

10. The visual design supports students in engaging thoughtfully with the subject. Navigation through the text is clear.

The visual design and the interactive instructional approach of *i-Ready Classroom Mathematics* cultivate student interest and engagement in mathematics. Simple, consistent, and precise images eliminate distractions and allow students to focus on the content. The images used often are zoomed in on specific elements of a problem (often to support understanding of the context), have a modern treatment, and engage students. The curriculum includes a large amount of open space for students to record their thinking pictorially, with a visual model, in writing, numerically, or symbolically. Students are engaged in the *Student Worktext* in large part because of the interactive instructional approach, which uses age-appropriate problem-solving situations.

Throughout *i-Ready Classroom Mathematics*, students work individually and participate in conversations with partners and the entire class as part of the Try–Discuss–Connect instructional routine (introduced in Lesson 0 on the *Teacher Toolbox*). Transitioning between individual, partner and whole class work throughout the routine while answering different questions about problems, strategies, and connections between strategies keeps students engaged and focused on learning through problem solving. See the *Student Worktext* or *Teacher’s Guide* for design samples.

Digital materials are accessible and easy for teachers and students to use in the classroom. Students can personalize their dashboards by selecting a background theme. The look and feel of the new student dashboard are automatically differentiated for younger students. Students can easily use the bottom navigation to access: To Do, My Progress, My Stuff, Bookshelf, Tools, and Learning Games screens. Family members can access the Family Center to learn more about how to support and encourage their child’s success. See more here:

- [Student Digital Experience](#) (3min video)
- [Teacher Digital Experience Overview](#) (1min video)
 - [Teacher Dashboard](#) (2min video)
 - [Teacher Toolbox K–8 access](#) (5 min video)
 - [Interactive Practice](#) (2:30min video)
 - [Digital Assessments](#) (3min video)
 - [Reports](#) (3min video)

Accessibility and Accommodations

See the [Accessibility FAQ for the Diagnostic, Student Bookshelf and Comprehension Checks](#).

See the *Student Worktext* or *Teacher’s Guide* for design samples.

Curriculum Associates fundamentally believes that all students deserve access to high-quality equitable educational resources. We strive to ensure that all learners, regardless of disability, cultural identity, economic status or circumstance, and linguistic background can engage with and see themselves reflected in our materials.



11. The materials engage parents in appropriate ways. For example, homework assignments in elementary grades, consist of routine problems, practice with getting answers, and fluency-building exercises that parents can easily support.

i-Ready Classroom Mathematics' print *Student Worktext* and Student Digital Experience were built with students and families in mind. The *Student Worktext* contains Family Letters and Activities for families to do together in order to gain understanding of the mathematics that is being explored at school. The Student Digital Experience is 24/7 at home or school and includes a wealth of interactive tools, games and family resources.

The **Develop Session Video Library** supports with online instruction. These instructional videos are available to students (My Videos on the student bookshelf) or can be shared with students for distance learning, homework support, or for when students are absent or need reteaching of session concepts.

Family Letters and **Activities** in the *Student Worktext* are available for every lesson. These letters provide support to parents and caregivers about the mathematics curriculum as well as the standards, strategies and methods students will be learning in that lesson. Family Letters are in the following languages digitally: English, Spanish, Tagalog, Russian, Arabic, Mandarin, Korean, Vietnamese. Portuguese, Somali and Amharic will be available back-to-school 2022. These letters include an activity that caregivers can do with students to further support learning. These short activities use resources easily accessible in most households. Letters are also provided digitally in the Family Center found online on the Student Dashboard. See the Family Letters and Activities in the *Student Worktext* or *Teacher's Guide* for each lesson. For example,

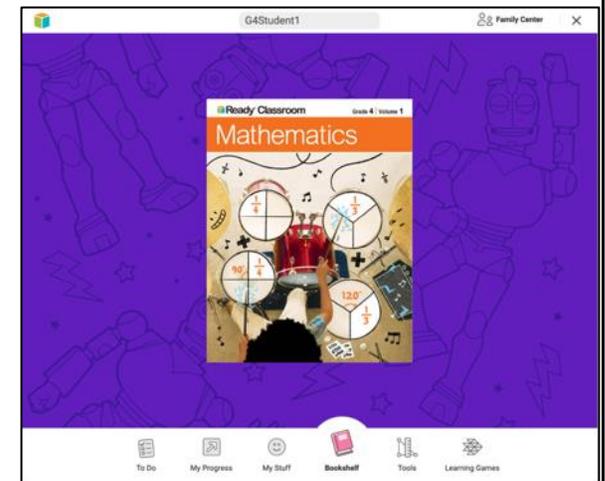
- Grade K – Lesson 9, pages 161–162
- Grade 1 – Lesson 8, pages 163–164
- Grade 2 – Lesson 9, pages 211–212
- Grade 3 – Lesson 3, pages 47–48
- Grade 4 – Lesson 7, pages 119–120
- Grade 5 – Lesson 6, pages 119–120

In the *Student Worktext*, **Additional Practice** and **Cumulative Practice** are provided for the teacher to assign for home practice or use for class practice. To support families, an example is built in to showcase and reinforce a strategy or method that was learned during the lesson. For examples, see the green practice pages in any Develop session.

The **Student Digital Experience** offers online access to the print *Student Worktext* via the Bookshelf along with Learning Games, Digital Math Tools and the Family Center.



- The **Bookshelf** houses the digital edition of *Student Worktext* and students have the ability to highlight, take notes or have the pages of read to them. **My Videos** houses the Develop session video library that provide instruction to students at-home, for review or if students are absent.



11. The materials engage parents in appropriate ways. For example, homework assignments in elementary grades, consist of routine problems, practice with getting answers, and fluency-building exercises that parents can easily support.

(continued)

- Adaptive **Learning Games**, which are provided on the Student Dashboard, merge gameplay and learning to provide engaging digital fluency practice across a wide range of content. The format and adaptive nature of the games provide novel ways for students to visualize different procedures and concepts. Students receive subtle and direct feedback that encourages multiple attempts. The more support students need, the more detailed the feedback. These games generate reports to support teachers in understanding students' progress towards specific skills and factors of learning such as confidence and growth mindset. There are currently eight games, and each has numerous levels that support students at multiple grade levels and ability levels.
- Digital Math Tools support students in discovery learning. The specific Digital Math Tools appropriate to a lesson are directly accessible on the *Teacher Toolbox* in the Lesson Overview section of each lesson. Grade-level appropriate Digital Math Tools are available to all students within the Bookshelf and include:
 - Counters and Connecting Cubes
 - Base-Ten Blocks
 - Perimeter and Area Models
 - Fraction Models
 - Number Lines
 - Multiplication Models
- On the Student Dashboard, parents/caregivers have access to the Family Center portal. The resources in the Family Center provide parents with information about how to access student materials, navigation, an overview of *i-Ready Classroom Mathematics*, and suggestions for how they can help support their student's progress and achievement.
- The **Bookshelf** also contains **Family Resources** such as Family Letters (available in English, Spanish, Tagalog, Russian, Arabic, Mandarin, Korean, Vietnamese, Portuguese, Somali and Amharic available back-to-school 2022.) and Unit Flow and Progression videos for each unit. The videos are available in English, with closed-captioning in Spanish. These videos further support parents in understanding the mathematical strategies of each unit, why those strategies are being used, and helps them better support student progress and achievement. For examples, see the Unit Flow and Progression videos in the beginning of the unit sections on the *Teacher Toolbox*.

