



# Mathematics

INTERVENTION

## Lessons and Activities

### Level 3

#### Table of Contents

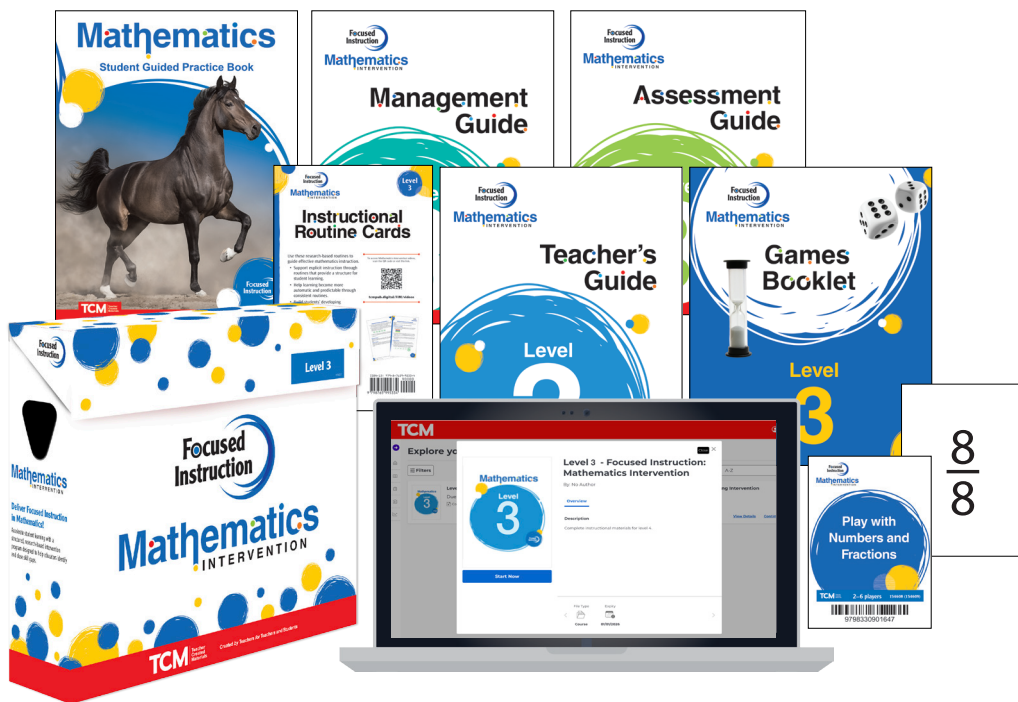
Management Guide (8 pages)

Teacher's Guide (7 pages)

Instructional Routine Cards (4 pages)

Student Guided Practice Book (7 pages)

Games Booklet (2 pages)





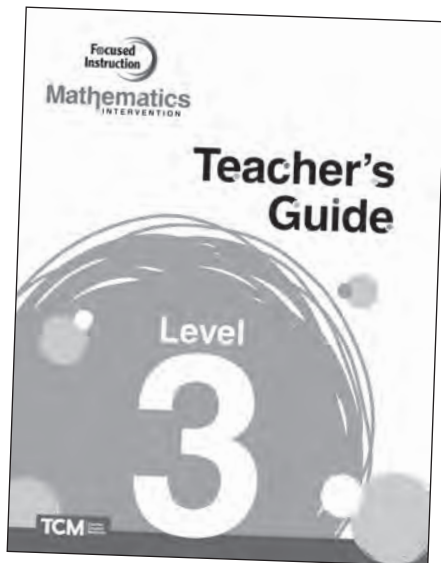
**Mathematics**  
INTERVENTION

# Management Guide

Level

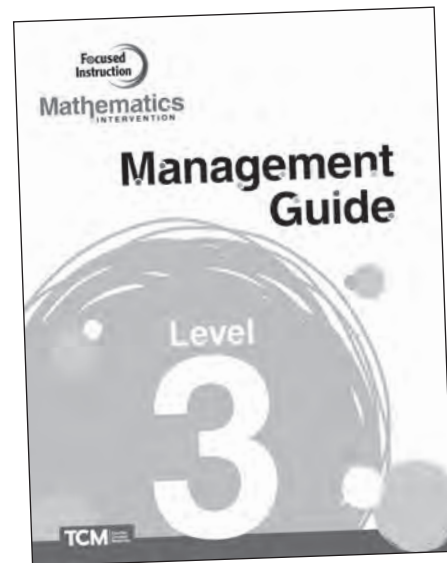
3

# Resource Overview



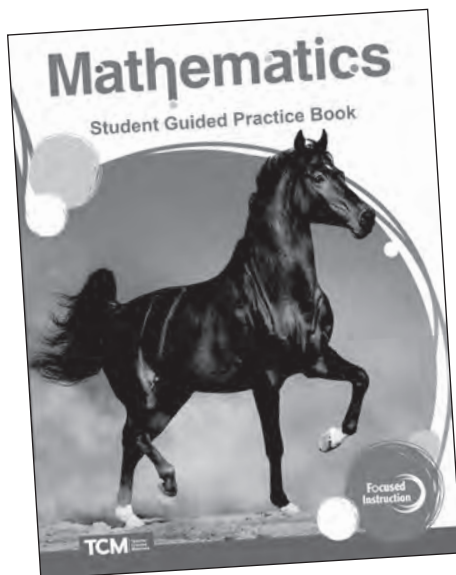
## Teacher's Guide

Deliver 30 easy-to-use, research-based lessons that follow the concrete, representational, abstract progression.



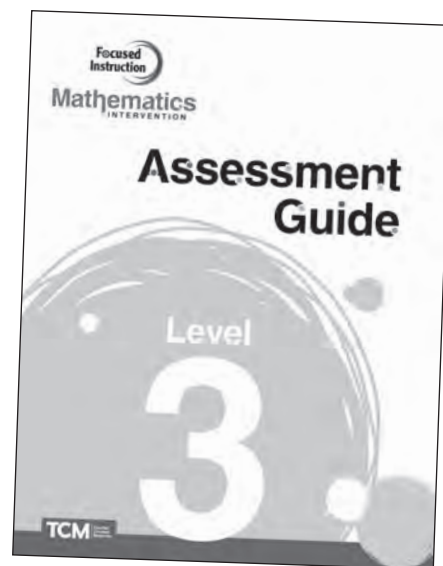
## Management Guide

Explore best practices for implementing effective mathematics intervention.



