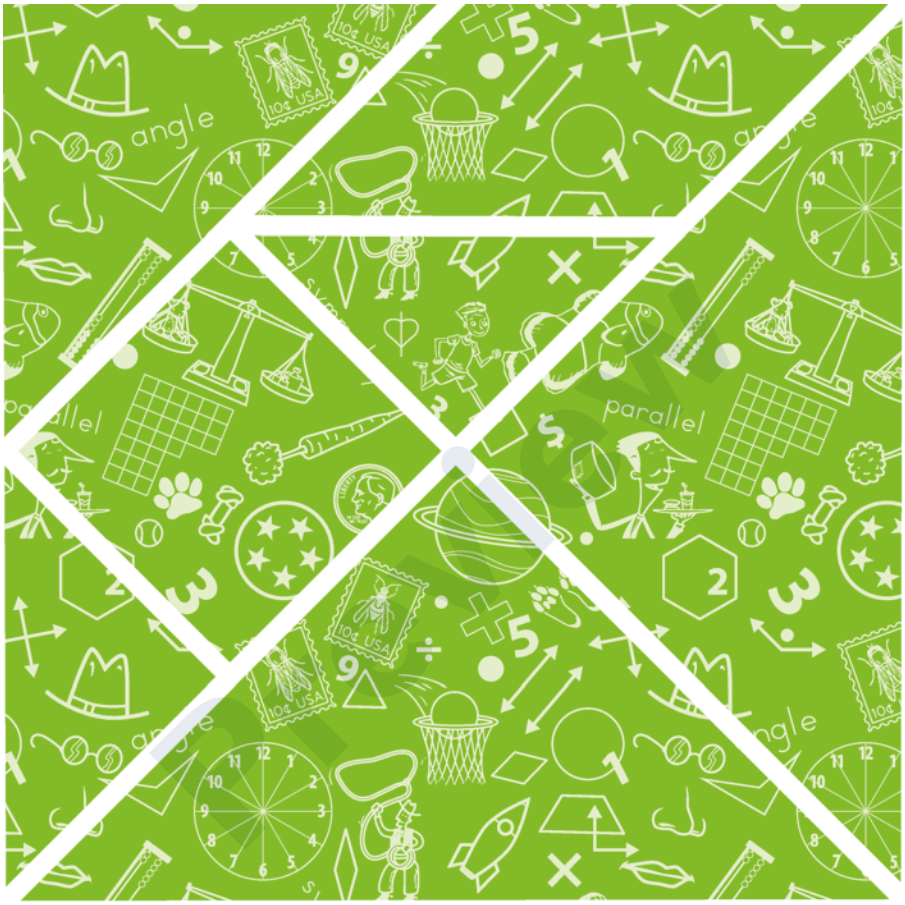
BRIDGES®
IN MATHEMATICS



BRIDGES

ASSESSMENT GUIDE

GRADE 3

Published by The MATH LEARNING CENTER Salem, Oregon

Bridges in Mathematics Second Edition Grade 3 Assessment Guide

The Bridges in Mathematics Grade 3 package consists of:

- Bridges in Mathematics Grade 3 Teachers Guide Units 1–8
- Bridges in Mathematics Grade 3 Assessment Guide
- *Bridges in Mathematics Grade 3 Teacher Masters*
- Bridges in Mathematics Grade 3 Student Books Volumes 1 & 2
- Bridges in Mathematics Grade 3 Home Connections Volumes 1 & 2
- *Bridges in Mathematics Grade 3 Teacher Masters Answer Key*
- *Bridges in Mathematics Grade 3 Student Book Answer Key*
- *Bridges in Mathematics Grade 3 Home Connections Answer Key*
- Bridges in Mathematics Components & Manipulatives
- *Bridges Educator Site*
- Work Place Games & Activities
- Number Corner Grade 3 Teachers Guide Volumes 1–3
- *Number Corner Grade 3 Teacher Masters*
- Number Corner Grade 3 Student Book
- *Number Corner Grade 3 Teacher Masters Answer Key*
- *Number Corner Grade 3 Student Book Answer Key*
- Number Corner Components & Manipulatives
- Word Resource Cards

Digital resources noted in italics.

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www.mathlearningcenter.org

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Bridges in Mathematics is a standards-based K–5 curriculum that provides a unique blend of concept development and skills practice in the context of problem solving. It incorporates the Number Corner, a collection of daily skill-building activities for students.

The Math Learning Center is a nonprofit organization serving the education community. Our mission is to inspire and enable individuals to discover and develop their mathematical confidence and ability. We offer innovative and standards-based professional development, curriculum, materials, and resources to support learning and teaching. To find out more, visit us at www.mathlearningcenter.org.

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Grade 3
Bridges Assessment Guide

Bridges Assessment Guide

Introduction

Although the role of assessment has become a complex and sometimes charged topic, the daily reality of assessment in the classroom remains both simple and profound. The fact of the matter is that assessment and good teaching go hand in hand. To teach effectively, we must be students of our students, continually observing, listening, and probing to determine how they are responding to our instruction. We can't teach well unless we know what our students already know, are in the process of learning, and need to know. Moreover, our students can't learn as effectively as they might unless they understand the short-term and long-term goals of instruction and have as much of a stake in their own learning as we do.

As a student-centered curriculum solidly rooted in problem solving, *Bridges in Mathematics* is filled with assessment opportunities. Consider the fact that many, if not most, of the sessions open with a question or prompt: a chart, a visual display, a problem, or perhaps a conjecture shared the previous day. Students are asked to share comments and observations, first in pairs and then as a whole class. This gives the teacher an opportunity to take the group's measure and conduct the day's instruction with a feel for the students in the room. While the strategy may be subtle, it reflects a radically different approach to instruction—one in which assessment takes the lead.

The *Bridges in Mathematics* curriculum features a variety of informal and formal assessments woven throughout the Bridges units and Number Corner workouts. These range all the way from tips to help teachers elicit student thinking to comprehensive written assessments at the beginning and end of each unit. The assessments themselves, along with all the needed materials, teacher masters, and instructions, reside in the Bridges and Number Corner Teachers Guides. The material in this Bridges Assessment Guide—answer keys, scoring guides, intervention and support suggestions, and tips for engaging students and their families in goal setting and progress monitoring—provides the tools teachers need to process and use the results of the assessments to guide instructional decisions.

Assessment should be more than merely a test at the end of instruction to see how students perform under special conditions; rather it should be an integral part of instruction that informs and guides teachers as they make instructional decisions.

» NCTM

Assessment Overview

Section 1: Standards & Assessments

Summarizes the Common Core State standards for third grade, provides a description of the types of assessments in Bridges and Number Corner, and features a complete list of all the assessments offered in Bridges Grade 3.

Section 2: Assessing Math Content

Takes a deeper look at the types of assessment tasks offered in Bridges Grade 3. Offers an assessment map that shows exactly where and when each Grade 3 Common Core standard is assessed and targeted for mastery.

Section 3: Assessing Math Practices

Profiles the CCSS Mathematical Practices in terms of third grade behaviors, and offers suggestions for assessing the practices throughout the year.

Section 4: Assessment as a Learning Opportunity

Describes ways in which the teacher can involve students in taking ownership of their own learning and monitoring their own progress toward mastering targeted skills, concepts, behaviors, and attitudes.

Section 5: Using the Results of Assessment to Inform Differentiation & Intervention

Details the connection between Bridges and Response to Intervention (RTI), and explains the scoring guides provided in the Bridges Unit Assessments and Number Corner Assessments parts of this guide.

Section 6: Reporting to Families

Suggests ways in which to help families understand the instructional targets for the year and monitor their child's growth and progress toward meeting those targets. Includes a Grade 3 Math Progress Report that might be used or adapted for use with other district reporting tools.

Bridges Unit Assessments

Features an assessment collection for each Bridges unit. Each collection includes:

- A brief description of all the assessments in the unit and the skills addressed
- Sheets for collecting observations about students' math skills and practices
- Answer keys and scoring guides for each assessment
- Suggestions for support and intervention

Number Corner Assessments

Features an assessment collection for Number Corner Grade 3. This collection includes:

- A brief description of the baseline and quarterly checkups
- A list of the skills addressed by each of the five assessments
- Answer keys and scoring guides for each assessment
- Suggestions for support and intervention

Comprehensive Growth Assessment

Describes the Comprehensive Growth Assessment (CGA), an instrument that provides global coverage of all the CCSS requirements for Grade 3. It includes:

- A copy of the CGA, along with tips about how to use it to best advantage
- A list of materials needed to conduct the assessment, and all needed teacher masters
- A list of the skills addressed by each item on the assessment
- An answer key and scoring guide
- Suggestions for support and intervention

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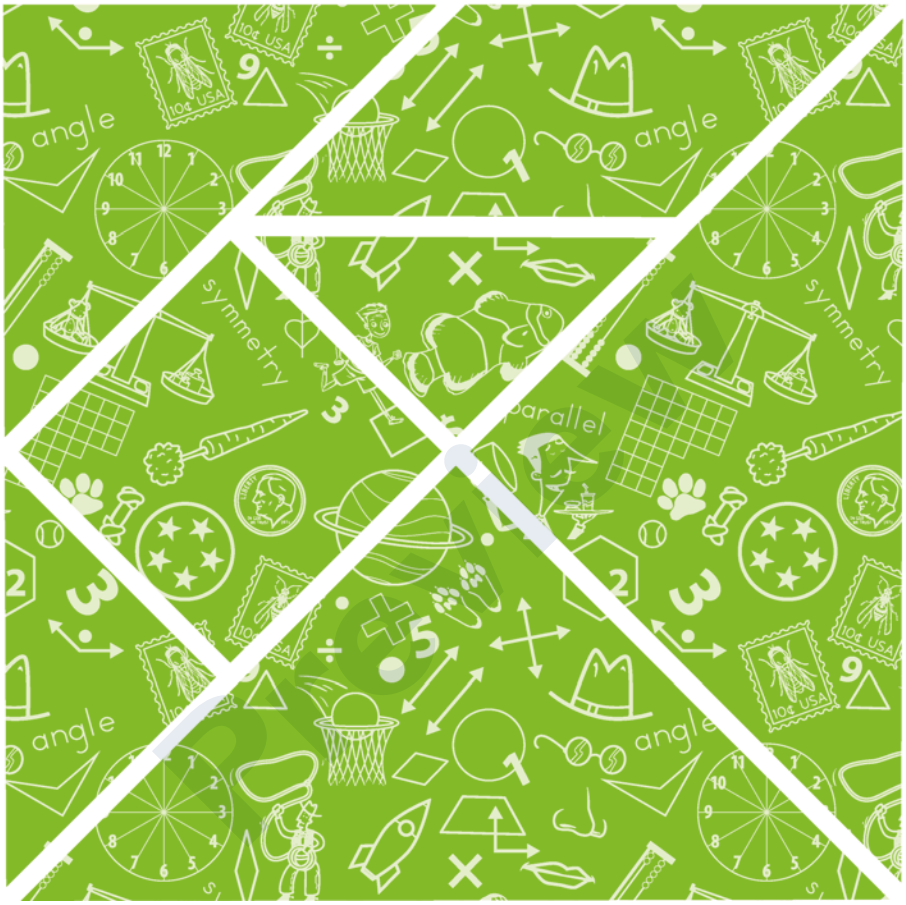

BRIDGES ASSESSMENT GUIDE GRADE 3

Assessment Overview

Published by The MATH LEARNING CENTER Salem, Oregon

Section 1
Standards & Assessments

Types of Assessments in Bridges and Number Corner

You've got to be very careful if you don't know where you are going, because you might not get there.

» Yogi Berra

We have many ways of finding out what our students know. We can observe them as they work in a variety of settings—whole group discussions and math forums, problem-solving sessions, Work Places. We can converse with students informally as they solve problems or play games, and carefully examine samples of their work from time to time. We can assess students' conceptual understanding and procedural fluency at the beginning of each unit to help guide our overall approach, and find out who is likely to need extra support or additional challenge. Furthermore, we can share the results of these pre-assessments with students so they can set their own learning goals. We can conduct assessments during the unit to see how students are responding to our instruction, and again at the end of the unit to check for levels of mastery appropriate to the time of year. Finally, every two or three months we can have students complete sets of written tasks that cover a range of skills and concepts to look at long-term growth.

To help teachers determine what their students already know, are in the process of learning, and need to know, Bridges and Number Corner feature several different types of assessments. Here is a brief description of each, and an indication of where it is found in the program.

Informal Observation

Located throughout Bridges Sessions and Number Corner workouts

Informal observation is one of the best but perhaps most undervalued methods of assessing students. Teachers develop intuitive understandings of students through careful observation, but not the sort where they carry a clipboard and sticky notes. These understandings develop over a period of months and involve many layers of relaxed attention and interaction. Experience with the age-level helps—after several years at third grade, a teacher begins to notice patterns of behavior, things that 8- and 9-year-olds seem to say, think, or do on a fairly consistent basis. Knowledge of learning outcomes is essential—the better you know where you're headed, the easier it is to recognize skills and concepts as they emerge in students.

Bridges sessions and Number Corner workouts, which continually ask students to share and explain their thinking, present ongoing opportunities to gauge children's skill levels and conceptual understandings. As we become accustomed to learning from our students, we become increasingly skilled at spotting their strengths and needs, as well as using our observations to monitor and adjust our instruction accordingly. Throughout Bridges sessions and Number Corner workouts, teachers will find suggested questions and prompts to elicit student thinking, conversation, sharing, and explanation, as well as sample dialogs to help them anticipate students' responses. To make the CCSS Mathematical Practices easy to spot, Teachers Guide sidebars feature Math Practices in Action, which highlight and describe selected instances in which the practices are integrated into instruction.

Carefully observing students during whole-group instruction, as well as during Work Places when they are operating more independently, yields information about their math practices as well as math content skills. You will find more information about assessing mathematical practices in Section 3.

Structured Observation: Work Place Guides

Located in Bridges Units

Work Places—individual and small group games and activities—offer frequent opportunities to observe and interact with students in authentic settings. To help teachers make the most of opportunities to assess students and provide on-the-spot support and challenge, each Work Place is accompanied by a guide that lists the skills and concepts involved, the materials needed, and a set of Assessment & Differentiation suggestions. This example is from Unit 5.

Unit 5 Module 3 | **Session 4** *1 copy kept in a clear plastic sleeve and stored in the Work Place bin*

Work Place Guide 5D Division Capture

Summary

Players spin to determine who goes first as well as whether to play for red or blue. Then players take turns spinning for a number they can use to complete one of 20 division combinations on a grid. Each partner uses a different color to write their numbers on the grid. Once all the equations are completed, players look for and circle in their own color any equations they completed that fall in a row, either vertically, horizontally, or diagonally. Each player earns a point for any three equations in a row they completed and 2 points for any four equations in a row they completed. The player with the higher score wins the game.

