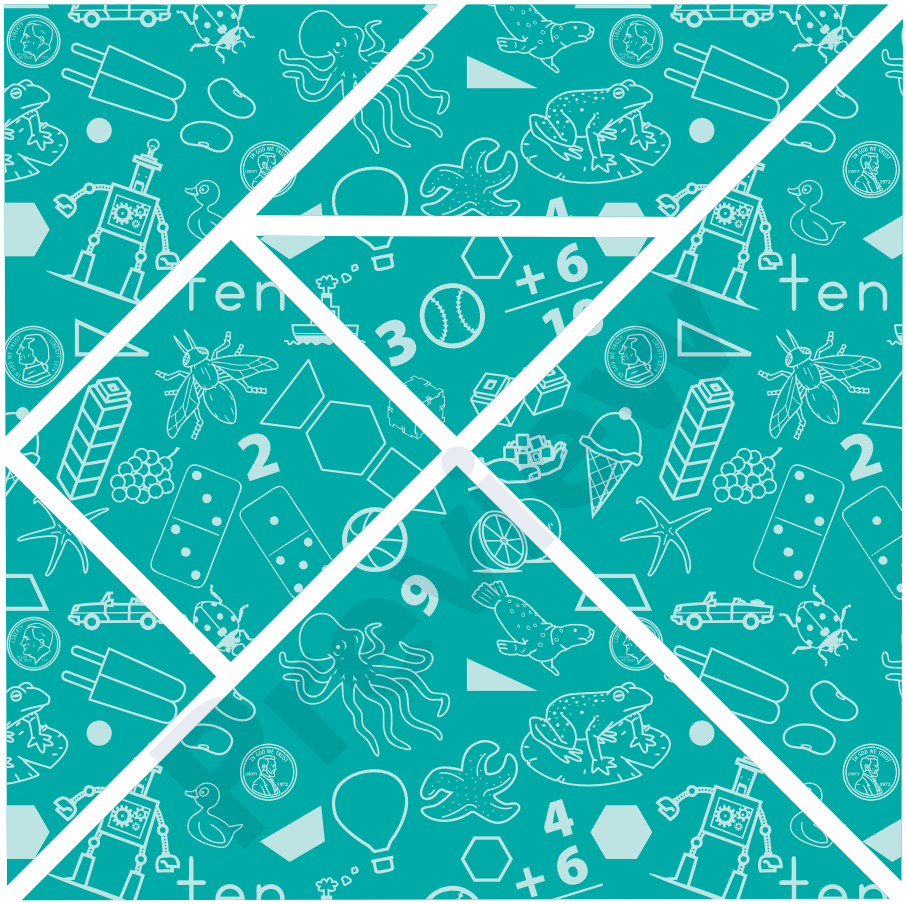
BRIDGES® IN MATHEMATICS



BRIDGES

ASSESSMENT GUIDE

GRADE 1

Published by The MATH LEARNING CENTER Salem, Oregon

Bridges in Mathematics Second Edition Grade 1 Assessment Guide

The Bridges in Mathematics Grade 1 package consists of:

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

Digital resources noted in italics.

The Math Learning Center, PO Box 12929, Salem, Oregon 97309. Tel 1 (800) 575-8130
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 1

Bridges Assessment Guide

Assessment Overview

Bridges Unit Assessments

Number Corner Assessments

Comprehensive Growth Assessment (CGA)

Comprehensive Growth Assessment Masters

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.

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

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 even a new game board. 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 host of informal and formal assessments woven throughout the Bridges units and Number Corner workouts. These range from tips to help teachers elicit student thinking to individual and small group interviews and formal paper-and-pencil tasks. 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 Overview

Section 1: Standards & Assessments

Summarizes the Common Core State standards for first 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 1.

Section 2: Assessing Math Content

Takes a deeper look at the types of assessment tasks offered in Bridges Grade 1, and offers an assessment map that shows exactly where and when each Grade 1 Common Core standard is assessed and targeted for mastery.

Section 3: Assessing Math Practices

Profiles the CCSS Mathematical Practices in terms of first grade behaviors, and offers suggestions for assessing the practices through 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 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 1 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 1. 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 1. 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

Works Cited

Copley, Juanita. *The Young Child and Mathematics.* National Association for the Education of Young Children; Washington D.C. 2010. Retreved from http://www.naeyc.org/store/files/store/TOC/167.pdf

Gresham, G. and M. Little. "RtI in Math Class." *Teaching Children Mathematics.* August 2012. Vol. 19, No. 1.

McCallum, Bill. "Structuring the mathematical practices." March 10, 2011. Blog post; retrieved from commoncoretools.me/2011/03/10/structuring-the-mathematical-practices/

McTighe, J. and Wiggins, G. *From Common Core Standards to Curriculum: Five Big Ideas.* 2012. Retrieved from http://jaymctighe.com/resources

National Council for Teachers of Mathematics. *Principles and Standards for School Mathematics.* The National Council for Teachers of Mathematics. Reston, Va. 2000. Retrieved from http://www.nctm.org/standards/content.aspx?id=16909

National Governors Association Center for Best Practices, Council of Chief State School Officers. *Common Core State Standards for Mathematics.* National Governors Association Center for Best Practices, Council of Chief State School Officers; Washington D.C. 2010. Retrieved from http://corestandards.org

National Governors Association Center for Best Practices, Council of Chief State School Officers. *Major Emphases and Shifts in Mathematics.* National Governors Association Center for Best Practices, Council of Chief State School Officers; Washington D.C. 2011. Retrieved from http://corestandards.org

North Carolina Department of Public Instruction. *Instructional Support Tools for Achieving New Standards: Mathematics, Unpacked Content.* Author, North Carolina Department of Public Instruction, Raleigh, 2011.Retrieved from http://www.ncpublicschools.org

Russell, Susan Jo. "CCSSM: Keeping Teaching and Learning Strong." *Teaching Children Mathematics.* August 2012. Vol. 19, No. 1.