## Student Guided Practice Book

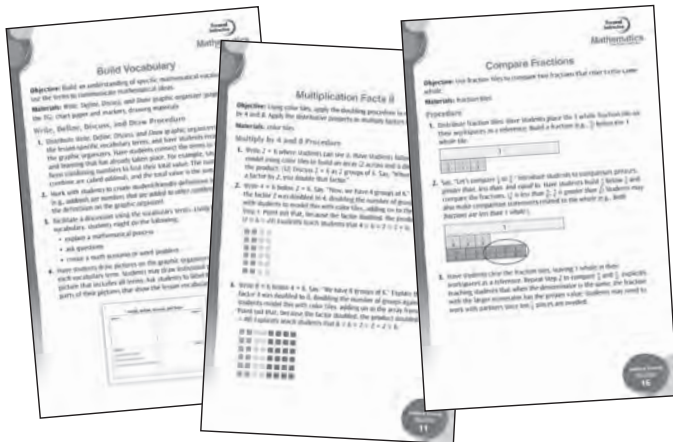
Guide student practice with full-color student activities, including differentiated student pages for each lesson. All student pages are available in the online course on the TCM Learning Platform.



## Assessment Guide

Monitor progress through flexible assessment opportunities, including a placement test, benchmark assessments, checklists, rubrics, and summative assessments.

# Resource Overview *(cont.)*



## Instructional Routine Cards

Support instruction through consistent discourse and manipulatives routines.



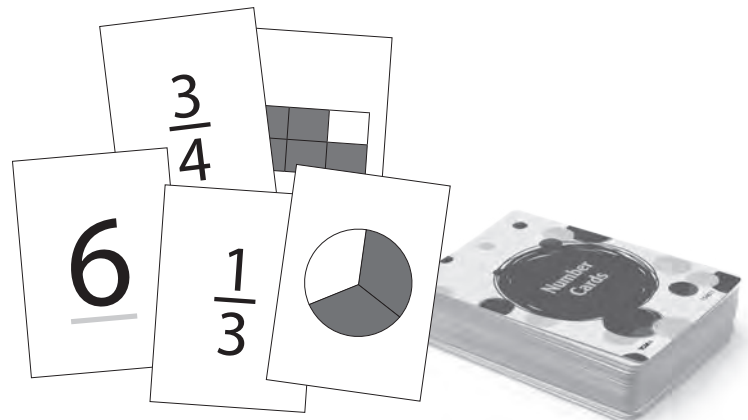
## TCM Learning Platform

Access all program resources and enhance instruction through lesson slides, support videos, assignable student pages, and digital assessments with student performance reporting.



## Games Booklet

This resource, used with the game cards, allows students to develop procedural fluency with mathematical concepts.



## Game Cards

Six decks of cards, each containing a set of Number Cards and a set of Fraction Cards, support the games included in each lesson.

# TCM Learning Platform

All program components are accessible in digital form via the TCM Learning Platform. This digital platform also houses additional resources for the successful implementation of *Focused Instruction: Mathematics Intervention*. Information for accessing the digital resources can be found in the TCM Learning Platform Quick Start Guide. Scan the QR code or visit this link to get started: [tcmpub.digital/FIM/quickstart](https://tcmpub.digital/FIM/quickstart).



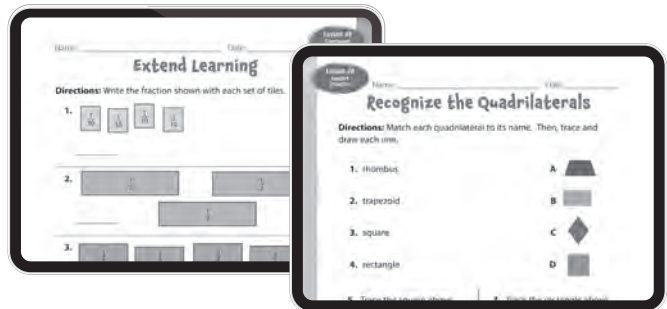
## Assessments and Reporting

Assessments can be assigned to students and completed on the TCM Learning Platform. All items are standards-aligned and autoscored providing immediate feedback to students and teachers. Performance Reports allow teachers to monitor student performance, identify gaps, and determine next steps for instruction.



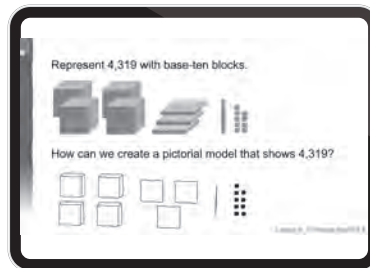
## Digital Student Guided Practice Book

Each page of the *Student Guided Practice Book* is offered in digital form. Students can print and download pages, enabling easy sharing of completed learning activities.



## Lesson Instruction Slides

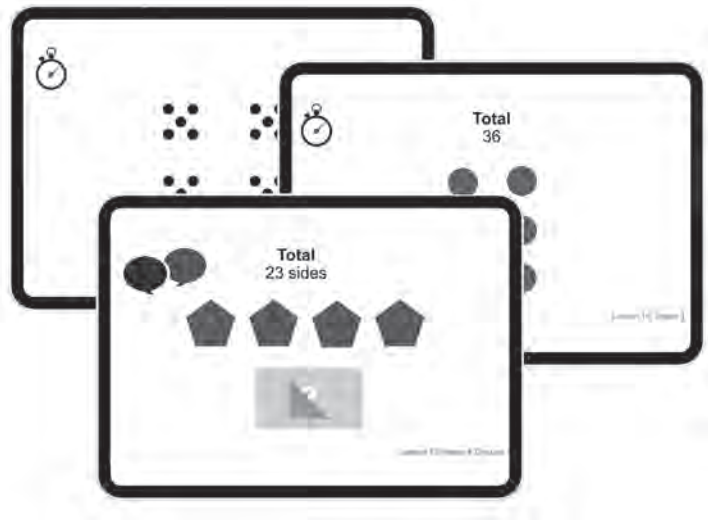
Lesson Instruction slides support the delivery of instruction during Parts 1 and 2 of each lesson. They help teachers connect the dots between student-facing content and instructional strategies.