Skills & Concepts

- Solve division problems by finding an unknown factor (3.OA.6)
- Fluently divide with dividends to 100 using strategies (3.OA.7)

Materials

Copies	Kit Materials	Classroom Materials
TM T7 Work Place Guide 5D Division Capture **TM T8–12** 5D Division Capture Record Sheets A–5 **SB 172–173** Work Place Instructions 5D Division Capture	• 3 clear spinner overlays • 6 colored pencils, 3 in red and 3 in blue • colored tiles • red linear units	• students' completed Multiplication Tables Student Book pages (from Unit 2, Module 3, Session 1)

Assessment & Differentiation

If you see that…	Differentiate	Example
Students are struggling with basic division facts, either because they don't understand the operation or because they haven't developed enough fluency with multiplication to be able to deal with the related division facts.	SUPPORT Encourage students to use colored tiles and red linear pieces to model and solve the combinations. This may be quite tedious, and you might consider having these students spend more time with Work Places 5B Scout Them Out, or 5C Line 'Em Up before they do too much with this Work Place. SUPPORT Allow students working at roughly the same level to use the same record sheet for several times running before they move on to the next. The 5 record sheets go in order from easiest to most challenging, so encourage these students to work them in order rather than skipping around. SUPPORT Invite all your students, not just those who are struggling, to use the Multiplication Table Student Book page they completed during Unit 2, Module 3, for help in solving division combinations.	Some pairs of students may benefit from playing the game several times with Record Sheet 1, which features division facts for 2s and 10s, before moving on to Record Sheet 2. ***Teacher*** *Looks like you're stuck on 48 ÷ 6. Can you find a fact on your Multiplication Table that would help you solve that problem?* ***Student*** *Umm …well, I see the answer 48 right here, and it says 6 × 8 is 48.* ***Teacher*** *How can you use that information to help with your division problem?* ***Student*** *If 6 × 8 is 48, then if I divide 48 by 6, the answer must be 8.*
Students are struggling to find the division combinations they need on the grid.	SUPPORT Pair students who are working at roughly the same level, and invite them to use Game Variation B. Players fill in the answers to all of the division combinations on the grid before they start playing the game. This simplifies the game because they don't have to search for the two combinations on the sheet that can be solved with any number they spin; they have only to find and circle the numbers they've already entered on the grid.	Encourage these students to use the Multiplication Table Student Book page they completed during Unit 2, Module 3, for help in finding the answers to the division combinations as they work together to fill in the grid. This will help reinforce the connection between multiplication and division facts.
Students are working easily with division facts.	CHALLENGE Pair students who are working at roughly the same leve. Invite them to choose the order in which they use the sheets and possibly skip those sheets that feature facts with which they're already fluent.	
English-Language Learners Use the following adaptations to support the ELL students in your classroom.		
• Play this game with small groups of ELL students, modeling how to play and what to do. Take the opportunity to reinforce the terms *divide, division*, and *quotient* as you work with the students. • Encourage ELL students to play with same-language peers in their own language.		

Work Samples

Located in Bridges (Units 1, 2, 3, and 8)

Another informal method of assessment is work samples, assignments completed by students in the course of normal instruction that you collect, examine carefully, and keep in individual portfolios. Saved over the year, a collection of work samples can contribute to your picture of each student's growth. Opportunities to collect work samples appear in Units 1, 2, 3, and 8, and you might decide to collect such samples from other units on your own after you're more familiar with the program. The samples from Units 1, 2, and 3 involve students' written responses to story problems. The samples from Unit 8 provide windows into students' skills with measurement, geometry, and data at the end of the school year.

Unit Assessments

Located in Bridges (Unit Pre-Assessments, Checkpoints, and Post-Assessments)

Bridges Units 1–7 include three to five assessments each—a pre-assessment at the beginning of the first module, one to three checkpoints and/or work samples during the unit, and a post-assessment at the end of the unit (see examples from Unit 2 below). Unit 8, an integrated math/science unit, has no formal assessments, but includes several suggestions for collecting samples of student work. The pre-assessments help teachers gauge students' conceptual understanding and procedural fluency at the start of each unit, making it easier to determine those students most likely to need extra support or challenge. Checkpoints and work samples allow teachers to see how students are doing with grade level standards at key points during the unit, so they can modify instruction if necessary. The unit post-assessments are similar to the pre-assessments, though generally a little more challenging. They are, however, similar enough to allow teachers to ascertain students' growth over each four-week period of instruction.

This is the first page of the pre-assessment and post-assessment for Unit 2. Notice that the items on each sheet are very similar, but pitched at a higher level on the post-assessment.

Unit 3 Module 1 | **Session 1** *class set plus 1 copy for display*

NAME | **DATE**

Unit 3 Pre-Assessment page 1 of 4

1 Round each number in the table below to the nearest ten.

Actual Number	Number Rounded to the Nearest Ten
42	
85	
629	
812	

2 Round each number in the table below to the nearest hundred.

Actual Number	Number Rounded to the Nearest Hundred
242	
485	
629	
812	

3 Fill in the bubble to show whether each equation is true or false.

a 139 + 141 = 140 + 142

○ True ○ False

b 231 – 219 = 232 – 220

○ True ○ False

4 Fill in the blank to complete each equation.

a 543 + 529 = _____ + 530

b 543 – 529 = _____ – 530

5 Pick *any two* numbers from this set to answer the question below.

655 300 213 525

Which two numbers can you add to get closest to 500? _____ _____

(continued on next page)

Bridges in Mathematics Grade 3 Teacher Masters T1 © The Math Learning Center | mathlearningcenter.org

Unit 3 Module 4 | **Session 5** *class set plus 1 copy for display*

NAME | **DATE**

Unit 3 Post-Assessment page 1 of 4

1 Round each number in the table below to the nearest ten.

Actual Number	Number Rounded to the Nearest 10
66	
118	
525	
2,861	

2 Round each number in the table below to the nearest hundred.

Actual Number	Number Rounded to the Nearest 100
366	
118	
525	
2,861	

3 Fill in the bubble to show whether each equation is true or false.

a 329 + 113 = 330 + 112

○ True ○ False

b 123 – 109 = 122 – 110

○ True ○ False

4 Fill in the blank to complete each equation.

a 673 + 249 = _____ + 250

b 843 – 129 = _____ – 130

5 Pick *any two* numbers from this set to answer the question below.

560 400 270 442

a Which two numbers can you add to get closest to 700? _____ _____

(continued on next page)

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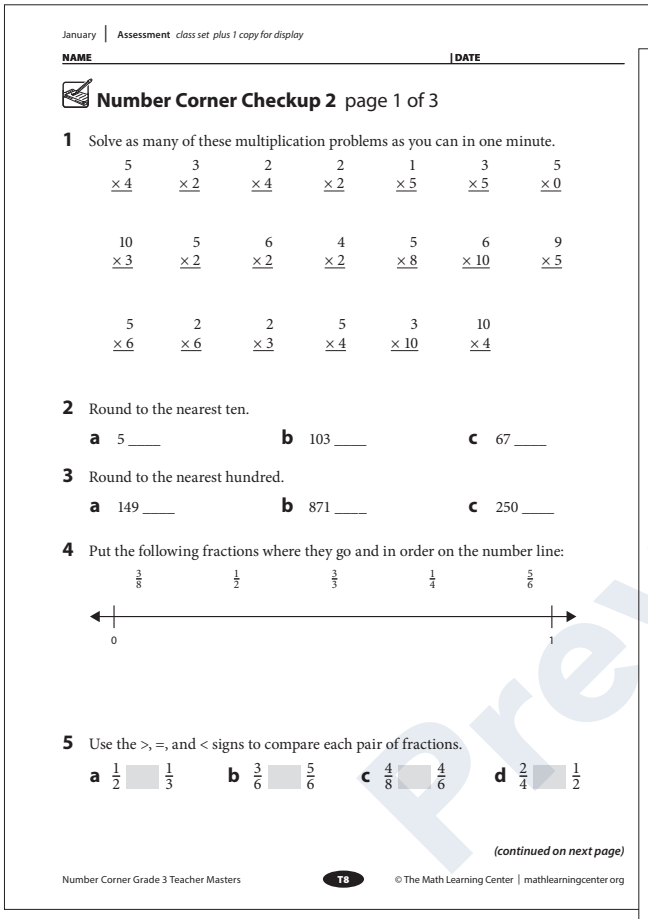
Long-Range Assessments

Located in the Number Corner (Baseline and Checkups)

The Number Corner Teachers Guide, September, offers a baseline assessment intended to gauge incoming students' proficiency with key number skills and concepts that were targeted for mastery by the end of second grade. In addition, the Teachers Guide includes four Number Corner check-ups, to be administered at two- or three-month intervals. These periodic assessments, which reflect the major clusters associated with critical areas of focus, are designed to check for conceptual understanding, procedural fluency and application of coherent and rigorous standards. They also provide a snapshot of each student's skills near the end of each quarter of the school year.



January | **Assessment** *class set plus 1 copy for display*

NAME | **DATE**

Number Corner Checkup 2 page 1 of 3

1 Solve as many of these multiplication problems as you can in one minute.

5 × 4	3 × 2	2 × 4	2 × 2	1 × 5	3 × 5	5 × 0
10 × 3	5 × 2	6 × 2	4 × 2	5 × 8	6 × 10	9 × 5
5 × 6	2 × 6	2 × 3	5 × 4	3 × 10	10 × 4	

2 Round to the nearest ten.

a 5 ____ **b** 103 ____ **c** 67 ____

3 Round to the nearest hundred.

a 149 ____ **b** 871 ____ **c** 250 ____

4 Put the following fractions where they go and in order on the number line:

$\frac{3}{8}$ $\frac{1}{2}$ $\frac{3}{3}$ $\frac{1}{4}$ $\frac{5}{6}$

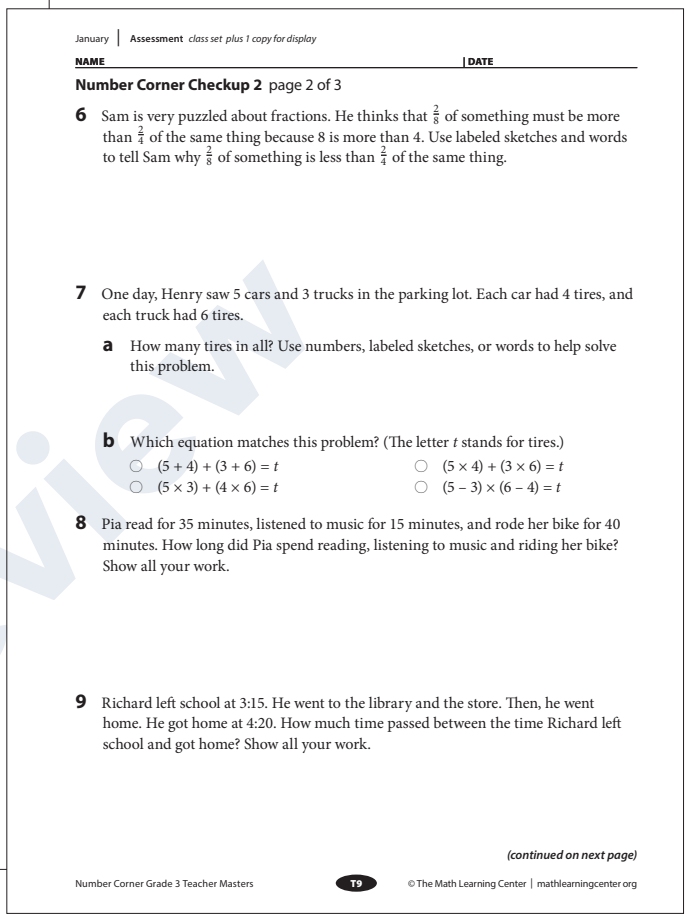
0 1

5 Use the >, =, and < signs to compare each pair of fractions.

a $\frac{1}{2}$ ☐ $\frac{1}{3}$ **b** $\frac{3}{6}$ ☐ $\frac{5}{6}$ **c** $\frac{4}{8}$ ☐ $\frac{4}{6}$ **d** $\frac{2}{4}$ ☐ $\frac{1}{2}$

(continued on next page)

Number Corner Grade 3 Teacher Masters T8 © The Math Learning Center | mathlearningcenter.org



January | **Assessment** *class set plus 1 copy for display*

NAME | **DATE**

Number Corner Checkup 2 page 2 of 3

6 Sam is very puzzled about fractions. He thinks that $\frac{2}{8}$ of something must be more than $\frac{2}{4}$ of the same thing because 8 is more than 4. Use labeled sketches and words to tell Sam why $\frac{2}{8}$ of something is less than $\frac{2}{4}$ of the same thing.

7 One day, Henry saw 5 cars and 3 trucks in the parking lot. Each car had 4 tires, and each truck had 6 tires.

a How many tires in all? Use numbers, labeled sketches, or words to help solve this problem.

b Which equation matches this problem? (The letter *t* stands for tires.)

- ○ $(5 + 4) + (3 + 6) = t$
- ○ $(5 \times 4) + (3 \times 6) = t$
- ○ $(5 \times 3) + (4 \times 6) = t$
- ○ $(5 - 3) \times (6 - 4) = t$

8 Pia read for 35 minutes, listened to music for 15 minutes, and rode her bike for 40 minutes. How long did Pia spend reading, listening to music and riding her bike? Show all your work.

9 Richard left school at 3:15. He went to the library and the store. Then, he went home. He got home at 4:20. How much time passed between the time Richard left school and got home? Show all your work.

(continued on next page)

Number Corner Grade 3 Teacher Masters T9 © The Math Learning Center | mathlearningcenter.org

A Year's Worth of Assessments

Each assessment written into Bridges and Number Corner offers a window into individual students' skills and concepts at a particular moment in time. Any one of these assessments also gives you a snapshot of your entire class—you can literally see the spread of strategies and skills by sorting through the sheets or entering the information on the Class Checklist/Scoring Guide provided for each assessment in this guide. As you collect impressions, observations, and responses to written tasks, patterns of growth and development begin to emerge for the whole class and for each individual student, allowing you to make more nuanced and responsive instructional decisions.

The chart below shows all the assessments offered in Bridges and Number Corner Grade 3, in order of appearance during the year. The listing for each assessment includes its title, assessment type, and location in the program.

	Assessment Title	Assessment Type	Location
September	Work Place Guides for Work Places 1A, 1B, 1C, 1D, 1E, 1F, 1G, 1H	Observation	**Bridges** Unit 1
	Unit 1 Pre-Assessment	Pre-Assessment	**Bridges** Unit 1, Module 1, Session 3
	Addition & Subtraction Checkpoint	Mid-Unit Checkup	**Bridges** Unit 1, Module 2, Session 3
	Adding Lengths Work Sample	Work Sample	**Bridges** Unit 1, Module 3, Session 3
	Unit 1 Post-Assessment	Post-Assessment	**Bridges** Unit 1, Module 4, Session 6
	Baseline Assessment	Assessment of Incoming Skills	**Number Corner** September
October	Work Place Guides for Work Places 2A, 2B, 2C, 2D	Observation	**Bridges** Unit 2
	Unit 2 Pre-Assessment	Pre-Assessment	**Bridges** Unit 2, Module 1, Session 2
	Multiplication Checkpoint	Mid-Unit Checkup	**Bridges** Unit 2, Module 2, Session 1
	Pet Store Story Problems	Work Sample	**Bridges** Unit 2, Module 3, Session 1
	Unit 2 Post-Assessment	Post-Assessment	**Bridges** Unit 2, Module 4, Session 4
	Number Corner Checkup 1	Quarterly Assessment of Skills	**Number Corner** October
Nov./Dec.	Work Place Guides for Work Places 3A, 3B, 3C, 3D	Observation	**Bridges** Unit 3
	Unit 3 Pre-Assessment	Pre-Assessment	**Bridges** Unit 3, Module 1, Session 1
	Rounding & Multi-Digit Addition Checkpoint	Mid-Unit Checkup	**Bridges** Unit 3, Module 2, Session 1
	Books & Books & Books Work Sample	Work Sample	**Bridges** Unit 3, Module 2, Session 4
	Three-Digit Addition & Subtraction Checkpoint	Mid-Unit Checkup	**Bridges** Unit 3, Module 3, Session 1
	Unit 3 Post-Assessment	Post-Assessment	**Bridges** Unit 3, Module 4, Session 5
January	Work Place Guides for Work Places 4A, 4B, 4C, 4D	Observation	**Bridges** Unit 4
	Unit 4 Pre-Assessment	Pre-Assessment	**Bridges** Unit 4, Module 1, Session 1
	Time Checkpoint	Mid-Unit Checkup	**Bridges** Unit 4, Module 2, Session 1
	Measurement Checkpoint	Mid-Unit Checkup	**Bridges** Unit 4, Module 3, Session 1
	Unit 4 Post-Assessment	Post-Assessment	**Bridges** Unit 4, Module 4, Session 4
	Number Corner Checkup 2	Quarterly Assessment of Skills	**Number Corner** January

	Assessment Title	Assessment Type	Location
February	Work Place Guides for Work Places 5A, 5B, 5C, 5D	Observation	**Bridges** Unit 5
	Unit 5 Pre-Assessment	Pre-Assessment	**Bridges** Unit 5, Module 1, Session 1
	Multiplication & Division Checkpoint	Mid-Unit Checkup	**Bridges** Unit 5, Module 2, Session 4
	Division Checkpoint	Mid-Unit Checkup	**Bridges** Unit 5, Module 4, Session 1
	Unit 5 Post-Assessment	Post-Assessment	**Bridges** Unit 5, Module 4, Session 6
March	Work Place Guides for Work Places 6A, 6B, 6C, 6D	Observation	**Bridges** Unit 6
	Unit 6 Pre-Assessment	Pre-Assessment	**Bridges** Unit 6, Module 1, Session 1
	Polygons & Quadrilaterals Checkpoint	Mid-Unit Checkup	**Bridges** Unit 6, Module 2, Session 4
	Unit 6 Post-Assessment	Post-Assessment	**Bridges** Unit 6, Module 4, Session 4
	Number Corner Checkup 3	Quarterly Assessment of Skills	**Number Corner** March
April	Work Place Guides for Work Places 7A, 7B	Observation	**Bridges** Unit 7
	Unit 7 Pre-Assessment	Pre-Assessment	**Bridges** Unit 7, Module 1, Session 1
	Multiplication & Division Checkpoint	Mid-Unit Checkup	**Bridges** Unit 7, Module 2, Session 2
	Fractions Checkpoint	Mid-Unit Checkup	**Bridges** Unit 7, Module 4, Session 2
	Unit 7 Post-Assessment	Post-Assessment	**Bridges** Unit 7, Module 4, Session 5
May/June	Work Place Guides for Work Places 8A, 8B, 8C, 8D	Observation	**Bridges** Unit 8
	Graphing Our Bridge Collection Student Book page	Work Sample (optional; no scoring guide provided)	**Bridges** Unit 8, Module 2, Session 4
	Finding Shapes in Bridges Student Book page	Work Sample (optional; no scoring guide provided)	**Bridges** Unit 8, Module 2, Session 5
	Long Bridges Journal Entry	Work Sample (optional; no scoring guide provided)	**Bridges** Unit 8, Module 3, Session 4
	Longest, Strongest Bridge Journal Entry	Work Sample (optional; no scoring guide provided)	**Bridges** Unit 8, Module 4, Session 3
	Number Corner Checkup 4	Quarterly Assessment of Skills	**Number Corner** May
	Grade 3 Comprehensive Growth Assessment (CGA)*	Comprehensive Skills Assessment	**Bridges Assessment Guide** Comprehensive Growth Assessment

* The Grade 3 Comprehensive Growth Assessment (CGA) addresses every Common Core standard for third grade. It can be administered at the end of the school year as a summative assessment of all the CCSS for Grade 3, administered twice or even three times over the course of the year to monitor students' progress toward mastering the Common Core Standards, or used as a flexible bank of test items. See the Comprehensive Growth Assessment part of this guide for more details.

Section 2

Assessing Math Content

Setting Our Targets: Desired Learning Outcomes for Grade 3

In a 2012 article titled "From Common Core Standards to Curriculum: Five Big Ideas," assessment specialists Jay McTighe and Grant Wiggins remind us that the Common Core Standards were developed with long-term outcomes in mind. The authors further explain that the Common Core Standards were designed to help educators "construct plans for what learners should be able to *accomplish* with learned content," rather than develop checklists of discrete skills to be "covered" at each grade level.

Since it is impossible to construct or administer assessments without clear targets in mind, let's take a minute to envision the Common Core third grader. If a 8- or 9-year-old student were fully immersed in a classroom in which the Common Core Standards were well and skillfully addressed, what would that child be able to do by the end of third grade?

Perhaps the best answer comes from the Common Core document itself. Text on page 21 characterizes the desired results of third grade instruction in this way:

> (1) Students [will] develop an understanding of the meanings of multiplication and division of whole numbers through activities and problems involving equal-sized groups, arrays, and area models; multiplication is finding an unknown product, and division is finding an unknown factor in these situations. For equal-sized group situations, division can require finding the unknown number of groups or the unknown group size. Students [should be able to] use properties of operations to calculate products of whole numbers, using increasingly sophisticated strategies based on these properties to solve multiplication and division problems involving single-digit factors. By comparing a variety of solution strategies, students [will] learn the relationship between multiplication and division.
>
> (2) Students [will] develop an understanding of fractions, beginning with unit fractions. Students [will] view fractions in general as being built out of unit fractions, and they [will] use fractions along with visual fraction models to represent parts of a whole. Students [should] understand that the size of a fractional part is relative to the size of the whole. For example, ½ of the paint in a small bucket could be less paint than ⅓ of the paint in a larger bucket, but ⅓ of a ribbon is longer than ⅕ of the same ribbon because when the ribbon is divided into 3 equal parts, the parts are longer than when the ribbon is divided into 5 equal parts. Students [will be] able to use fractions to represent numbers equal to, less than, and greater than one. They [will] solve problems that involve comparing fractions by using visual fraction models and strategies based on noticing equal numerators or denominators.
>
> (3) Students [will] recognize area as an attribute of two-dimensional regions. They [will] measure the area of a shape by finding the total number of same-size units of area required to cover the shape without gaps or overlaps, a square with sides of unit length being the standard unit for measuring area. Students [will] understand that rectangular arrays can be decomposed into identical rows or into identical columns. By decomposing rectangles into rectangular arrays of squares, students [will] connect area to multiplication, and [be able to] justify using multiplication to determine the area of a rectangle.
>
> (4) Students [will] describe, analyze, and compare properties of two-dimensional shapes. They [will] compare and classify shapes by their sides and angles, and connect these with definitions of shapes. Students [will] also relate their fraction work to geometry by expressing the area of part of a shape as a unit fraction of the whole.

To maximize the instructional value of assessment, teachers need to move beyond a superficial 'right or wrong' analysis of tasks to a focus on how students are thinking about the tasks. Efforts should be made to identify valuable student insights on which further progress can be based rather than to concentrate solely on errors or misconceptions. […] Assembling evidence from a variety of sources is more likely to yield an accurate picture of what each student knows and is able to do.

» NCTM

Critical Areas of Focus

The description above reflects the Critical Areas of Focus for Grade 3. The authors of the Common Core Standards point out that, "Not all of the content in a given grade is emphasized equally in the standards. Some clusters require greater emphasis than others based on the depth of the ideas, the time that they take to master, and/or their importance to future mathematics or the demands of college and career readiness."

The chart below, taken from the "Major Emphases and Shifts in Mathematics" document developed by the Common Core State Standards Initiative, shows the major, supporting, and additional clusters for Grade 3. In this chart, we see that multiplication and division, solving problems involving the four operations, fractions, and measurement of time, liquid volume, mass, and area are deemed more important than skills and concepts related to place value, data, perimeter, and shapes.

Cluster	Major Clusters	Supporting Clusters	Additional Clusters
Operations and Algebraic Thinking			
Represent and solve problems involving multiplication and division.	●		
Understand properties of multiplication and the relationship between multiplication and division.	●		
Multiply and divide within 100.	●		
Solve problems involving the four operations, and identify and explain patterns in arithmetic.	●		
Number and Operations in Base Ten			
Use place value understanding and properties of operations to perform multi-digit arithmetic.			●
Number and Operations—Fractions			
Develop understanding of fractions as numbers.	●		
Measurement and Data			
Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.	●		
Represent and interpret data.		●	
Geometric measurement: understand concepts of area and relate area to multiplication and to addition.	●		
Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.			●
Geometry			
Reason with shapes and their attributes.		●	

Assessments in Grade 3 Bridges reflect these emphases. If you examine the Assessment Map at the end of this section, you'll notice that students are assessed three to eight times over the course of the year on most of the skills and concepts related to multiplication, division, and fractions, as well as story problems, measurement, and area. By contrast, work with place value, data representation and analysis, perimeter, and geometry skills receives less attention, and the assessment of these skills is generally tied more tightly to the period of instruction in the program rather than being spread over the year.

Another reason for the discrepancy in the number of times each skill is assessed is that some of the skills are more granular than others, even skills that fall within major clusters. For example, standard 3.MD.5a, which falls within the cluster of skills related to area, asks that students demonstrate understanding of the fact that area is measured with square units, and that a square with a side length of 1 unit is said to have 1 square unit of area. While important, and certainly foundational to the notion of area, this standard represents a smaller piece of the puzzle than, say, related standards that ask third-graders to find the area of a rectangle by tiling it, show that the result is the same as would be found by multiplying the side lengths, and represent the product of two whole numbers as a rectangular area.

Levels of Cognitive Demand

Along with a tighter focus on fewer skills at each grade level, the authors of the Common Core Standards call for greater levels of rigor in instruction, citing the need to help students develop conceptual understanding, procedural skill and fluency, and the ability to apply math concepts in "real world" situations.

The call for rigor demands that we make efforts to assess students accordingly, especially when grade-level standards call for understanding, analysis, or fluency. This is why some of the assessments in Grade 3 involve observation rather than written tasks, and written tasks often ask the students to show their work, explain their reasoning, or justify their responses.

One construct that has proved useful in designing the instruction and assessment in Bridges is the Depth of Knowledge scheme developed by Dr. Norman Webb at the University of Wisconsin. Dr. Webb points out that the expectations at a given grade level involve different degrees of cognitive demand, and sets out the following levels for educators to consider in developing instructional activities and assessment tasks.

Level 1: Recall & Reproduction
Recall, recognition; skill, behavior or sequence of behaviors learned through practice and easily performed

Level 2: Skills & Concepts
Engagement of some mental processing beyond recalling; the use of information or conceptual knowledge; requires making some decisions regarding how to approach a question or problem

Level 3: Strategic Thinking
More sophisticated reasoning and analysis; deep understanding; students are required to solve problems & draw conclusions

Level 4: Extended Thinking
Requires integration of knowledge from multiple sources and ability to represent knowledge in a variety of ways; usually requires work over an extended period of time

The chart that follows indicates the level of cognitive demand involved in several different CCSS standards for Grade 3 and outlines the types of assessment tasks needed to elicit corresponding levels of thinking from the student.

	Common Core Standard	Sample Assessment Task
Level 1: Recall	**3.OA.7** By the end of Grade 3, know from memory all products of two 1-digit numbers.	Give students 20 combinations that involve two 1-digit numbers, and ask them to write the correct answers to as many as possible in 1 minute.
Level 2: Skills & Concepts	**3.NBT.2** Fluently add and subtract within 1,000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.	Pose a 3-digit subtraction problem. Ask the student to solve the problem in an efficient manner and show all of her work.
Level 3: Strategic Thinking	**3.MD.8** Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.	Pose a story problem in which students are given a certain length of fencing with which to make a rectangular animal pen. Students must determine how best to utilize the fencing by forming two or more rectangles with the same perimeter, but different areas, choosing the rectangle that seems best for the purpose, and explaining their choice.
Level 4: Extended Thinking	**3.NF.3d, 3.MD.2, 3.MD.4, 3.G.1** Use simple materials to design and construct a model bridge that is as long as possible. Your bridge must support its own weight, as well as at least 60 grams placed in the center of the span. (This problem is posed to students after they have studied several different types of bridges, as well as built and tested a variety of model bridges.)	After each team of students has built, tested, refined, and retested their bridge, data about bridge lengths and deck thicknesses is compiled on two different line plots, and students are asked to reflect in their math journals about the shapes, materials, construction methods, and bridges type(s) that produced the best results.

Targets for Mastery

The Assessment Map at the end of this section indicates when mastery of each standard is expected. As we might predict, most of the Grade 3 Common Core Standards are targeted for mastery in the latter half of the year. While it is tempting, and not unusual, for a program or a district to divide a set of grade-level standards into three or four piles and target each pile for mastery by the end of a particular quarter or trimester, this approach disregards the fact that skills and concepts involving higher levels of cognitive demand require more time to develop than others. It also tends to trivialize learning by breaking skills and concepts into small bits, rather than retaining the connections among them that support the focus, coherence, and rigor demanded by the Common Core Standards.

The fact is that most of the new third grade standards involve a degree of cognitive demand beyond Level 1 (recall and recognition). Even a relatively simple skill, such as comparing two fractions with different denominators, is made more complex in that students are expected to recognize that comparisons are valid only when the two fractions refer to the same whole, record the comparison with the symbols >, =, or <, and justify their reasoning. Furthermore, this particular skill is part of a larger conceptual cluster that involves an understanding of fractions as numbers in their own right. It is no small prospect for students who have only recently learned that 8 is greater than 4 to understand how and why ⅛ is *less* than ¼.

Standard 3.OA.8 provides another example of the rigor and complexity the Common Core Standards demand. This standard has to do with using the four operations to solve two-step word problems. Third graders are expected to be able to represent such problems using equations with a letter standing for the unknown quantity, and assess the reasonableness of their answers using mental computation and estimation strategies including rounding. We can certainly teach and assess each of the component skills (e.g., estimation and rounding, writing equations, solving two-step story problems), but in the end, students need to be able to comprehend what any given problem is asking, identify the operations needed to solve it, decide how best to represent the problem with an equation, employ viable strategies using the information provided, assess the reasonableness of their answer, and explain and justify their thinking. This requires they develop a rich network of interconnected skills and concepts, which takes time, experience, and application. While we might reasonably expect incremental progress through third grade in the three major learning progressions (multiplication and division, fractions, and measurement), the whole of each progression is greater than the sum of a set of discrete parts. We best serve our students by viewing each unit of instruction as another layer in a yearlong journey toward mastery.