# TCM Learning Platform (cont.)

## Quick View Slides

Each lesson includes a Quick View presentation to be accessed during instruction in Part 5. These Quick View slides promote discourse and allow students to develop fluency with mathematical concepts, such as subitizing, multiplicative reasoning, place value, and composition and decomposition of numbers.



## Videos

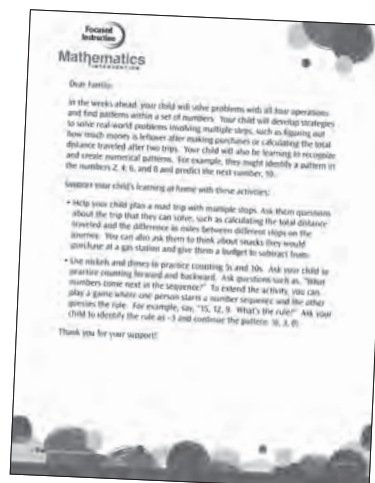
Teachers can access professional development videos for program implementation and delivery of instruction. To access the Math Intervention videos, scan the QR code or visit this link: [tcmpub.digital/FIM/videos](https://tcmpub.digital/FIM/videos). The following videos are included:



- **Using Manipulatives as Part of CRA:** Explains the nonlinear Concrete-Representational-Abstract progression, focusing on the importance of using hands-on manipulatives to develop key mathematical understandings. Makes explicit connections between the phases of CRA.
- **Using Instructional Routine Cards:** Learn about why routines are important for students and how to move between the lesson plans in the Teacher's Guide and the Instructional Routine Cards.
- **Using the TCM Learning Platform:** Watch a quick overview of the TCM Learning Platform to learn how to navigate and assign content, review and analyze student data, and make the most of platform features.

## School-Home Connection

The TCM Learning Platform is available to students and their families from any connected device. Each lesson series includes a family engagement letter to further support the school-home connection.





# Level 3 Standards Correlation *(cont.)*

	Standard	Lesson(s)
Operations and Algebraic Thinking	<b>Solve multiplication and division problems.</b>	
	Interpret products of whole numbers by determining the number of objects when equally sized groups of objects are combined. Explore multiplication as repeated addition using a number line.	Lesson 6
	Interpret whole-number quotients of whole numbers. Determine the number of objects in each group when a set of objects is partitioned into equal shares or a set of objects is shared equally.	Lesson 7
	Multiply and divide within 100 using visual models and equations to solve one- and two-step word problems involving equal groups.	Lessons 8 and 9
	Determine the unknown whole number in a multiplication equation, relating three whole numbers, when the unknown number is a factor or the product.	Lesson 10
	Multiply 2-digit numbers by 1-digit numbers using both the distributive property and standard algorithm.	Lesson 12
	<b>Solve problems involving the four operations.</b>	
	Represent and solve two-step real-world problems involving any of the four operations with whole numbers.	Lesson 13
	Explore patterns in arithmetic (including addition and multiplication tables). Identify, create, and extend numerical patterns.	Lesson 14
Number and Operations in Base Ten	<b>Develop place value understanding.</b>	
	Compose and decompose numbers in multiple ways, including representing numbers in expanded form.	Lesson 1
	Compare and order whole numbers and represent the comparison using the symbols $>$ , $<$ , and $=$ .	Lesson 2
	<b>Use place value understanding and properties of operations to perform multi-digit arithmetic.</b>	
	Round whole numbers to the nearest 10 or 100.	Lesson 3
	Solve, with procedural fluency, one- and two-step problems involving addition and subtraction within 1,000. Relate addition to subtraction.	Lessons 4 and 5
	Use place value understanding and properties of operations to multiply a whole number by a multiple of 10 or 100.	Lesson 11

# Level 3 Standards Correlation *(cont.)*

	Standard	Lesson(s)
Number and Operations with Fractions	<b>Develop understanding of fractions as numbers.</b>	
	Represent and interpret unit fractions in the form $\frac{1}{b}$ as the quantity formed by one part of a whole number that has been partitioned into $b$ equal parts.	Lesson 15
	Understand a fraction $\frac{a}{b}$ as the quantity formed by parts of size $\frac{1}{b}$ , or the result of adding the unit fraction $\frac{1}{b}$ to itself $b$ times.	Lesson 16
	Represent fractions of halves, fourths, and eighths on a number line by defining the interval from 0 to 1 as the whole and partitioning it into equal parts (e.g., 2, 4, or 8).	Lesson 17
	Identify and represent equivalent fractions with denominators of 2, 3, 4, 6, and 8 using a number line. Generate simple equivalent fractions and explain why they are equivalent.	Lesson 18
	Compare two fractions with the same numerator or denominator by reasoning about their sizes, and record comparison statements using the symbols $>$ , $<$ , and $=$ .	Lessons 19 and 20
Measurement and Data	<b>Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.</b>	
	Solve real-world problems involving addition and subtraction of time intervals in minutes by representing the problem on a number line.	Lesson 26
	Measure and estimate the mass and liquid volume (capacity) of objects using grams, kilograms, and liters to solve real-world problems involving any of the four operations.	Lessons 29 and 30
	<b>Represent and interpret data.</b>	
	Solve one- and two-step problems related to categorical data represented on a scaled bar graph.	Lesson 27
	Measure line segments to the nearest half or fourth of an inch and represent the lengths on a line plot, where the horizontal scale is marked off in appropriate units (e.g., whole numbers, halves, or fourths).	Lesson 28
	<b>Understand concepts of area and perimeter.</b>	
	Understand that a square with a side length of 1 unit, called a “unit square,” is said to have “one square unit” of area. Explore and determine the area of a rectangle by counting unit squares.	Lesson 21
	Find the area of a rectangle with whole-number side lengths using multiplication in the context of solving real-world and mathematical problems.	Lesson 22
	Find the areas of rectilinear figures by decomposing composite figures into non-overlapping rectangles using the additive property of area.	Lesson 23
Solve real-world and mathematical problems involving the perimeter of a polygon. Determine the missing side length when given the perimeter and remaining side lengths.	Lesson 24	
Geometry	<b>Reason with shapes and their attributes.</b>	
	Recognize and draw rhombuses, rectangles, squares, and trapezoids as quadrilaterals. Define them based on their attributes.	Lesson 25



# Level 3 Standards Correlation *(cont.)*

## Math Practices/Processes Alignment

Each lesson targets one of the eight Standards for Mathematical Practice (SMP). This chart shares a lesson alignment to each SMP, as well as an alignment to the Florida Mathematical Thinking and Reasoning Standards and the TEKS Mathematical Process Standards.