Grade 3 Assessment Map

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	Bridges Unit 1	September NC	Bridges Unit 2	October NC	Bridges Unit 3	Bridges Unit 4	January NC	Bridges Unit 5	Bridges Unit 6	March NC	Bridges Unit 7	Bridges Unit 8	May NC	CGA
2.OA.1 Use addition and subtraction within 100 to solve one-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions.	M1, S3 Unit 1 Pre-Assessment M2, S3 Addition & Subtraction Checkpoint M4, S6 Unit 1 Post-Assessment	●												
2.OA.2 Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two 1-digit numbers.	M1, S3 Unit 1 Pre-Assessment M2, S3 Addition & Subtraction Checkpoint M4, S6 Unit 1 Post-Assessment	●												
2.OA.4 Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.		●												
2.NBT.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.	M1, S3 Unit 1 Pre-Assessment M4, S6 Unit 1 Post-Assessment													
2.NBT.6 Add up to four 2-digit numbers using strategies based on place value and properties of operations.	M4, S6 Unit 1 Post-Assessment													
2.NBT.7 Add and subtract within 1,000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting 3-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.		●												
2.NBT.9 Explain why addition and subtraction strategies work, using place value and the properties of operations		●												
2.MD.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.		●												
2.MD.3 Estimate lengths using units of inches, feet, centimeters, and meters.		●												
2.MD.4 Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.		●												

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Green indicates Bridges unit or Number Corner month in which a skill is targeted for mastery.

Yellow indicates review and extension of a Grade 2 skill.

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2.MD.5 Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units.	M3, S3 Work Sample	●												
2.G.2 Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.		●												
2.G.3 Partition circles and rectangles into two, three, or four equal shares; describe the shares using the words halves, thirds, half of, a third of, etc.; and describe the whole as two-halves, three-thirds, four-fourths.		●												
2.G.3 Recognize that equal shares of identical wholes need not have the same shape.		●												
3.OA.1 Interpret products of whole numbers.			M1, S2 Unit 2 Pre-Assessment M2, S1 Multiplication Checkpoint M4, S4 Unit 2 Post-Assessment	●			●	M1, S1 Unit 5 Pre-Assessment M2, S4 Multiplication & Division Checkpoint M4, S6 Unit 5 Post-Assessment			M2, S2 Multiplication & Division Checkpoint		●	●
3.OA.2 Interpret whole-number quotients of whole numbers.								M1, S1 Unit 5 Pre-Assessment M2, S4 Multiplication & Division Checkpoint M4, S6 Unit 5 Post-Assessment			M2, S2 Multiplication & Division Checkpoint		●	●
3.OA.3 Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities.			M1, S2 Unit 2 Pre-Assessment M2, S1 Multiplication Checkpoint M3, S1 Work Sample M4, S4 Unit 2 Post-Assessment	●			●	M1, S1 Unit 5 Pre-Assessment M4, S1 Division Checkpoint M4, S6 Unit 5 Post-Assessment			M2, S2 Multiplication & Division Checkpoint		●	●
3.OA.4 Determine the unknown whole number in a multiplication or division equation relating three whole numbers.			M1, S2 Unit 2 Pre-Assessment M3, S1 Work Sample M4, S4 Unit 2 Post-Assessment					M1, S1 Unit 5 Pre-Assessment M4, S6 Unit 5 Post-Assessment		●			●	●
3.OA.5 Apply properties of operations as strategies to multiply and divide.											M1, S1 Unit 7 Pre-Assessment M2, S2 Multiplication & Division Checkpoint M4, S5 Unit 7 Post-Assessment		●	●

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3.OA.6 Understand division as an unknown-factor problem.			M3, S1 Work Sample					M1, S1 Unit 5 Pre-Assessment M2, S4 Multiplication & Division Checkpoint M4, S1 Division Checkpoint M4, S6 Unit 5 Post-Assessment					●	●
3.OA.7 Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division or properties of operations. By the end of Grade 3, know from memory all products of two 1-digit numbers.			M1, S2 Unit 2 Pre-Assessment M4, S4 Unit 2 Post-Assessment	●			●	M1, S1 Unit 5 Pre-Assessment M2, S4 Multiplication & Division Checkpoint M4, S1 Division Checkpoint M4, S6 Unit 5 Post-Assessment		●	M1, S1 Unit 7 Pre-Assessment M4, S5 Unit 7 Post-Assessment		●	●
3.OA.8 Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.	M4, S6 Unit 1 Post-Assessment			●	M1, S1 Unit 3 Pre-Assessment M2, S4 Work Sample M3, S1 Three-Digit Addition & Subtraction Checkpoint M4, S5 Unit 3 Post-Assessment	M1, S1 Unit 4 Pre-Assessment M3, S1 Measurement Checkpoint M4, S4 Unit 4 Post-Assessment	●	M1, S1 Unit 5 Pre-Assessment M4, S6 Unit 5 Post-Assessment			M1, S1 Unit 7 Pre-Assessment M4, S5 Unit 7 Post-Assessment		●	●
3.OA.9 Identify patterns among basic addition and subtraction facts, and explain those patterns by referring to properties of the operation.	M1, S3 Unit 1 Pre-Assessment M2, S3 Addition & Subtraction Checkpoint M4, S6 Unit 1 Post-Assessment													
3.OA.9 Identify patterns among basic multiplication and division facts, and explain those patterns by referring to properties of the operation.			M1, S2 Unit 2 Pre-Assessment M4, S4 Unit 2 Post-Assessment				●						●	●
3.NBT.1 Use place value understanding to round whole numbers to the nearest 10 or 100.					M1, S1 Unit 3 Pre-Assessment M2, S4 Work Sample M2, S1 Rounding & Multi-Digit Addition Checkpoint M4, S5 Unit 3 Post-Assessment		●							●

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3.NBT.2 Fluently add and subtract within 1,000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.	M1, S3 Unit 1 Pre-Assessment M3, S3 Work Sample M4, S6 Unit 1 Post-Assessment			●	M1, S1 Unit 3 Pre-Assessment M2, S1 Rounding & Multi-Digit Addition Checkpoint M2, S4 Work Sample M3, S1 Three-Digit Addition & Subtraction Checkpoint M4, S5 Unit 3 Post-Assessment	M1, S1 Unit 4 Pre-Assessment M4, S4 Unit 4 Post-Assessment					M1, S1 Unit 7 Pre-Assessment M4, S5 Unit 7 Post-Assessment		●	●
3.NBT.3 Multiply 1-digit whole numbers by multiples of 10 in the range 10–90 using strategies based on place value and properties of operations.											M1, S1 Unit 7 Pre-Assessment M2, S2 Multiplication & Division Checkpoint M4, S5 Unit 7 Post-Assessment		●	●
3.NF.1 Understand a fraction 1/*b* as the quantity formed by 1 part when a whole is partitioned into *b* equal parts; understand a fraction *a*/*b* as the quantity formed by *a* parts of size 1/*b*.						M1, S1 Unit 4 Pre-Assessment M4, S4 Unit 4 Post-Assessment				●	M1, S1 Unit 7 Pre-Assessment M4, S1 Fractions Checkpoint M4, S5 Unit 7 Post-Assessment			●
3.NF.2 Understand a fraction as a number on the number line; represent fractions on a number line diagram.						M1, S1 Unit 4 Pre-Assessment M4, S4 Unit 4 Post-Assessment	●			●	M1, S1 Unit 7 Pre-Assessment M4, S1 Fractions Checkpoint M4, S5 Unit 7 Post-Assessment		●	●
3.NF.2a Represent a fraction 1/*b* on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into *b* equal parts. Recognize that each part has size 1/*b* and that the endpoint of the part based at 0 locates the number 1/*b* on the number line.										●	M1, S1 Unit 7 Pre-Assessment M4, S1 Fractions Checkpoint M4, S5 Unit 7 Post-Assessment			●
3.NF.2b Represent a fraction *a*/*b* on a number line diagram by marking off a lengths 1/*b* from 0. Recognize that the resulting interval has size *a*/*b* and that its endpoint locates the number *a*/*b* on the number line.										●	M1, S1 Unit 7 Pre-Assessment M4, S1 Fractions Checkpoint M4, S5 Unit 7 Post-Assessment			●
3.NF.3a Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.						M1, S1 Unit 4 Pre-Assessment M4, S4 Unit 4 Post-Assessment				●	M1, S1 Unit 7 Pre-Assessment M4, S5 Unit 7 Post-Assessment			●

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3.NF.3b Recognize and generate simple equivalent fractions. Explain why the fractions are equivalent.						M1, S1 Unit 4 Pre-Assessment M4, S4 Unit 4 Post-Assessment				●	M1, S1 Unit 7 Pre-Assessment M4, S1 Fractions Checkpoint M4, S5 Unit 7 Post-Assessment			●
3.NF.3c Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers.						M1, S1 Unit 4 Pre-Assessment M4, S4 Unit 4 Post-Assessment				●	M1, S1 Unit 7 Pre-Assessment M4, S5 Unit 7 Post-Assessment		●	●
3.NF.3d Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions.						M1, S1 Unit 4 Pre-Assessment M4, S4 Unit 4 Post-Assessment	●			●	M1, S1 Unit 7 Pre-Assessment M4, S1 Fractions Checkpoint M4, S5 Unit 7 Post-Assessment		●	●
3.MD.1 Tell and write time to the nearest minute						M1, S1 Unit 4 Pre-Assessment M2, S1 Time Checkpoint M4, S4 Unit 4 Post-Assessment				●				●
3.MD.1 Measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes.						M1, S1 Unit 4 Pre-Assessment M2, S1 Time Checkpoint M4, S4 Unit 4 Post-Assessment	●			●				●
3.MD.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units.				●		M1, S1 Unit 4 Pre-Assessment M3, S1 Measurement Checkpoint M4, S4 Unit 4 Post-Assessment								●
3.MD.3 Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs.				●						●		M2, S4 Work Sample*		●
3.MD.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.												M3, S4 Work Sample* M4, S3 Work Sample*	●	●

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3.MD.5a A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area.								M1, S1 Unit 5 Pre-Assessment M4, S6 Unit 5 Post-Assessment		●				●
3.MD.5b A plane figure which can be covered without gaps or overlaps by *n* unit squares is said to have an area of *n* square units.								M1, S1 Unit 5 Pre-Assessment M4, S6 Unit 5 Post-Assessment		●				●
3.MD.6 Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).								M1, S1 Unit 5 Pre-Assessment M4, S6 Unit 5 Post-Assessment		●				●
3.MD.7a Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.								M1, S1 Unit 5 Pre-Assessment M4, S6 Unit 5 Post-Assessment		●	M2, S2 Multiplication & Division Checkpoint			●
3.MD.7b Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.								M1, S1 Unit 5 Pre-Assessment M4, S6 Unit 5 Post-Assessment	M1, S1 Unit 6 Pre-Assessment M4, S4 Unit 6 Post-Assessment	●	M2, S2 Multiplication & Division Checkpoint	M3, S4 Work Sample* M4, S3 Work Sample*	●	●
3.MD.7c Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths *a* and *b* + *c* is the sum of *a* × *b* and *a* × *c*. Use area models to represent the distributive property in mathematical reasoning.											M1, S1 Unit 7 Pre-Assessment M4, S5 Unit 7 Post-Assessment		●	●
3.MD.7d Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real-world problems.									M1, S1 Unit 6 Pre-Assessment M4, S4 Unit 6 Post-Assessment	●				●
3.MD.8 Solve real-world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.									M1, S1 Unit 6 Pre-Assessment M4, S4 Unit 6 Post-Assessment	●		M3, S4 Work Sample* M4, S3 Work Sample*		●
3.G.1 Understand that shapes in different categories may share attributes, and that the shared attributes can define a larger category. Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.				●					M1, S1 Unit 6 Pre-Assessment M2, S4 Polygons & Quadrilaterals Checkpoint M4, S4 Unit 6 Post-Assessment			M2, S5 Work Sample* M3, S4 Work Sample* M4, S3 Work Sample*		●
3.G.2 Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole.						M1, S1 Unit 4 Pre-Assessment M4, S4 Unit 4 Post-Assessment				●	M1, S1 Unit 7 Pre-Assessment M4, S1 Fractions Checkpoint M4, S5 Unit 7 Post-Assessment			●

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Section 3

Assessing Math Practices

In addition to presenting a set of math content standards for each grade level, the authors of the Common Core Standards have established a set of Mathematical Practice Standards that rest on important "processes and proficiencies with longstanding importance in mathematics education." This set is identical for each grade level, K–12.

Dr. William McCallum, one of the authors of the CCSS, points out that the eight math practices can be grouped into four categories, as shown on the chart below.

Habits of Mind of a Productive Mathematical Thinker	Reasoning and Explaining	Modeling and Using Tools	Seeing Structure and Generalizing
MP.1 Make sense of problems and persevere in solving them. **MP.6** Attend to precision.	**MP.2** Reason abstractly and quantitatively. **MP.3** Construct viable arguments and critique the reasoning of others.	**MP.4** Model with mathematics. **MP.5** Use appropriate tools strategically.	**MP.7** Look for and make use of structure. **MP.8** Look for and express regularity in repeated reasoning.

In rich settings in which informal and formal possibilities for solving problems are numerous, young children develop the ability to focus attention, test hypotheses, take reasonable risks, remain flexible, try alternatives, exhibit self-regulation, and persevere.

» Juanita Copley

It is important to note that these practices reflect the attitudes and ways of thinking and working that characterize successful mathematicians. They are much bigger and somewhat more amorphous than math content skills, and at least as important. However, they are not a list of discrete skills to be "covered." They are, rather, vehicles for teaching, learning, and doing mathematics at every level.

What Do the Math Practices Look Like at Grade 3?

It is impossible to address and assess these practices without having a clear picture of the desired outcomes. The language of the math practices is straightforward, but exactly what does "reasoning abstractly and quantitatively" look like in third grade? How do we know when an 8-year-old is proficient at "modeling with mathematics?"

The North Carolina Department of Instruction has produced a document that "unpacks" the Common Core Standards, providing clear descriptions of what the standards mean a student must know, understand, and perform at each grade level. The chart on the next page features explanations and examples of the math practices in action at third grade from the North Carolina unpacking document.

Math Practice		Explanations and Examples
Habits of Mind	**MP. 1** Make sense of problems and persevere in solving them.	In third grade, mathematically proficient students know that doing mathematics involves solving problems and discussing how they solved them. Students explain to themselves the meaning of a problem and look for ways to solve it. Third graders may use concrete objects or pictures to help them conceptualize and solve problems. They may check their thinking by asking themselves, "Does this make sense?" They listen to the strategies of others and will try different approaches. They often will use another method to check their answers.
	MP. 6 Attend to precision.	Mathematically proficient third graders develop their mathematical communication skills, they try to use clear and precise language in their discussions with others and in their own reasoning. They are careful about specifying units of measure and state the meaning of the symbols they choose. For instance, when figuring out the area of a rectangle they record their answers in square units.
Reasoning & Explaining	**MP. 2** Reason abstractly and quantitatively.	Mathematically proficient third graders should recognize that a number represents a specific quantity. They connect the quantity to written symbols and create a logical representation of the problem at hand, considering both the appropriate units involved and the meaning of quantities.
	MP. 3 Construct viable arguments and critique the reasoning of others.	In third grade, mathematically proficient students may construct arguments using concrete referents, such as objects, visual models, and labeled sketches. They refine their mathematical communication skills as they participate in mathematical discussions involving questions like "How did you get that?" and "Why is that true?" They explain their thinking to others and respond to others' thinking.
Modeling & Using Tools	**MP. 4** Model with mathematics.	Mathematically proficient students experiment with representing problem situations in multiple ways including numbers, words (mathematical language), making sketches, using objects, acting out, making a chart, list, or graph, writing equations, and so on. Students need opportunities to connect the different representations and explain the connections. They should be able to use all of these representations as needed. Third graders should evaluate their results in the context of the situation and reflect on whether the results make sense.
	MP. 5 Use appropriate tools strategically.	Mathematically proficient third graders consider the available tools (including estimation) when solving a mathematical problem and decide when certain tools might be helpful. For instance, they may use graph paper to find all the possible rectangles that have a given perimeter. They compile the possibilities into an organized list or a table, and determine whether they have all the possible rectangles.
Structure & Generalizing	**MP. 7** Look for and make use of structure.	In third grade mathematically proficient students look closely to discover a pattern or structure. For instance, students use properties of operations as strategies to multiply and divide (commutative and distributive properties).
	MP. 8 Look for and express regularity.	Mathematically proficient students in third grade should notice repetitive actions in computation and look for more shortcut methods. For example, students may use the distributive property as a strategy for using products they know to solve products that they don't know. For example, if students are asked to find the product of 7×8, they might decompose 7 into 5 and 2 and then multiply 5×8 and 2×8 to arrive at $40 + 16$ or 56. In addition, third graders continually evaluate their work by asking themselves, "Does this make sense?"

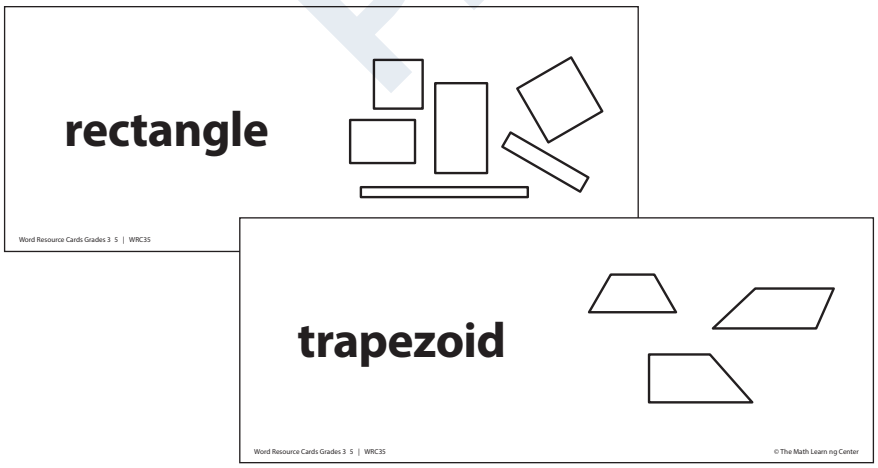
How Can We Best Assess the Math Practices?

While it is possible to score extended response items for a variety of traits, much as writing samples are scored, the characteristics, habits of mind, and dispositions represented by the math practices don't easily lend themselves to paper-and-pencil testing, especially in the elementary grades. We need to observe our students in action during daily instruction, at Work Places, and in individual and small group settings, watching and listening carefully for evidence that they are demonstrating the desired proficiencies and performances.

What Is the Teacher's Role in Eliciting Math Practices?

As we consider how to best teach and assess math practices, we need to examine the teacher's role as a facilitator in the classroom. What behaviors and attitudes can we hold and model on a consistent basis, whether in instructional or assessment settings, that will elicit and reinforce the practices?

- **Value the process of finding the answer at least as much as the answer itself.** This means listening carefully to students and trying to understand how they get their answers, even when they don't make much sense to you. Students' responses, as random as they may seem at times, are based on their current understandings. There is almost always some kind of underlying logic.
- **Create an atmosphere in which it's OK to take risks and make mistakes.** If you listen to students with genuine respect and curiosity, you'll find that they begin to do the same for their classmates.
- **When appropriate, make a selection of tools available,** including pattern blocks, base ten pieces, colored tiles, geoboards, whiteboards and markers, paper and pencil, and virtual tools such as the number rack, number line, geoboard, and number pieces apps. Talk with students about their choices from time to time, and encourage them to explain why, for example, they've chosen to make a sketch of an open number line instead of using base ten pieces to model and solve a particular problem.
- **Give students time to share their observations, ideas, and strategies with one another.** This can take place in small group settings such as Work Places, or during whole group discussions, but means that you have to establish the idea of listening to and learning from one another as a classroom norm. The care and respect you demonstrate in listening to each member of your classroom community will shape students' attitudes toward one another.
- **Encourage students to be as precise as possible in their use of mathematical terms and labels.** The level of precision your third graders are able to exercise will vary from one student to the next, depending on a variety of factors, but you can be consistent in using precise terminology yourself. To support you in this effort, we have provided a list of math vocabulary on the first page of each session and workout throughout Bridges and Number Corner, as well as a set of Word Resource Cards (found in the Number Corner kit). Each card in the set shows a word or term along with an illustration of its meaning. A working definition is provided on the back of each card for your reference. We recommend that you use these cards to develop math word walls over the course of each unit and/or month of Number Corner by posting them as the need arises during your instruction.



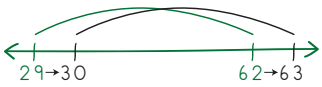
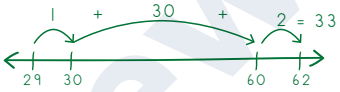
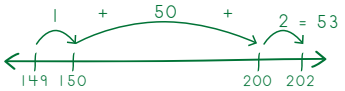
- **Help students clarify and justify their thinking with the questions you ask** as they are working independently or discussing problems in group settings. We have included sample dialog in many of the Bridges sessions and Number Corner workouts for modeling possible questioning techniques. Beyond these examples, we find that there are key questions that elicit specific math practices. Some of these are listed on the following chart.

Math Practice		Questions That Elicit the Desired Behavior
Habits of Mind	**MP.1** Make sense of problems and persevere in solving them. **MP.6** Attend to precision.	• What do you think that problem is asking? • How would you describe this problem in your own words? • What information is given in the problem? • What might you do to get started? • Share your thinking with the person next to you. What does your partner think? • Did your partner get the same answer? If not, can the two of you figure out why not? • What's the word we use for any shape with 4 sides and 4 vertices? • What measuring tool would give you the most precise answer? • Does your answer seem reasonable? Why or why not? • What can you do to double-check your answer?
Reasoning & Explaining	**MP.2** Reason abstractly and quantitatively. **MP.3** Construct viable arguments and critique the reasoning of others.	• Can you find a combination of cards that totals 1,000? • How many more do you need to make 1,000? • Which team is winning our game so far? By how much? • What number do you hope you spin next in this game? Why? • What does each of the numbers and symbols in this problem mean? • What equation might we use to represent this story problem? Does someone have a different idea? • What answer did you get for this problem? How did you figure it out? • Does anyone have a different solution? • Does anyone have a different strategy; a different way to solve the problem? • We have seen three different strategies for solving this problem. How are these strategies alike? How are they different? • Did anyone try a method that didn't word? Why didn't it work? Do you think it would ever work? Why or why not? • Can you convince us? • Can you find a way to prove that?
Modeling & Using Tools	**MP.4** Model with mathematics. **MP.5** Use appropriate tools strategically.	• Can you make a labeled sketch to show your thinking? • What equation might we use to represent this situation? • Would you prefer to use base ten pieces or a number line sketch to help solve this problem? Why? • How might you use a rectangular array to show this situation? • Would you rather use one of the geoboards from our collection of math tools, or the geoboard app on your tablet today? Why?
Structure & Generalizing	**MP.7** Look for and make use of structure. **MP.8** Look for and express regularity.	• What do you notice (about this chart, game board, picture, sequence, problem, etc.)? • Do you see any patterns here; anything that repeats over and over? • What might come next? Why? • What do you predict will happen? Why? • How is this problem like the one we just solved? How is it different? • Does that always work? Why or why not? • What would happen if … ? • How are these shapes alike? How are they different? • What do you notice about the numbers in this list?

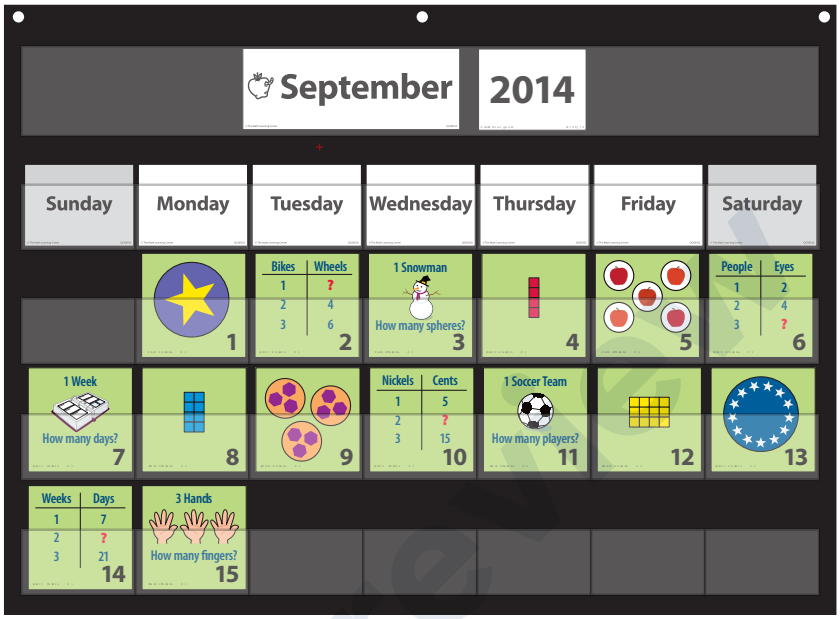
Looking for the Math Practices in All the Right Places, Part 1

Although teachers' beliefs and attitudes regarding the math practices shape their questioning and instructional strategies and go a long way toward eliciting the desired behaviors, we need to acknowledge that certain types of activities are more effective than others in educing particular practices. To say that we're doing all the math practices all of the time strips them of their fundamental value.

Math educator Susan Jo Russell suggests instead that we identify "Content-Practice nodes" or places in a curriculum where a teaching/learning emphasis on each practice can most productively occur. The chart on the following pages identifies some of the types of activities in Bridges and Number Corner that are particularly strong at facilitating each practice in Grade 3, and gives an example of each.

MP	Activity
MP.6 MP.2, MP.3 MP.4, MP.5 MP.8	**Computation Problems Involving Two or More Steps** **Unit 3 Module 4, Session 4** Think Before You Subtract After investigating a range of methods, including the standard algorithm, students are presented with several different subtraction problems and asked to select and use the strategy that seems most appropriate, given the numbers involved. In so doing, students are empowered to select from a variety of tools in the form of strategies, and encouraged to debate and discuss their selections with one another. The first problem in the set is 62 – 29. After students have had time to solve the problem, the teacher invites several volunteers to share their solutions and strategies with the class. ***Natasha*** *First I tried the regrouping way, but it I didn't want to deal with 2 take away 9. I knew I could change the problem to be 63 – 30 because of the constant difference strategy—all you have to do is add 1 to both numbers. Then it was really easy! 63 take away 30 is 33 and so 62 – 29 = 33.* ***Martin*** *I pictured the numbers on a number line. Then, I started at 29 and counted up to 30. That was 1. Then I took a jump of 30 to 60. That was 31. Then I just had to jump 2 more to 62 and that makes 33. I jumped a total of 33 which is the difference between 29 and 62.* ***Charlotte*** *I used the regrouping way, where you start with the ones. Since you can't do 2 – 9 without getting a negative number, I took one of the tens, and broke it into ones for 12 – 9. That was 3, and then I had 50 – 20, so my answer was 33.* Algorithm 5 12 ~~6~~ ~~2~~ – 29 33 Constant Difference on a Number Line  62 + 1 = 63 – 29 + 1 = 30 33 Finding the Difference on a Number Line  The third problem in the set is 202 – 149. ***Pablo*** *At first I thought it would be hard because the numbers are bigger. But, then it seemed even easier than the other ones we did.* ***Teacher*** *What made this one easier?* ***Pablo*** *Well, 202 is so close to 200 and 149 is so close to 150. I could picture a number line in my head with a big jump from 150 to 200 and then there was just a little more to add on each side.* ***Eliza*** *I thought is was pretty easy too. I changed the 149 to 150 and then added 1 to the 203 so my problem was 203 take away 150, which is 53.* Algorithm 1 9 12 ~~2~~ ~~0~~ ~~2~~ – 149 53 Finding the Difference on a Number Line  Constant Difference Using Equations 202 + 1 = 203 – 149 + 1 = –150 53 At several different points, the teacher asks the class to compare the strategies shared: Which strategy is the most efficient, given the combination? Which is easiest to understand? Why? While they may not agree across the board, the goal is for students to see that they can use the relationships among numbers to solve the problems, and choose the strategy that fits the numbers in the problem. **Which subtraction strategies work best?** ○ You don't have to use the same strategy all the time. ○ Look at the numbers first to see which strategy might work best. ○ Look for ways to use constant difference to make the problems easier. ○ If you don't have to regroup, the algorithm is fast and easy. ○ The algorithm always works, so it's a good thing to know when you can't think of an easier way to solve the problem.

MP	Activity
MP.1 MP.3 MP.4 MP.7, MP.8	**Pattern Problems** **September Number Corner** Calendar Grid Workout Each day, a new marker is posted in the Calendar Grid pocket chart. In September, the sequence is designed to introduce multiplication and familiarize students with some of the models they'll use throughout the year to represent and solve multiplication problems. These models include objects arranged in equal groups, ratio tables, familiar items that come naturally grouped in certain amounts, and arrays. The markers are patterned in a predictable sequence, making it possible for students to predict the appearance of new markers based on the markers that have already been posted. By using words and numbers to describe the markers through the month, students learn that multiplication is a means to determine the total number of objects when there are a specific number of groups, and each group has the same number of objects. Furthermore, they learn that the multiplication symbol × means *groups of*, and combinations such as 3 × 3 refer to *3 groups of 3*.



Teacher *What do you think the Calendar Grid marker for today will look like? Please talk to the person next to you, and then we'll have some people share their thinking with the class.*

Kelsey *It has to be an array with 16 squares in it.*

Teacher *Thumbs up if you agree with Kelsey. I'm seeing lots of thumbs up. Who'd like to explain why they agree?*

Morgan *It has to be 16 because the number of things is always the same as the date. And it has to be an array because that's the pattern— loops, ratio table, picture, array.*

Teacher *Can anyone tell us more about the array we might see on today's marker?*

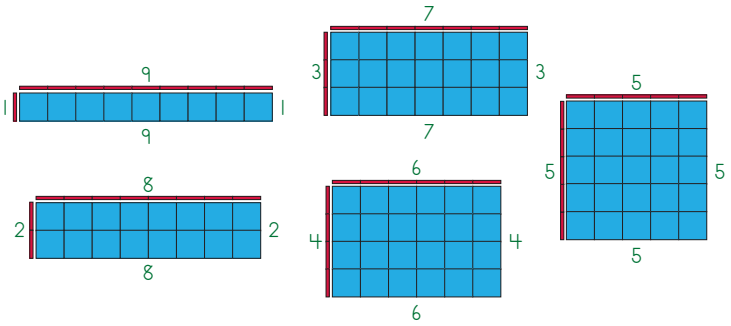
Students *It could be one long row of 16, but that wouldn't fit very well.*

It could be 2 rows of 8 because 8 and 8 make 16.

I don't think it's going to have 3 rows, because if you go by 3s, you don't land on 16.