Standard for Mathematical Practice	Florida Mathematical Thinking and Reasoning Standard	TEKS Mathematical Process Standard	Lessons
1. Make sense of problems and persevere in solving them.	Actively participate in effortful learning both individually and collectively.	Use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution.	5, 11, 25
2. Reason abstractly and quantitatively.	Demonstrate understanding by representing problems in multiple ways.	Create and use representations to organize, record, and communicate mathematical ideas.	2, 19, 22, 28
3. Construct viable arguments and critique the reasoning of others.	Engage in discussions that reflect on the mathematical thinking of self and others.	Communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate.	3, 20, 26
4. Model with mathematics.	Apply mathematics to real-world contexts.	Apply mathematics to problems arising in everyday life, society, and the workplace.	6, 7, 18
5. Use appropriate tools strategically.	Complete tasks with mathematical fluency.	Select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems.	1, 10, 15, 21, 29
6. Attend to precision.	Assess the reasonableness of solutions.	Display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.	4, 9, 23, 30
7. Look for and make use of structure.	Use patterns and structure to help understand and connect mathematical concepts.	Analyze mathematical relationships to connect and communicate mathematical ideas.	8, 13, 17, 24
8. Look for and express regularity in repeated reasoning.	Use patterns and structure to help understand and connect mathematical concepts.	Analyze mathematical relationships to connect and communicate mathematical ideas.	12, 14, 16, 27

# Table of Contents

<b>Lesson 1:</b> Compose and Decompose Numbers . . . . .	4	<b>Lesson 16:</b> Explore Numerical Patterns . . . . .	94
<b>Lesson 2:</b> Compare and Order Numbers . . . . .	10	<b>Lesson 17:</b> Unit Fractions . . . . .	100
<b>Lesson 3:</b> Round Numbers to Estimate . . . . .	16	<b>Lesson 18:</b> Understand Fractions . . . . .	106
<b>Lesson 4:</b> Two-Digit and Three-Digit Addition . . . . .	22	<b>Lesson 19:</b> Represent Fractions . . . . .	112
<b>Lesson 5:</b> Two-Digit and Three-Digit Subtraction . . . . .	28	<b>Lesson 20:</b> Find Equivalent Fractions . . . . .	118
<b>Lesson 6:</b> Interpret Products of Whole Numbers . . . . .	34	<b>Lesson 21:</b> Compare Fractions . . . . .	124
<b>Lesson 7:</b> Interpret Quotients of Whole Numbers . . . . .	40	<b>Lesson 22:</b> Mass and Liquid Volume . . . . .	130
<b>Lesson 8:</b> Multiply by 0, 1, 2, 5, and 10 . . . . .	46	<b>Lesson 23:</b> Time to the Nearest Minute . . . . .	136
<b>Lesson 9:</b> Multiply by 3, 6, and 9 . . . . .	52	<b>Lesson 24:</b> Explore Area . . . . .	142
<b>Lesson 10:</b> Multiply by 4 and 8 . . . . .	58	<b>Lesson 25:</b> Find Area with the Distributive Property . . . . .	148
<b>Lesson 11:</b> Multiply by 7 . . . . .	64	<b>Lesson 26:</b> Areas of Rectilinear Figures . . . . .	154
<b>Lesson 12:</b> Multiples of 10 and 100 . . . . .	70	<b>Lesson 27:</b> Solve Perimeter Problems . . . . .	160
<b>Lesson 13:</b> Divide Within 100 . . . . .	76	<b>Lesson 28:</b> Quadrilaterals . . . . .	166
<b>Lesson 14:</b> Relate Multiplication and Division . . . . .	82	<b>Lesson 29:</b> Bar Graphs . . . . .	172
<b>Lesson 15:</b> Solve Two-Step Word Problems . . . . .	88	<b>Lesson 30:</b> Line Plots . . . . .	178
		<b>Glossary</b> . . . . .	184
		<b>Answer Key</b> . . . . .	186
		<b>Additional Resources</b> . . . . .	201

# Multiply by 4 and 8



## Learning Outcome

Use doubling to multiply whole numbers by 4 and 8.



## Language Goal—Speaking

Listen to a partner explain how to use base-ten blocks to represent the doubling procedure to multiply.



## Mathematical Practice/Process

Use appropriate tools strategically.

## Lesson Preview

	Part 1	Part 2	Part 3	Part 4	Part 5
Summary	Students use color tiles and pictorial models to use doubling as they multiply whole numbers by 4 and 8.	Students multiply by 4 and 8 using a standard algorithm and color tiles and/or pictorial models, as necessary. Students build vocabulary.	Students complete the formative assessment and practice comparing numbers by playing <i>Place Value Chance</i> .	Students actively participate in differentiated learning activities and complete a guided word problem.	Students engage in math discourse, complete an independent rich math task, and strengthen numeracy skills with visual representations.
Materials	<ul style="list-style-type: none"> <li>page 65 of the student book</li> <li>Instructional Routine 11</li> <li>color tiles</li> </ul>	<ul style="list-style-type: none"> <li>page 66 of the student book</li> <li>Instructional Routines 1 and 11</li> <li>color tiles</li> </ul>	<ul style="list-style-type: none"> <li>page 67 of the student book</li> <li>page 13 in the <i>Games Booklet</i></li> <li>page 66 in the <i>Assessment Guide</i></li> <li>color tiles</li> <li>10-sided number cube</li> <li>whiteboards and markers</li> </ul>	<ul style="list-style-type: none"> <li>pages 68–70 of the student book</li> <li>Instructional Routine 2</li> <li>color tiles</li> </ul>	<ul style="list-style-type: none"> <li>page 71 of the student book</li> <li>Instructional Routine 3</li> <li><i>Lesson 10 Quick View</i> slides</li> </ul>

## Possible Student Misconception

Students might try to double the factor that is not 4 or 8. While doubling isn't restricted to the  $\times 4$  and  $\times 8$  facts, they are the focus of the lesson. To address this, give students verbal reminders to look for the fours and eights. (It might be helpful to have them underline those factors to help differentiate them from the others.)



## Vocabulary

double  
factor  
product

To support the CRA teaching model, ensure students have access to hands-on math manipulatives throughout all lesson parts. These tools enable students to create concrete representations of math concepts.

# Multiply by 4 and 8

## Explore



10–15 min.



whole group

1. Distribute color tiles. Have students represent a number. Then, have them double it (e.g., 5 to 10). Have students double a few more numbers (e.g., 4 to 8; 10 to 20; 9 to 18).
- ✓ 2. Observe strategies students use to double their numbers. Students may automatically know, and others may rely on color tiles or other procedures. Use these observations to support students as they learn to use doubling as a strategy to multiply.

.....  
**Vocabulary:** Ask students to listen for the words *double*, *factor*, and *product* during the lesson. Write the words where students can see them. Students use strategies to build vocabulary on the second day of instruction.  
 .....

## Explain

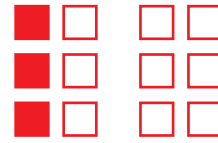


10–15 min.



whole group

3. Follow the Multiply by 4 and 8 Procedure of the *Multiplication Facts II* routine (card 11). Have students actively follow along as you multiply  $6 \times 4$  and  $6 \times 8$  using the doubling method. Explicitly teach students that the doubling method works because  $6 \times 4$  is the same as  $6 \times 2 \times 2$  and  $6 \times 8$  is the same as  $6 \times 2 \times 2 \times 2$ .
4. Write  $4 \times 3$  where students can see it. Use color tiles to show 1 group of 3, and then ask students to think of a strategy for doubling 3 without using more tiles. For example, students may double 3 mentally or count the tiles a second time. (6) Then, have them double the product (6) again. (12) Have students continue to use color tiles to multiply 4 by factors 1–10 ( $4 \times 1$ ;  $4 \times 2$ ;  $4 \times 4$ ; and so on).



5. Write  $8 \times 5$  where students can see it. Use color tiles to show 1 group of 5, and then ask students to think of a strategy for doubling 5 without using more tiles. For example, students may double 5 mentally or count the tiles a second time. (10) Then, since they are multiplying by 8, have them double the product (10) twice. (20; 40) Have students explain how the doubling procedure for 8 is similar to the doubling procedure for 4.

### Teacher Tip

Students may start recognizing that multiple strategies can be used to solve multiplication facts. For example,  $5 \times 8$  can be solved using the doubling procedure or recognizing 5 as a foundational factor (students can skip count by 5 eight times). Although the objective is to practice the doubling procedure, students should be encouraged to use the multiplication strategies they are most comfortable with.

## Guided Practice



10–15 min.




whole group

6. Have students complete *Doubles Practice* (page 65 of the student book). As students work, ask questions to check their understanding of the math concepts and provide support, as needed.

# Multiply by 4 and 8

## Review the Skill

 5 min.  whole group

1. Follow the Multiply by 4 and 8 Procedure of the *Multiplication Facts II* routine (card 11). Work with students to multiply  $9 \times 4$  and  $8 \times 3$ . (36; 24)
2.  Have students turn to partners and explain what it means to use the doubling method to multiply by 4 and 8. Encourage students to ask one another clarifying questions and work together to correct any errors that are shared.

### Multilingual Support

Teach multiple forms of the word *multiply* (e.g., *multiple*, *multiplying*, and *multiplication*). Use definitions that relate to how the different forms of the word will be used throughout the lesson. Students may hear, “I *multiplied* the factors,” or, “Use *multiplication* to solve the problem.”

## Build Vocabulary

 5–10 min.  whole group

3. Follow the *Build Vocabulary* routine (card 1). Use the Fix It and Find It Procedure to help students build a conceptual understanding of these words: *double*, *factor*, and *product*.

## Explain

 10–15 min.  whole group

4. Write  $4 \times 7$  where students can see it. Say, “To use the doubling method when multiplying a factor by 4, double the factor. Then, double it again.” Have students actively follow along as you draw 1 group of 7. Discuss the procedures to find the product. (28)
  - Count the color tiles a second time to double 7 to 14. Then, double 14 to 28.
  - Draw a second group of 7 to make 14. Then, count all the color tiles a second time to double 14 to 28.
  - Draw a complete array to model  $4 \times 7 = 28$ .
5. Write  $8 \times 8$  where students can see it. Say, “To use the doubling method when multiplying a factor by 8, double the factor. Double it a second time. Then, double it one more time!” Have students actively follow along as you draw 1 group of 8. Discuss the procedures to find the product of 64:
  - Count the color tiles a second time to double 8 to 16. Then, double 16 to 32 and 32 to 64.
  - Draw a second group of 8 to make 16. Then, count all the color tiles two more times to double 16 to 32 and 32 to 64.
  - Draw a complete array to model  $8 \times 8 = 64$ .
6. Repeat Steps 4–5 to continue multiplying factors by 4 and 8.

## Independent Practice

 10–15 min.  independent

7. Have students complete *Double Trouble* (page 66 of the student book). Students can use manipulatives, pictorial models, and algorithms to complete the page. Support students, as needed. Encourage them to think and ask questions before providing prompts to guide their work.

# Multiply by 4 and 8

## Skill Warm-Up

 5–10 min.  whole group

1. Distribute color tiles, whiteboards, and markers. Have students write  $8 \times \underline{\quad}$  and  $4 \times \underline{\quad}$  two times each.
2. Roll a 10-sided number cube for each blank, and have students find the products. Discuss the procedures students used and the products as a group.