It could be in 4s though, because 4, 8, 12, then 13, 14, 15, 16.

MP	Activity
MP.1 MP.3 MP.4 MP.7	**Problems with More Than One Solution** **Unit 6 Module 3: Session 2** The 329th Friend: How Many Tables? Part 2 In this session, students use square-inch tiles and red linear pieces to model rectangular tables that will seat exactly 20 friends. When most pairs have found at least 3 different solutions, the teacher reconvenes the class and invites volunteers to share their arrays at the board. Students discuss the arrays, taking note of the fact that they all have a perimeter of 20 linear units, but each is composed of a different number of tiles. Implicit in the activity is the invitation to discuss which solution is best given the problem itself.



Students *Some of the rectangles are really skinny, and others wider.*

That one at the end is a square.

The skinniest one is a 1-by-9. Then you can see a 2-by-8. Then there's a 3-by-7, and it keeps going until you have a 5-by-5.

I think it's really weird that it only took 9 tiles to make the skinniest rectangle, and it took 25 to make the square, and they all have 20 around the perimeter.

If I were Emery Raccoon, I'd put little tables together to make long, skinny rectangles because it doesn't take nearly as many.

The good thing about the big square one is everyone can see each other around the table.

After students have had an opportunity to share their initial observations, the teacher works with input from the class to organize and record the information in chart form.

Tables to Seat 20 Friends

width	length	perimeter	area
1	9	20	9 tiles
2	8	20	16 tiles
3	7	20	21 tiles
4	6	20	24 tiles
5	5	20	25 tiles

The sessions and workouts shown in the chart above are meant to give examples of the types of activities teachers will find throughout the program. Each Bridges session and Number Corner workout is accompanied by a skills list that identifies two or three math practices that are most strongly elicited by the activity. For a complete listing, see the Bridges in Mathematics Grade 3 CCSS Correlations on the Bridges Educator website.

Looking for the Math Practices in All the Right Places, Part 2

On the next page, you'll find a Math Practices Observation Sheet. Here you can note observations about students' use of math practices during Bridges sessions and Number Corner workouts. Consider running several copies, labeling each row with one of the students' names, and making periodic notes about each student once every week or two.

Math Practices Observation Chart

You can use this chart to record notes about students' use of Math Practices during Bridges sessions and Work Places, as well as during Number Corner workouts. See the Grade 3 Correlations on the Bridges Educator site for the sessions and workouts most likely to elicit particular Math Practice.

Students	**Habits of Mind** **3.MP.1** Make sense of problems and persevere in solving them **3.MP.6** Attend to precision	**Reasoning & Explaining** **3.MP.2** Reason abstractly and quantitatively **3.MP.3** Construct viable arguments and critique the reasoning of others	**Modeling & Using Tools** **3.MP.4** Model with mathematics **3.MP.5** Use appropriate tools strategically	**Seeing Structure & Generalizing** **3.MP.7** Look for and make use of structure **3.MP.8** Look for and express regularity in repeated reasoning

Section 4

Assessment as a Learning Opportunity

There is no question that third graders can participate in an informed way in their own learning, setting goals and monitoring their progress toward meeting those goals. In this section, we will examine several different ways to engage students as active participants in their own learning. These include setting and evaluating learning targets with students each day; utilizing a variety of techniques for bringing each session to some kind of closure; having students reflect on the results of the unit pre-assessments in order to set their own goals for each 20-session period of study; and giving students the opportunity to compare and contrast their skill levels at the beginning and end of each unit.

Assessment should not merely be done to students; rather it should also be done for [and with] students, to guide and enhance their learning.
» NCTM

Learning Targets

A learning target is, very simply, a statement of intent for a lesson. Such a target lets students know what the goal of the lesson is. Teachers sometimes set two or even three targets for a math session: one that has to do with the content (skills or concepts), one that has to do with key vocabulary, and one that has to do with a mathematical practice likely to be elicited in the course of the activity.

Setting Learning Targets

Each Bridges session includes a summary, list of skills and concepts, and list of related vocabulary to make the task of generating learning targets easier for teachers.

Unit 5 Module 1

Unit 5 | Module 1 | **Session 4**

Session 4

Game Store Story Problems, Part 1

Summary

This is the first of three consecutive sessions that focus on solving and posing multiplication and division story problems based on a Game Store theme. In today's session, students work together to solve a division problem, and then work independently in their journals on a second problem. After sharing their solutions and strategies for the second problem, students spend any time remaining in the session at Work Places.

Skills & Concepts

- Interpret products of whole numbers; write story problems or describe problem situations to match a multiplication expression or equation (3.OA.1)
- Interpret quotients of whole numbers; write story problems or describe problem situations to match a division expression or equation (3.OA.2)
- Solve multiplication and division story problems with products and dividends to 100 involving situations of equal groups, arrays, and measurement quantities (3.OA.3)
- Solve division problems by finding an unknown factor (e.g., solve 32 ÷ 8 by finding the number that makes 32 when multiplied by 8) (3.OA.6)
- Make sense of problems and persevere in solving them (3.MP.1)
- Construct viable arguments and critique the reasoning of others (3.MP.3)

Materials

Copies	Kit Materials	Classroom Materials
Problems & Investigations Introducing the Game Store		
TM T6–T7 Game Store Problems 1 & 2	• colored tiles (see Preparation) • red linear pieces (see Preparation) • Magic Wall (see Preparation) • magnetic tiles (see Preparation) • base ten pieces	• student math journals • piece of copy paper to mask portions of the teacher master • overhead transparencies (if you are using an overhead projector; see Preparation)
Work Places in Use		
3C Round Ball Hundreds (introduced in Unit 3, Module 1, Session 4) **3D** Round & Add Hundreds (introduced in Unit 3, Module 3, Session 1) **4A** Tic-Tac-Tock (introduced in Unit 4, Module 1, Session 2) **4B** Measurement Scavenger Hunt (introduced in Unit 4, Module 2, Session 2) **4C** Target One Thousand (introduced in Unit 4, Module 2, Session 3) **4D** Hexagon Spin & Fill (introduced in Unit 4, Module 3, Session 3)		
Daily Practice		
SB 148 Flowers, Shells & Cards		

Vocabulary

An asterisk [*] identifies those terms for which Word Resource Cards are available.

array*
column
dimension*
divide*
equation*
expression*
group
multiply*
row

A teacher might examine the Summary and Skills & Concepts list for a session such as the one shown above, and devise one, two, or even three learning targets in the form of "I can" statements:

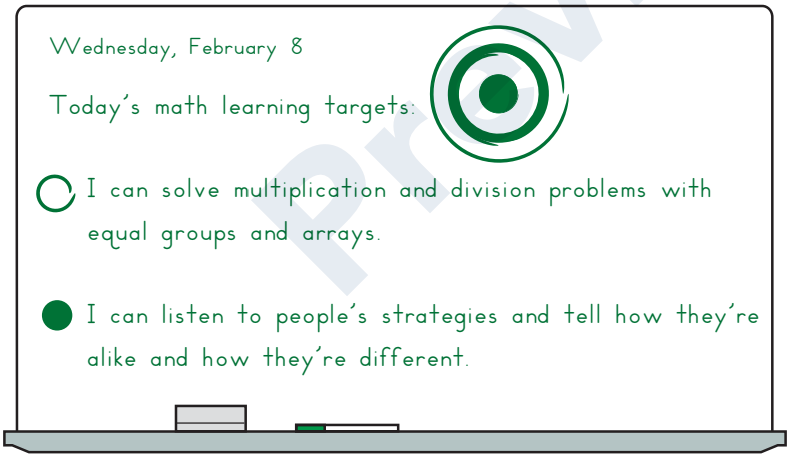
> *I can solve multiplication and division problems with equal groups and arrays.*
>
> *I can explain how you can use multiplication to help solve a division problem.*
>
> *I can listen to my classmates explain their strategies for solving today's problems and tell how the strategies are alike and how they're different.*

These are only three of many possible learning targets for this particular session. Other content targets might deal with reading and solving multiplication story problems, explaining how a tile array can be used to model and solve a division problem, or writing equations to represent story problems. Other vocabulary targets might revolve around any of the words listed for the session. Alternate math practice targets might have to do with sharing and explaining one's thinking, being able to restate a classmate's explanation or strategy, or evaluating strategies for efficiency. It is not hard to come up with an assortment of possible targets; the challenge is to choose the one or two that best address the strengths and needs of your students at the time and to frame those targets in student-friendly terms (e.g., "I can … " statements).

Teachers generally find that the process of devising learning targets for their students is helpful in focusing their own thinking about the purpose of a lesson. It's not unusual for teachers to collaborate during grade-level team meetings or professional learning communities in generating learning targets for the sessions they plan to teach in the coming week.

Communicating Learning Targets

Once a teacher has decided on the learning targets for a particular session, she must then communicate them to the students. Oftentimes, she does this by writing the targets on the board before the session and then sharing them with the students at the very opening of the session. Some teachers even make a drawing of a target on the board to accompany the display, like this:



Evaluating Learning Targets

After sharing the targets with the students and clarifying as needed, the teacher conducts the lesson, referring back to each target once or twice during instruction to refocus students on their learning goals. At the end of the activity, the teacher draws students' attention back to the targets and evaluates each with the class, perhaps conducting a check for understanding in the process, as illustrated in the dialog below.

> ***Teacher*** *Our first learning target today was to solve multiplication and division problems with equal groups and arrays. What if we had a problem to solve where Rosa's little brother went into the game shop to buy some more marbles? Let's say the little brother bought 30 marbles, and these marbles came in bags of 6. How might we use equal groups or arrays to find out how many bags he bought?*

Student *You could get 30 tiles and then divide them up into equal groups.*

Teacher *OK, let's try that. There are still tiles at your tables, right? Now, would each of you work with the person next to you to count out 30 tiles and use them to solve the problem?*

Teacher *I've been walking around watching you work, and I'm seeing some interesting strategies. What did you get for an answer?*

Students *It's 5.*

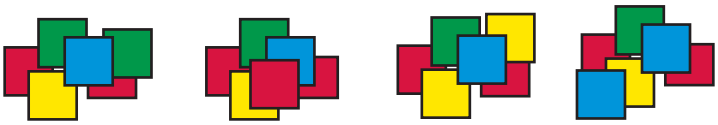
We said the little brother got 5 bags of marbles.

We got 4.

Teacher *Who'd like to share how they got their answer? Please come up to the projector and show us with the tiles. I have 30 tiles right here for you.*

Students *We made groups of 6, because there were 6 marbles in each bag.*

We just kept going until we ran out of tiles. You can see that we got 5 groups of 6, so we said the little brother got 5 bags of marbles.

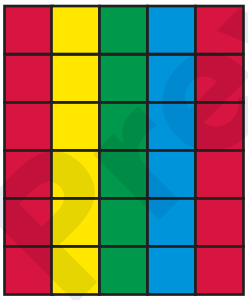


Teacher *Did anyone use the tiles in a different way?*

Students *We did! Can we show?*

It's kind of the same, but we decided to make columns of 6 instead of piles of 6.

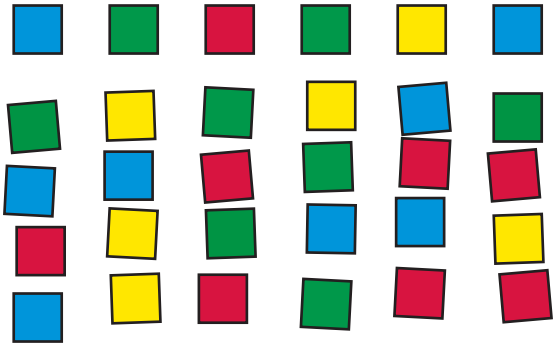
It came out to be a 6 by 5 rectangle, and then we remembered that 6 × 5 is 30, so if you divide up 30 into groups of 6, you have to get 5 groups.



Students *We got 4 for our answer, but we want to change it to 5 now.*

We figured out how we got goofed up. We thought there were 6 bags, instead of 6 in each bag, and we had the idea to put out 1 tile for each bag, and then divide up the rest of the tiles until we used them all up.

But we got confused, and forgot to count the first tiles we put out, so we thought there were 4 in each bag.



Teacher *Oh, interesting! It sounds like you were solving a different problem. How would you describe what you were trying to find out?*

Students *Well, ours was kind of like, OK he got 6 bags of marbles, 30 in all, so how many in each bag?*

What's really weird is if we had remembered to count the tiles in the top row, we would have gotten the right answer—5!

Teacher *That's something to think about, isn't it? How do you think we're doing at using equal groups and arrays to solve division story problems? Show thumbs up if you think we hit the bull's-eye, thumbs sideways if you think we're not really there yet, and thumbs down if you're still not sure about this skill. OK—looks like lots of bull's-eyes!*

Bringing Sessions to Closure

While it is generally not reasonable to expect full mastery of any given skill or concept at the end of a single session, you can enhance students' engagement with the learning process by taking care to bring each session to closure, rather than moving too quickly to the next activity. Most of the sessions in Bridges offer summary opportunities of one sort or another. Sometimes these are simple housekeeping procedures, such as having students clean up, put their materials away, and reconvene to find out what they'll be doing the following session. Other times, a session will close with a final problem, or a short set of questions, making it possible for students to monitor their own progress toward meeting standards on a regular basis.

There are many other very effective ways to bring daily sessions to closure in ways that allow students to review and reflect upon the learning that has taken place that day, or their feelings about it. You'll find a few of these described below.

Thumbs Up, Down, or Sideways

Call for a show of thumbs at the end of the session in response to questions that involve students' confidence level with a particular skill, understanding of a particular concept, or feelings about a topic, skill, or concept.

Learning Lines

At the end of a session, have students each draw a line on a whiteboard or small piece of scratch paper and label it with three faces, as shown in the illustration. Then have them mark an X along the line to indicate how well they think they did with the skill, concept, or practice that was targeted for the lesson.

Exit Cards

At the end of a session, give students each a 3″ × 5″ index card or a small piece of scratch paper, or have them turn to the next available page in their math journal, and ask them to respond to one of the prompts below, or another of your own choice.

- Three important ideas from today's lesson are _____, _____, and _____, but the most important thing I learned today is _____.
- One question I still have about what we did today is _____.
- One thing I learned about _____ today is _____.

Error Analysis

Post a problem on the board with an error in the computation or the answer. Have students work independently or in pairs to identify the error, and then talk it over with the group.

Using the Unit Pre-Assessments for Goal Setting

Although teachers sometimes hesitate to administer unit pre-assessments for fear that students may feel overwhelmed and defeated before the instruction even begins, there are a number of good reasons to conduct these assessments. One of the strongest arguments for doing so is that you can use the results to guide your instruction, knowing ahead of time which students are likely to struggle and need extra support, and which are likely to need extra challenges along the way. It's important to reassure students that the unit pre-assessments are designed to help you (and them) understand what they already know and what they still have to learn with regard to the skills and concepts in the upcoming unit. You don't expect them to know how to answer all the questions and solve all the problems yet, but you also don't want to spend lots of time teaching things they can already do. You might encourage your students to regard each pre-assessment as a "sneak preview of coming attractions" or a peek at some of the things they'll be studying over the next few weeks.