## Quick Check

 10–15 min.  independent

1. Have students complete *Quick Check* (page 67 of the student book) to gauge student progress toward mastery of the learning outcomes.
2. Based on the results of the *Quick Check* and your observations throughout the lesson, identify students who may benefit from focused reteaching and students who may benefit from extended learning opportunities. See page 11 in the *Assessment Guide* for more information about analyzing formative assessment data and making these instructional decisions. Differentiation will take place on the next day of instruction.

## Practice and Application

 15–20 min.  small groups or pairs

1. Facilitate *Place Value Chance* (page 13 in the *Games Booklet*). Directions are also provided on page 214 of the student book.
2.  As students play, listen to make sure they understand the concepts of reading/saying numbers and determining the values of digits and are applying them correctly. Model the correct process(es) for students requiring support.
3. Annotate observations using the *Place Value in Whole Numbers Checklist* (page 66 in the *Assessment Guide*).

### Multilingual Support

Provide sentence frames to support the communication of mathematical concepts.

- *My number is* \_\_\_\_\_.
- *My number has* \_\_\_\_\_ *hundreds.*
- \_\_\_\_\_ *is less than* \_\_\_\_\_ *because* \_\_\_\_\_.
- \_\_\_\_\_ *is greater than* \_\_\_\_\_ *because* \_\_\_\_\_.

### Scaffolded Support

Provide students with base-ten blocks and *Place Value Mats*. Encourage them to represent the numbers they create with the base-ten blocks using the *Place Value Mats*. Organized base-ten blocks will help students visualize and determine the values of digits.



# Multiply by 4 and 8

## Differentiation

Based on the results of the previous day's *Quick Check* and observations throughout the lesson, place students in two groups. (See page 11 in the *Assessment Guide* for more information about analyzing formative assessment data and making these instructional decisions.)

- For students who require reteaching, deliver the Focus Mini-Lesson while the other students independently complete *Extend Learning* (page 68 of the student book).
- Then, have the groups switch, and deliver the Extend Mini-Lesson to students who meet or exceed the expected benchmarks while the other students complete *Focus Learning* (page 69 of the student book).

## Focus Mini-Lesson

 10–15 min.  small group



1. Distribute color tiles. Work with students to recognize the pattern of multiplying by 2, 4, and 8. Practice doubling numbers three times. For example, 3 doubled three times is 24. (6; 12; 24) Each time a number is doubled, compare it to being multiplied by 2, 4, and 8. ( $3 \times 2 = 6$ ;  $3 \times 4 = 12$ ;  $3 \times 8 = 24$ )
2. Have students share how the doubling method works when multiplying a number by 2, 4, and 8.

## Extend Mini-Lesson

 10–15 min.  small group



1. As a group, discuss students' strategies and solutions from *Extend Learning* (page 68 of the student book). Discuss strategies for doubling to find products. Encourage students to support their thinking with color tiles and/or pictorial models.
2. As time allows, pose additional problems:  $4 \times 2$ ;  $8 \times 2$ ;  $16 \times 4$ . (8; 16; 64) Note the strategies students use to solve them. Have students explain and defend the strategies they use to solve the problems.

## Guided Problem-Solving

 10–15 min.  whole group

Follow the *Guided Problem-Solving* routine (card 2) to support students with problem-solving strategies as they complete *Ladybugs* (page 70 of the student book).

- **Strategies:** For students struggling with doubling, encourage them to use color tiles to build a full array that represents  $6 \times 8$ .

This problem can also be solved using the following strategies:

- multiplying 8 by 5 and adding a group of 8 to the answer
- doubling 6 three times
- **Solution:** 48 spots

# Multiply by 4 and 8

## Quick View

 10–15 min.  whole group

1. Display the first *Lesson 10 Quick View* slide for 5–7 seconds. Remove the image and provide wait time. Then, ask students to name the quantity they saw. Accept a variety of responses.
2. Show the slide again. Have students share how they determined the quantity, including any strategies or grouping procedures they used. Guide students to use multiplicative reasoning. Encourage students to confirm or revise their answers.
3. Repeat Steps 1–2 for the remaining *Lesson 10 Quick View* slides.

### Multilingual Support

To prepare for the Rich Math Task, talk with students about how the same product can come in different sizes, leaving a choice to consumers. Give examples of items students are familiar with, such as different-sized cups for fountain drinks. Ask students why a person might choose to buy one size over the other.

## Rich Math Task

 20–30 min.  small groups or pairs

1. Display *Burning Candles* (page 71 of the student book). Read the problem: *A store sells small candles that burn for 4 hours and large candles that burn for 8 hours. You need to burn candles for 24 hours. What combinations of candles could you buy to equal exactly 24 hours?*
2. To help students connect this task to real life, have a conversation about time. For example, ask, “What do you usually do in 24 hours?” and “How many of those hours do you spend sleeping?”
3. As students work, follow the *Mathematical Discourse* routine (card 3). Consider using these task-specific prompts in addition to the prompts on the card:
  - How many numbers can you use to skip count to 24?
  - Is one combination of candles better than the other?

### Summative Assessment

A summative assessment to gauge student progress toward mastery of the learning outcomes for Lessons 8–11 is provided on page 102 of the *Assessment Guide*.

## Build Vocabulary

**Objective:** Build an understanding of specific mathematical vocabulary and use the terms to communicate mathematical ideas.

**Materials:** *Write, Define, Discuss, and Draw* graphic organizer (page 202 in the TG), chart paper and markers, drawing materials

### Write, Define, Discuss, and Draw Procedure

1. Distribute *Write, Define, Discuss, and Draw* graphic organizers. Introduce the lesson-specific vocabulary terms, and have students record them on the graphic organizers. Have students connect the terms to the teaching and learning that has already taken place. For example, say, “We have been combining numbers to find their total value. The numbers we combine are called *addends*, and the total value is the *sum*.”
2. Work with students to create student-friendly definitions for the terms (e.g., *addends are numbers that are added to other numbers*), and record the definitions on the graphic organizer.
3. Facilitate a discussion using the vocabulary terms. Using lesson vocabulary, students might do the following:
  - explain a mathematical process
  - ask questions
  - create a math scenario or word problem
4. Have students draw pictures on the graphic organizers to represent each vocabulary term. Students may draw individual pictures or one picture that includes all terms. Ask students to label their pictures or parts of their pictures that show the lesson vocabulary.

Write, Define, Discuss, and Draw	
Write #1	Define #1
Discuss #1	Draw #1

Use the word in a sentence.  
 Ask a question about the word.  
 Explain how the word connects to the real world.

# Build Vocabulary (cont.)

## Find It and Fix It Procedure

Prior to the lesson, prepare a chart-paper poster with three columns: Vocabulary, Definition with Errors, and Correct Definition. Write the lesson vocabulary in the first column and definitions with clear, major errors in the second column. Avoid the use of small or trivial errors.

1. Introduce the lesson-specific vocabulary terms, and connect their definitions to the teaching and learning that has already taken place. For example, say, “We have been making equal groups of color tiles and finding the total number of tiles. The number of groups and the number of tiles in each group are called *factors*. The total value is the *product*.”
2. Work with the group to create student-friendly definitions for the terms, and record the definitions where students can see them.
3. Display the vocabulary poster. Have student pairs find the error in each definition. Discuss their findings as a group.
4. Use the third column to write the correct definition for each term. Display the vocabulary poster throughout the lesson.

---

## Multilingual Support

Provide students with synonyms, acronyms, alternate words, or pictures when necessary. For example, students may associate the word *difference* with synonyms, such as *answer*, even though the precise term should be encouraged.

## Scaffolded Support

Modify the Find It and Fix It steps to Fix It. Highlight, circle, or underline the errors in the definitions prior to students viewing them. Let the focus of the conversation be on what the errors are and how they can be corrected.

*This routine is based on Assisting Students Struggling with Mathematics: Intervention in the Elementary Grades Educator’s Practice Guide by the National Center for Education Evaluation and Regional Assistance (NCEE) at IES.*

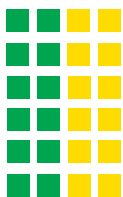
## Multiplication Facts II

**Objective:** Using color tiles, apply the doubling procedure to multiply factors by 4 and 8. Apply the distributive property to multiply factors by 7.

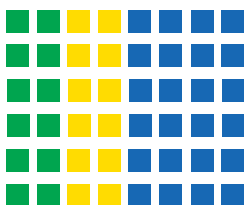
**Materials:** color tiles

### Multiply by 4 and 8 Procedure

1. Write  $2 \times 6$  where students can see it. Have students follow along as you model using color tiles to build an array (2 across and 6 down) to find the product. (12) Discuss  $2 \times 6$  as 2 groups of 6. Say, “When you multiply a factor by 2, you double that factor.”
2. Write  $4 \times 6$  below  $2 \times 6$ . Say, “Now, we have 4 groups of 6.” Explain that the factor 2 was doubled to 4, doubling the number of groups. Work with students to model this with color tiles, adding on to the array from Step 1. Point out that, because the factor doubled, the product doubled. ( $4 \times 6 = 24$ ) Explicitly teach students that  $4 \times 6 = 2 \times 2 \times 6$ .



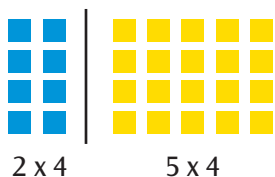
3. Write  $8 \times 6$  below  $4 \times 6$ . Say, “We have 8 groups of 6.” Explain that the factor 4 was doubled to 8, doubling the number of groups again. Have students model this with color tiles, adding on to the array from Step 2. Point out that, because the factor doubled, the product doubled. ( $8 \times 6 = 48$ ) Explicitly teach students that  $8 \times 6 = 2 \times 2 \times 2 \times 6$ .



# Multiplication Facts II (cont.)

## Multiply by 7 Procedure

1. Write  $7 \times 4$  where students can see it. Say, “I know  $2 \times 4 = 8$ .” Have students follow along as you build an array (2 across and 4 down) using color tiles. Practice as a group skip counting by 2s to 8.
2. “I’ve only made 2 groups of 4, but I need to find 7 groups of 4. How many more groups do I need to create?” (5) Work with students to skip count by 5s to determine  $5 \times 4 = 20$ , and model this by adding on to the array.



3. Explicitly teach students that the array models the distributive property:  $(2 \times 4) + (5 \times 4) = 28$ . Say, “ $7 \times 4 = 28$ . Since 7 can be a challenging factor to work with, it was distributed as factors 2 and 5. The factors 2 and 5 are foundational factors that are becoming easier for us to work with.”
4. Ask students how they can prove that  $(2 \times 4) + (5 \times 4) = 7 \times 4$ . Encourage them to use color tiles (one color) to model  $7 \times 4$ , making comparisons to the arrays used to model  $(2 \times 4) + (5 \times 4)$ .

---

## Multilingual Support

Teach multiple forms of the word *double* (e.g., *doubled* and *doubling*). Use definitions that relate to how the different forms of the word will be used throughout the lesson. Students may hear, “I *doubled* the product,” or “Use the *doubling* procedure to solve the problem.”

## Scaffolded Support

Review skip counting by 2s and 5s to support students using the distributive property to multiply factors by 7. Make this a regular part of your math routine.