Student Reflection Sheets

The results of unit pre-assessments can also provide students with concrete evidence of their current skills relative to what will be addressed during any given unit. We believe there is so much potential in allowing students to take stock of their areas of strength and need at the start of each unit that we have formalized the process by providing a Student Reflection Sheet, as well as time in the first module of instruction, for each unit except the last. The procedure, described below, is the same from one unit to the next, but the reflection sheets are specific to each unit, and are found in the Bridges Teachers Guide.

Bridges in Mathematics Grade 3 Teacher Masters

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NAME | DATE

Unit 4 Pre-Assessment Student Reflection Sheet

Skill	Look at these problems.	I can do this well already.	I can do this sometimes.	I need to learn to do this.	Notes
Can you solve story problems about mass, length, and liquid volume?	1a, 1b, 1c, 2a				
Do you remember to label your answers with the correct units when you solve story problems?	1a, 1b, 1c, 2a				
Can you choose the equation that best represents a story problem?	2b				
Can you choose the type of measurement (mass, length, or volume) needed to measure something, and also choose the best unit?	3a, 3b, 3c				
Can you read and write time to the minute?	4, 5				
Can you solve a story problem about time?	6				
Do you understand that half of a small object is not equal to half of a large object?	7a, 7b				
Can you compare fractions and tell when they're equivalent (equal)?	8, 12, 13a, 13b, 13c, 13d				
Can you split a shape into the number of parts you need to make a certain fraction, and then shade that fraction in correctly?	9a, 9b				
Can you place fractions correctly on a number line?	10				
Do you understand that fractions have to be equal parts of the same whole?	11				
Do you understand that the more parts you cut something into, the smaller the parts are?	12				

- After you have made a mark and some notes about each skill above, draw a star next to the two skills that you need to work on the most during this unit.
- Write other ideas about what you want or need to learn how to do during this unit.

Unit 4 Module 1 | **Session 3** *class set, plus 1 copy for display*

To start, you'll hand each student his or her scored assessment and give them a minute or so to look over their papers. Then you'll display a copy of the reflection sheet, give students each a copy, and follow these steps:

- Go over the sheet, one row at a time, with the class.
- For each row, read the skill and make sure students understand it. Ask volunteers to explain, or use one of the associated items on the pre-assessment to explain the skill to the class.
- Have students look at the assessment item(s) associated with that particular skill, talk in pairs about how they did with the skill, and then mark their reflection sheets accordingly.
- When you and the students have finished working through all the skills listed on the reflection sheet, have students star the two they feel they need to work on most in the next few weeks.
- Finally, give students a couple of minutes to describe in writing any other goals, needs, requests, or questions at the bottom of the sheet.
- When students are finished, collect the unit pre-assessments and student reflection sheets. Staple them together and file them so they can be shared with students at the conclusion of the unit, should you choose to do so.

Before and After

Many third graders enjoy comparing the results of their unit pre- and post-assessments, looking to see which items they were able to do correctly the second time around, and noting changes in their organizational skills, the strategies they used to solve various problems, and so on. This is a relatively quick and simple way to help students take ownership, and something you might consider implementing early in the school year. To facilitate this process, you will find a Post-Assessment Student Reflection sheet that closely parallels the Pre-Assessment Reflection sheet for each unit in the Bridges Unit Assessment part of this guide. Whether or not you choose to use these sheets is up to you. Time has not been provided in the sessions, but you may find the specific feedback provided to students worth the extra time and effort involved.

Section 5

Using the Results of Assessment to Inform Differentiation & Intervention

The key to meaningful intervention is for teachers at a grade level to conduct the same assessments, score them the same way, discuss the results with colleagues, and develop a plan that accurately targets and addresses the needs of students.

This time-tested recipe for success has been formalized over the past decade, partly as a result of state and federal demands for increased accountability. The last ten years have seen the rise of professional learning communities, data walls, and Response to Intervention (RtI). At the heart of these developments is the goal of ensuring that *all* students meet the standards and achieve mathematical success.

One of the most challenging tasks we face as classroom teachers is finding ways to reach all our students and match each student's level of mathematical readiness and performance to the skills we are required to teach.

» Regina Gresham and Mary Little

What is RtI?

Succinctly stated by math educators Gina Gresham and Mary Little, Response to Intervention (RtI) is the practice of "1) providing high-quality instruction or intervention matched to student needs and 2) using learning rate over time and level of performance to 3) make important educational decisions to guide instruction."

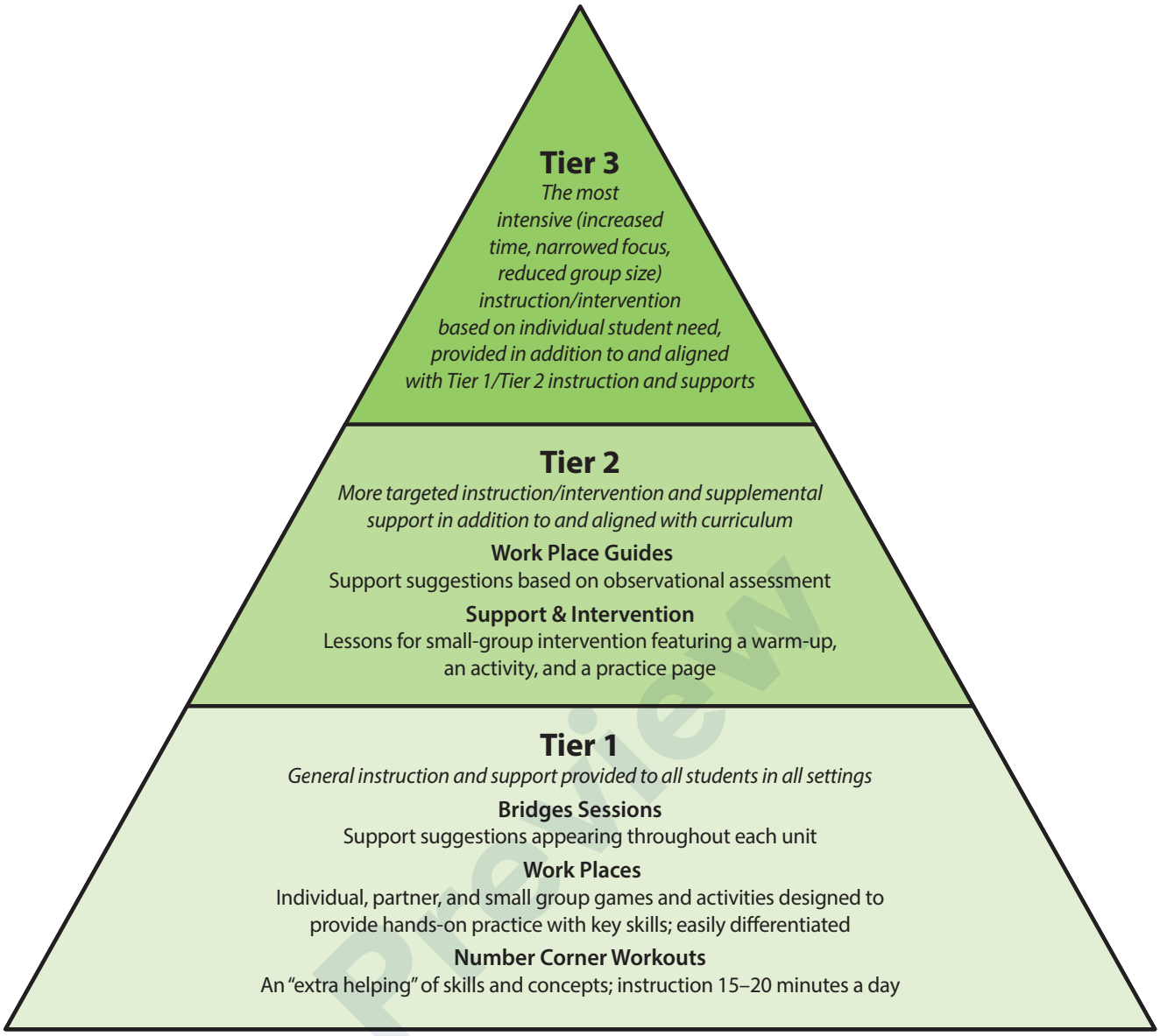
Gresham and Little go on to identify the important role of classroom teachers:

> The RtI process relies on proactive, instructional problem solving among educators to develop dynamic instructional or intervention plans that are based on assessment data and that address academic or behavioral concerns about students. RtI in mathematics focuses on the effective use of evidence-based instructional approaches, resources, and strategies within the classroom while continuously monitoring student learning. Because the goal is to increase mathematical achievement for all students, general education classroom teachers are crucial participants in the RtI process.

How Does Bridges Support RtI?

RtI models generally describe a three-tiered approach to providing instruction and intervention to students at increasing levels of intensity, as determined by student response. Assessment data is collected at each tier in order to make instructional decisions and determine whether or not students are responding to instruction and interventions.

As illustrated in the diagram below, Bridges provides Tier 1 instruction and a solid set of Tier 2 resources, along with the assessments, including recheck opportunities, needed to monitor students' progress. Although Bridges is not designed to deliver Tier 3 instruction (intensive, individualized interventions and support), the models and instructional methods employed throughout the program are highly compatible with those of Math Recovery, a well-regarded Tier 3 program.



Continual use of assessments throughout the school year helps guide decisions about the level of intervention required to ensure success for each student. The following items are part of an instructional path that follows a set of RtI-friendly steps:

1 Conduct Tier 1 instruction for approximately 75 minutes a day following the sequence laid out in the Bridges units and monthly Number Corner write-ups. The RtI model is most effective if it rests on a curriculum such as Bridges, which is based on best practices, research-validated models and instructional methods, consistent development of key vocabulary, and an unflagging commitment to access and equity for all students.

2 Use the observational assessments included with each Work Place Guide in the Bridges units to fine-tune instruction during Work Places. The Assessment & Differentiation section on the first page of each Work Place Guide teacher master provides guidance about specific behaviors to watch for and suggests appropriate on-the-spot support or challenge as needed (see example below). The support suggestions, implemented during Work Places, may be just the type of Tier 2 instruction needed to address the needs of your struggling students most of the time.

Unit 2 Module 1 | **Session 5** *1 copy kept in a clear plastic sleeve and stored in the Work Place bin*

Work Place Guide 2A Loops & Groups

Summary

Players take turns rolling a die numbered 1–6 two times. The first roll tells how many loops they will draw; the second roll tells how many shapes they will draw in each loop. For example, if a player rolled first a 4 and then a 3, she would draw 4 loops and then 3 small shapes inside each loop, for a total of 12. Players write a multiplication equation ($4 \times 3 = 12$) or a sentence (4 groups of 3 equals 12) to show the results. Each player takes 5 turns and then adds their products to find the sum. The player with the higher sum wins.

Skills & Concepts

- Interpret products of whole numbers (3.OA.1)
- Solve multiplication problems with products to 100 involving situations of equal groups (3.OA.3)
- Use and explain additive strategies (e.g., repeated addition and skip-counting) to demonstrate an understanding of multiplication (supports 3.OA)

Materials

Copies	Kit Materials	Classroom Materials
TM T10 Work Place Guide 2A Loops & Groups **TM T11** 2A Loops & Groups Record Sheet **SB 40** Work Place Instructions 2A Loops & Groups	• 3 dice numbered 1–6	

Assessment & Differentiation

Here are some quick observational assessments you can make as students begin to play this game on their own. Use the results to differentiate as needed.

If you see that …	Differentiate	Example
Students are counting the shapes by ones	**SUPPORT** Help students to use skip-counting or repeated addition. Provide a number line to make skip-counting easier.	"I notice you are counting by 1s. I bet that takes a long time. Do you know any other way that won't take so long? How about a number line? Can you skip-count on a number line?"
Students are struggling to write equations	**SUPPORT** Help students to see how the equation matches the pictures. Emphasize the words that describe the pictures—4 *groups of* 3, 2 *sets of* 5. Draw a few examples of loops and groups, and have the student tell you equations for the pictures.	"Do you remember what the multiplication sign means? It means "groups of." So, if you have 4 groups of 6, you can write "4 × 6 = ____"
Students are struggling to add many numbers	**SUPPORT** Review addition strategies with these students. Encourage them to use combinations of 10 or friendly numbers. For example, when adding 8 + 13 + 15 + 16 + 24, they could add the 16 + 24 to get 40. Then split the 8 into 7 and 1, so 7 + 13 = 20. Then add the 1 to the 15 = 16. So now you have 40 + 20 + 16, a much easier sum.	
Students can efficiently multiply single-digit numbers	**CHALLENGE** Encourage students to use a 4–9 die for larger numbers. For even larger numbers, suggest that students roll a 4–9 die and a 1–6 die and add the numbers shown. They can use this number for the number of loops or the number of items they put in the loops. Then, they roll a 4–9 die for the other number and follow the directions accordingly.	"It seems like you really know these multiplication problems. Can you play the game with bigger numbers? What if you had 9 loops? What if you had 12 loops? What if you had 8 loops with 13 objects in each one? How would you solve those problems?"
English-Language Learners Use the following adaptations to support the ELL students in your classroom.		
• Play the game with ELL students, modeling how to play and what to do. Focus on showing students how the equation and phrases (such as 2 groups of 5 or 3 sets of 4) match the picture created on the record sheet. • Encourage ELL students to play with same-language peers in their own language.		

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3 Administer the baseline assessment (found in the Number Corner Teacher's Guide) in September. Examine students' work, and score it using the suggestions found in the Number Corner Assessments part of this guide. Use the results to inform your initial thinking about support and intervention. While it may seem a little early in the school year to make hard-and-fast judgments about incoming third graders, the baseline assessment serves as an early warning system. You'll want to keep a close eye on students who are unable to perform the featured assessment tasks, as some of these students may emerge as candidates for additional services.

4 Administer the checkpoints and unit assessments as they appear in the Bridges units. Assessment instructions, materials, and teacher masters can be found in the Bridges Teachers Guide.

5 Examine, correct, and score students' work, using the class list/scoring guides found in the Bridges Unit Assessment part of this guide. Use of the scoring guides is optional, of course, but the guides will help you and your colleagues, school- or district-wide, score the unit assessments consistently.

6 Use your observations and the results of the assessments to help make decisions about interventions for specific students. The suggestions in the Work Place Guides may be adequate to support those who struggle with one or more skills from time to time. Students who consistently score between 25% and 50% on the Bridges and Number Corner assessments may be targeted for small group Tier 2 instruction, provided during Work Places using games and activities from the Support & Intervention volumes found within the Curriculum section of the Bridges Educator site. Students who consistently score less than 25% on the assessments may need Tier 3 instruction, conducted one-on-one or in a very small group with a tutor or in the resource room.

7 Conduct the Number Corner checkups near the end of each quarter. You will find the instructions, materials, and needed teacher masters in the Number Corner Teachers Guide for October, January, March, and May. These quarterly checkups retest many of the skills covered in the Bridges unit assessments, but may be considered more summative than the unit-end assessments because they reflect a longer span of instruction. Examine, correct, and score students' work, using the class list/scoring guides in the Number Corner Assessments part of this guide.

8 It is well worth your time to meet with other teachers at your grade level, either in your building or in your district, to share, examine, and discuss the results of the Number Corner checkups at or near the end of each quarter. Given that the Number Corner Checkups address a broad set of skills each quarter, the results may provide you and your colleagues with the information you need to make decisions about grouping students needing support as you devise strategies for delivering Tier 2 and Tier 3 instruction to all students in need of intervention, school-wide.