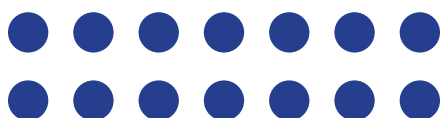


Name: \_\_\_\_\_ Date: \_\_\_\_\_

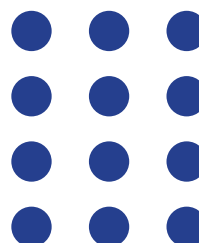
# Doubles Practice

**Directions:** Double the arrays to find the final products.

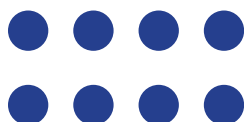
1.  $4 \times 7 =$  \_\_\_\_\_



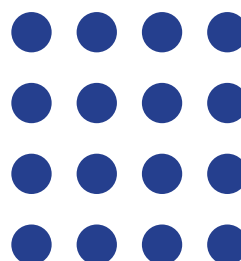
3.  $8 \times 3 =$  \_\_\_\_\_



2.  $4 \times 4 =$  \_\_\_\_\_



4.  $8 \times 4 =$  \_\_\_\_\_



Name: \_\_\_\_\_ Date: \_\_\_\_\_

# Double Trouble

**Directions:** Use doubling to find the products.

1.  $4 \times 6 =$  \_\_\_\_\_

4.  $8 \times 9 =$  \_\_\_\_\_

2.  $8 \times 7 =$  \_\_\_\_\_

5.  $4 \times 8 =$  \_\_\_\_\_

3.  $4 \times 3 =$  \_\_\_\_\_

6.  $8 \times 4 =$  \_\_\_\_\_

Name: \_\_\_\_\_ Date: \_\_\_\_\_

 **Quick Check****Directions:** Answer the questions.

1.  $8 \times 4 =$  \_\_\_\_\_

2.  $4 \times 7 =$  \_\_\_\_\_

3. Which pair of numbers shows doubling?

- (A) 15 and 25
- (B) 0 and 2
- (C) 10 and 8
- (D) 12 and 24

4. How many times do you need to double a factor when you multiply it by 8?

- (A) 4
- (B) 2
- (C) 3
- (D) 8

## Extend Learning

**Directions:** Find the products.

1.  $4 \times 2 =$  \_\_\_\_\_

$8 \times 2 =$  \_\_\_\_\_

$16 \times 2 =$  \_\_\_\_\_

---

2.  $4 \times 3 =$  \_\_\_\_\_

$8 \times 3 =$  \_\_\_\_\_

$16 \times 3 =$  \_\_\_\_\_

---

3.  $4 \times 4 =$  \_\_\_\_\_

$8 \times 4 =$  \_\_\_\_\_

$16 \times 4 =$  \_\_\_\_\_

Name: \_\_\_\_\_ Date: \_\_\_\_\_

# Focus Learning

**Directions:** Find the products.

1.  $2 \times 4 =$  \_\_\_\_\_

$4 \times 4 =$  \_\_\_\_\_

$8 \times 4 =$  \_\_\_\_\_

---

2.  $2 \times 7 =$  \_\_\_\_\_

$4 \times 7 =$  \_\_\_\_\_

$8 \times 7 =$  \_\_\_\_\_

---

3.  $2 \times 9 =$  \_\_\_\_\_

$4 \times 9 =$  \_\_\_\_\_

$8 \times 9 =$  \_\_\_\_\_

# Ladybugs

**Directions:** Read the problem. Then, solve.

There are 6 ladybugs in the garden.  
Each ladybug has 8 spots. How many  
spots are there in all?





Name: \_\_\_\_\_ Date: \_\_\_\_\_

# Burning Candles

**Directions:** Read the task. Then, solve.

A store sells small candles that burn for 4 hours and large candles that burn for 8 hours. You need to burn candles for 24 hours. What combinations of candles could you buy to equal exactly 24 hours?



# Place Value Chance

## Game Overview

Students build 3-digit numbers. The largest number wins. During their turns, players can keep their cards or replace up to 2 digits with mystery cards.

**Teacher Tip:** Encourage students to read multi-digit numbers aloud with accuracy. Some students incorrectly use the word *and* when reading a whole number. They may read 275 as, “two hundred *and* seventy-five.” Explain that the word *and* is only used when naming decimal numbers (e.g., 1.8 is one *and* eight tenths). Reinforce that 275 should be read as “two hundred seventy-five.”

## Multilingual Support

Provide sentence frames to support the communication of mathematical concepts.

- *My number is \_\_\_\_\_.*
- *My number has \_\_\_\_\_ hundreds.*
- *\_\_\_\_\_ is less than \_\_\_\_\_ because \_\_\_\_\_.*
- *\_\_\_\_\_ is greater than \_\_\_\_\_ because \_\_\_\_\_.*

## Scaffolded Support

Provide students with base-ten blocks and place value mats. Encourage students to represent the numbers they create with the base-ten blocks using the place value mats. Organized base-ten blocks will help students visualize and determine the values of digits.

## Game Variations

### Order Numbers Chance

- One student flips their cards to reveal their number. Players work together to predict if the number will be the largest number, the smallest number, or one of the middle numbers.
- If they accurately order the numbers, the group wins.

### Build Numbers

- Students try to build the largest 3-digit number. They flip 3 cards (hundreds, tens, and ones).
- Students can switch 2 of their cards to make the biggest number possible.

See pages 92–94 in the *Assessment Guide* for the Gameplay checklist and rubric.

# Place Value Chance

2 to 4 Players

**Skill:** Compare the values of multi-digit whole numbers.

**Materials:** Number Cards

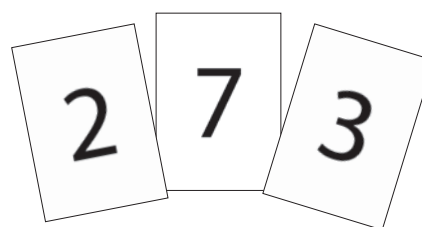
**How to Win:** The player with the most cards at the end of the game wins.

## Setup

1. Shuffle the Number Cards from the card deck.
2. Give 3 cards, face down, to each player.
3. Place the rest of the cards face down in a draw pile in the center.

## How to Play

1. To start each round, players should all have 3 cards face down in front of them.
  - At the same time, all players flip their cards to reveal their 3-digit numbers. The cards must stay in the order they were flipped.
  - Each player says their number. The player with the largest number goes first. On your turn, you can trade 1 or 2 digits from your number, and replace them with mystery cards from the draw pile. If you take mystery cards, you must keep them. Say your new number.
2. Start a new round, with each player taking 3 new cards from their draw pile.
  - If no cards remain in the draw pile, shuffle the discard pile and use those cards to continue playing.
3. Continue playing until time is up. At the end of the game, the player with the most cards wins!



*I will take a chance and replace the 2 with a mystery digit!*

The player with the largest number wins the round and keeps their cards. The rest of the players place their cards in a discard pile.