9 The Support & Intervention volumes in the Curriculum section of the Bridges Educator site may be used as a source of Tier 2 instruction and progress monitoring, in or out of the classroom. After targeted students have received Tier 2 instruction for 6–8 weeks, you can pull items from the Comprehensive Growth Assessment to retest specific skills. It is important to note that these volumes focus quite specifically on the critical areas that have been identified for K–5 students—counting and place value, understanding operations, fact strategies and fluency, multi-digit computation, word problems, fractions, and decimals.

Support & Intervention

The Support & Intervention volumes include reteaching and practice activities and games; you'll find them in the Curriculum section of the Bridges Educator site.

What About RtI Screeners?

The assessment in Bridges is multi-layered and complex, designed to help teachers monitor students' growth and progress with respect to the entire set of Common Core standards for Grade 3. There are times when you might need something much shorter and faster to administer. There are a number of RtI "screeners" currently available, including some fine products available free online. These are generally one-on-one interviews featuring a few carefully selected items related to key numeracy skills for the grade level. They are quick and easy to conduct, and are sometimes used by teachers at the start of the school year to quickly identify students in need of Tier 2 or Tier 3 instruction. These screeners can be re-administered midyear and again at the end of the year as needed to gauge the effects of interventions.

The key difference between RtI screeners and the assessments in Bridges and Number Corner is that screeners address a very limited set of skills, selected for their importance in determining the success of a student in developing the desired level of numeracy for a given grade level.

A Word About the Scoring Guides

In the Bridges Unit Assessments and Number Corner Assessments parts of this guide, you'll find scoring guides for every assessment in the Bridges units (including the work samples) and all the Number Corner assessments. These guides assign a point value to every item on an assessment. If an item involves a level of cognitive demand greater than simple recall, the scoring guide generally gives specific direction about how to assign points. Consider the example below, taken from the scoring guide for the Unit 5 Pre-Assessment.

Item	CCSS	Points Possible
12 Demonstrate the understanding that the greater the denominator, the smaller the size of the fraction. *No. Explanations will vary. Example: She's wrong. 8 is more than 2, but if you cut a pizza into 8 pieces, each piece is way smaller than if you cut it into 2 pieces.*	3.NF.1	**2 pts.** • 1 pt. for the correct answer (no) • 1 pt. for a reasonable explanation

Here is another example, taken from the scoring guide for the Unit 7 Pre-Assessment. This is a three-part problem in which students select the most reasonable estimate for the answer to a two-step story problem, write an equation to represent the problem, and solve the problem. It is possible to earn up to 5 points for the three parts combined.

Item	CCSS	Points Possible
10a Choose the most reasonable estimate for the answer to a two-step story problem, and explain choice. *(Choice 3: 200 kids. Explanations will vary. Example: 6×4 is 24, and $220 - 24$ is closer to 200 than any of the other choices.)*	3.OA.8	**2 pts.** • 1 pt. for the correct answer • 1 pt. for a reasonable explanation
10b Write an equation to represent the problem. Use a letter to stand for the unknown quantity. *(Equations will vary. Examples include $220 - (6 \times 4) = k$; $220 - 24 = k$; $24 + k = 220$; $k + 24 = 220$; $(6 \times 4) + k = 220$)*	3.OA.8	**1 pt.** For an equation that accurately represents the problem
10c Solve a two-step story problem that involves multiplication and subtraction. *(196 kids. Work will vary. Example: $6 \times 4 = 24$; $220 - 20 = 200$; $200 - 4 = 196$)*	3.OA.8	**2 pts.** • 1 pt. for the correct answer • 1 pt. for using a strategy that could lead to the correct answer

Note that a student who is able to choose the most reasonable estimate and explain his choice, write an equation to represent the situation, and demonstrate a strategy that could lead to the correct answer is able to score 4 out of the 5 points possible, even if he doesn't get the correct answer. Why not award 1 point for the correct answer to each part and be done with it? Because we're interested in taking a more nuanced look at what the student *can* do. Representing and solving a 2-step story problem is a complex operation; making and explaining an estimate that helps one determine if one's answer is reasonable adds another layer of complexity. If a student can write an equation to represent the problem, take all the information into account and devise a strategy that could lead to the correct answer, he is working at a grade-appropriate level of understanding, even if he makes an arithmetical error and winds up with the wrong answer. This is not to say that accuracy is unimportant, but the Common Core Standards *also* value practices such as making sense of a problem, modeling with mathematics, and communicating effectively, so these must be taken into account.

Assessment vs. Evaluation

Assessment and evaluation are often confused or taken to mean the same thing, but there is an important distinction between the two. Assessment is the process of gathering information in order to make decisions. Evaluation is a step beyond assessment in that we assign a rank, level, score, or grade to the information that has been collected. Assessment captures the situation as it exists at a particular moment or over a period of time. Evaluation places a judgment on it—adequate, not adequate; enough, not enough, below, at, or above expectation.

The fact that RtI is data-driven requires a move in the direction of evaluation. In working with our colleagues to make instructional decisions that sometimes go beyond the walls of our own classroom, the results of our assessments take on added weight at times. The scoring guides in this assessment guide bear out this line of thinking, in that the points possible for each item are added together, and the total scored by a student is assigned a value: meeting standard, approaching standard, strategic (Tier 2), or intensive (Tier 3). Here are examples taken from two of the scoring guides in the Bridges Unit Assessments part of this guide. The first is from the scoring guide for the Unit 3 Pre-Assessment. This pre-assessment, like the others that appear at the beginning of each unit, is formative, designed to help teachers make instructional decisions (plan to slow down or compact the rate of instruction; reteach a certain skill or concept to the whole class before starting the unit; anticipate pulling a small group during Work Places to provide extra support with a particular skill; and so on) based on students' responses.

TOTAL SCORE/LEVEL OF PROFICIENCY* 30 pts.

* 8–30 points: Working at Tier 1 or Tier 2 Level
7 points or fewer: May need Tier 3 Support

The example below is taken from the Unit 3 Post-Assessment, administered toward the end of the unit. This assessment, like the rest of the unit-end assessments, is more summative in nature, basically serving to evaluate how well each student did with skills and concepts presented over the course of the unit.

TOTAL SCORE/LEVEL OF PROFICIENCY* 30 pts.

* Meeting Standard	23–30 points (75–100% correct)
Approaching Standard	15–22 points (50–74% correct)
Strategic	8–14 points (25–49% correct)
Intensive	7 points or fewer (24% or less correct)

The cut scores and the designations assigned to each range are designed to help teachers identify students in need of Tier 2 or Tier 3 instruction as well as students who are approaching or meeting standard. This ranking system is particularly useful in districts with standards-based report cards, where the marks shared with families have to do with whether or not their children are meeting nationally established standards.

Section 6

Reporting to Families

Research has shown that the home environment has a profound impact on the academic achievement of our students. Its relationship to student achievement is much stronger than that of household income, parent's occupations, or parents' education. Ongoing communication is critical to the success of the parent-teacher and family-school relationship. With the proper resources and information, parents, families, and the community can become a teacher's greatest asset and support system.

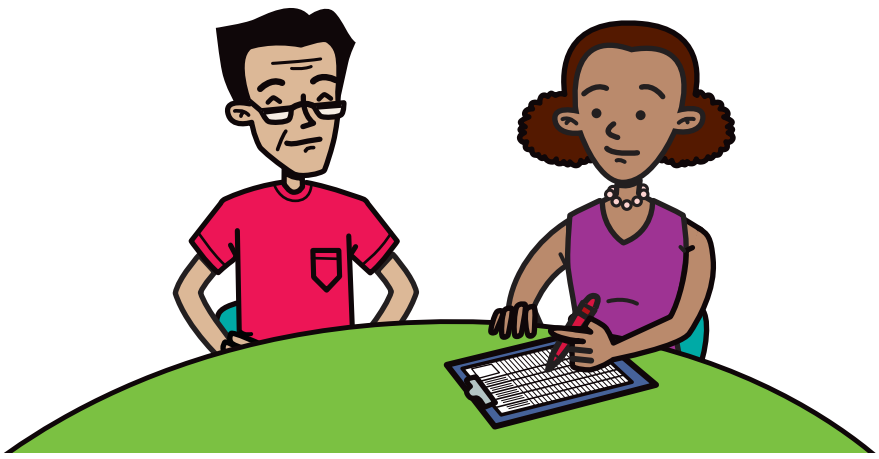
In contrast to years past, when grade level standards varied from one state, one district, or even one school to another, most states have adopted the common, coherent, rigorous, and focused goals set by the Common Core State Standard Initiative. It is safe to anticipate that we will have support from a variety of organizations, ranging all the way from the federal and state governments to the National PTA, in communicating grade-level expectations to families. In fact, as of this writing, the PTA has made available a set of guides that explain the Common Core State Standards at each grade level and offer tips about how families can support their children's mathematical development at home. Such resources are likely to be increasingly available, many online. Links to the PTA *Parents' Guide to Student Success* and other resources for families, including unit overviews for each grade level, can be found on the Bridges Educator site.

Even though most states have adopted the Common Core Standards, the pacing of instruction and assessment will continue to vary from one district to another, along with the methods, models, and strategies for helping students master the national standards. It will still be incumbent upon teachers to communicate with families about how the standards are being taught and assessed. One of the more powerful ways we can accomplish this is through conferencing and writing reports. Although your district probably determines the form and content of your report cards, you may be free to supplement with written comments, checklists and the like. We have provided quarterly Math Progress Reports to help you report students' progress to families in greater detail. Please note that the skills and concepts on these reports follow the sequence of instruction and assessment in Bridges and have been framed in family-friendly language. Also, those standards associated with the Critical Areas of Focus for Grade 3 may appear on more than one of the reports.

In addition to marking the Progress Report, there is room to write a note about each student's use of the CCSS Mathematical Practices, along with observations about any special strengths or weaknesses. During conferences, you can provide even more information for families by sharing samples of students' work, including notable responses to items on unit and Number Corner assessments.

Having clearly defined goals helps families and teachers work together to ensure that students succeed. Standards help parents and teachers know when students need extra assistance or when they need to be challenged even more.

» National PTA



Grade 3 Math Progress Report: First Quarter

Assessment Schedule: September through late October/early November

CCSS	Needing	Meeting	Exceeding
3.OA.1		Understands what it means to multiply; writes story problems or describe situations to match multiplication equations	
3.OA.3		Solves multiplication story problems within 100	
3.OA.4		Solves for the unknown in a multiplication equation, e.g., $3 \times ? = 12$	
3.OA.7		Uses strategies to solve multiplication facts, e.g., $4 \times 6 = (2 \times 6) + (2 \times 6)$	
3.OA.8		Uses addition, subtraction, and multiplication to solve story problems that require more than one step	
3.OA.9		Identifies patterns among basic addition and subtraction facts	
3.NBT.2		Adds and subtracts 2-digit numbers	
3.MD.3		Constructs and reads scaled picture graphs and bar graphs, and solves problems using the information in a graph	

Comments

Grade 3 Math Progress Report: Second Quarter

Assessment Schedule: November–January

CCSS	Needing	Meeting	Exceeding
3.OA.3		Solves multiplication story problems within 100	
3.OA.7		Uses strategies to solve multiplication facts, e.g., $4 \times 8 = (2 \times 8) + (2 \times 8)$	
3.OA.8		Uses addition, subtraction, and multiplication to solve story problems that require more than one step	
3.OA.9		Identifies patterns among basic multiplication facts	
3.NBT.1		Rounds numbers to the nearest 10 or the nearest 100	
3.NBT.2		Adds and subtracts 3-digit numbers	
3.NF.2		Locates and places fractions correctly on a number line	
3.NF.3		Recognizes and generates equivalent fractions, e.g., ½ = ²⁄₄	
3.NF.3		Compares fractions	
3.MD.1		Tells time to the minute	
3.MD.1		Solves story problems about time	
3.MD.2		Estimates and measures liquid volume and mass in metric units; solves related story problems	
3.G.2		Divides shapes into parts with equal areas; identifies the area of each part as a fraction of the whole shape	

Comments

Grade 3 Math Progress Report: Third Quarter

Assessment Schedule: February–March

CCSS	Needing	Meeting	Exceeding
3.OA.1		Understands what it means to multiply; writes story problems or describe situations to match multiplication equations	
3.OA.2		Understands what it means to divide; writes story problems or describe situations to match division equations	
3.OA.3		Solves multiplication and division story problems within 100	
3.OA.4		Solves for the unknown in a multiplication or division equation, e.g., $4 \times ? = 28$ or $15 \div ? = 3$	
3.OA.6		Solves division problems by finding an unknown factor, e.g., $32 \div 8 = 4$ because $8 \times 4 = 32$	
3.OA.7		Demonstrates fluency with multiplication facts	
3.OA.8		Uses addition, subtraction, multiplication, and division to solve story problems that require more than one step; chooses or writes equations to represent such problems	
3.NF.2		Locates and places fractions correctly on a number line	
3.NF.3		Recognizes and generates equivalent fractions, e.g., $\frac{2}{3} = \frac{4}{6}$	
3.NF.3		Compares fractions	
3.MD.1		Tells time to the minute	
3.MD.1		Solves story problems about time	
3.MD.3		Constructs and reads scaled picture graphs and bar graphs, and solves problems using the information in a graph	
3.MD.6		Finds the area of a rectangle by covering it with square units, and then counting those units	
3.MD.7		Finds the area of a rectangle by multiplying its side lengths	
3.MD.8		Solves area and perimeter problems	
3.G.1		Identifies and constructs different kinds of quadrilaterals	
3.G.1		Sorts and classifies shapes	

Comments

Grade 3 Math Progress Report: Fourth Quarter

Assessment Schedule: April–May

CCSS	Needing	Meeting	Exceeding
3.OA.1		Understands what it means to multiply; writes story problems or describe situations to match multiplication equations	
3.OA.2		Understands what it means to divide; writes story problems or describe situations to match division equations	
3.OA.3		Solves multiplication and division story problems within 100	
3.OA.4		Solves for the unknown in a multiplication or division equation, e.g., $4 \times ? = 28$ or $15 \div ? = 3$	
3.OA.5		Uses properties of operations to solve multiplication problems, e.g., $4 \times 60 = 4 \times (6 \times 10) = (4 \times 6) \times 10 = 240$	
3.OA.6		Solves division problems by finding an unknown factor, e.g., $32 \div 8 = 4$ because $8 \times 4 = 32$	
3.OA.7		Demonstrates fluency with multiplication and division facts	
3.OA.8		Uses addition, subtraction, multiplication, and division to solve story problems that require more than one step; chooses or writes equations to represent such problems; evaluates answers to be sure they're reasonable	
3.OA.9		Identifies patterns among basic multiplication facts	
3.NBT.3		Multiplies 1-digit numbers by multiples of 10, e.g., 3×70	
3.NF.2		Locates and places fractions correctly on a number line	
3.NF.3		Recognizes and generates equivalent fractions, e.g., $\frac{2}{3} = \frac{4}{6}$	
3.NF.3		Compares fractions	
3.MD.1		Solves story problems about time	
3.MD.4		Constructs and reads line plots involving lengths measured to the nearest half or quarter inch	
3.MD.7		Finds the area of a rectangle by multiplying its side lengths	
3.MD.8		Solves area and perimeter problems	
3.G.2		Divides shapes into parts with equal areas; identifies the area of each part as a fraction of the whole shape	

Comments