Webb, Norman. "Teaching with Depth: An Understanding of Webb's Depth of Knowledge." 2008. PowerPoint presentation; retrieved from http://www.polk-fl.net/staff/professionaldevelopment

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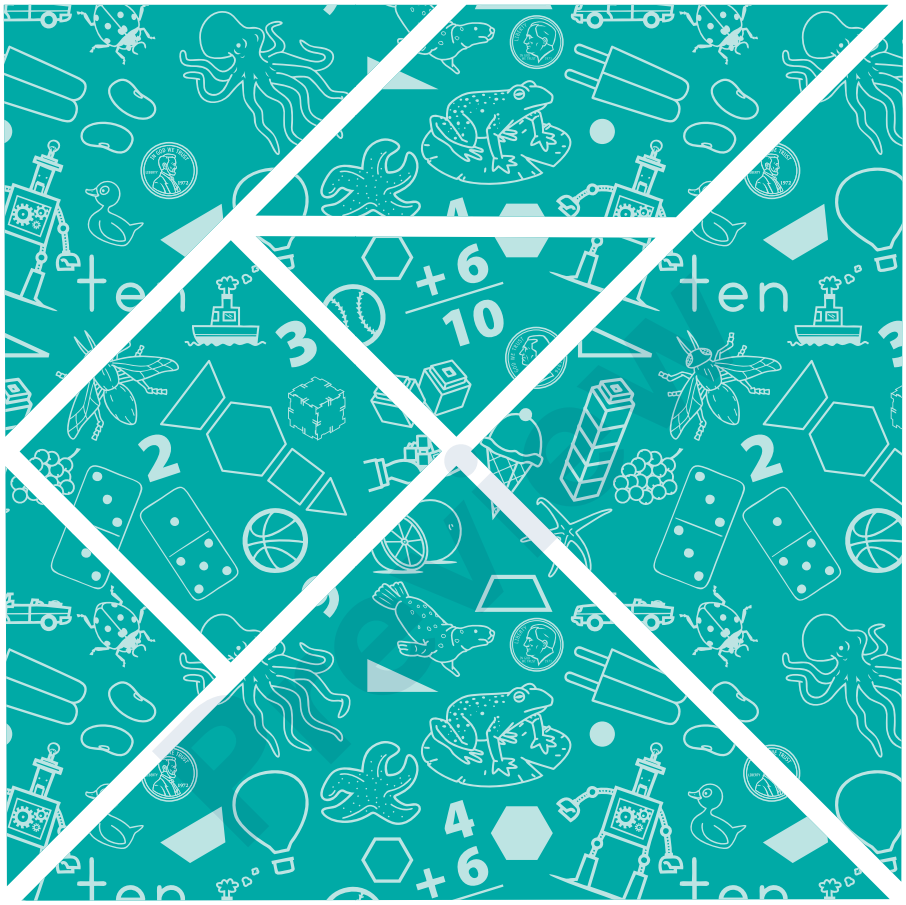

BRIDGES ASSESSMENT GUIDE

GRADE 1

Assessment Overview

Published by The MATH LEARNING CENTER Salem, Oregon

Section 1

Standards & Assessments

Types of Assessments in Bridges and Number Corner

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, problem-solving sessions, Work Places. We can converse with students informally as they solve problems or play games, or we can conduct more formal interviews with individuals or small groups. We can check near the midpoint of each unit to see how they're responding to our instruction, and again at the end of the unit for a level 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 focus on long-term growth.

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

» Yogi Berra

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 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 first grade, a teacher begins to notice patterns of behavior, things that 6- and 7-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 assessment opportunities. As we become accustomed to learning from our students, we become increasingly skilled at spotting their strengths and needs without resorting to more formal means. Throughout Bridges sessions and Number Corner workouts, teachers will find suggested questions and prompts along with sample dialogs to elicit student thinking, conversation, sharing, and explanation. 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 almost daily 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 2.

Unit 2 Module 2 | **Session 3** *1 copy kept in a clear plastic sleeve and stored in the Work Place bin*

Work Place Guide 2C Sort the Sum

Summary

Players take turns drawing a domino from the draw pile and finding the sum of the two halves. They place the domino in the correct column on the game board and score a point. Play continues until the game board is full. The player with the most points is the winner.

Skills & Concepts

- Recognize the number of objects in a collection of 6 or fewer, arranged in any configuration (supports K.CC)
- Solve addition problems by counting on (1.OA.5)
- Add within 20 , and use strategies to add with sums to 20 (1.OA.6)
- Use >, =, and < symbols to record comparisons of 1- and 2-digit numbers (1.NBT.3)

Materials

Copies	Kit Materials	Classroom Materials
TM T9 Work Place Guide 2C Sort the Sum **TM T10** Work Place Instructions 2C Sort the Sum **TM T11** 2C Sort the Sum Record Sheet	• 3 sets of Double-Six Dominoes • 3 Sort the Sum Game Boards	• 6 pieces of 6" × 9" construction paper, any color • 90 Unifix cubes, 6 sets of 15, each set a different color • legal-size paper (optional, for Game Variation A)

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
Some students continue to count the dots by 1s rather than use more efficient strategies to determine how many there are on the dominoes they draw.	SUPPORT Gather students in a small group to practice recognizing small groups of dots and counting on to find the total number of dots on dominoes.	Have students take turns rolling a die and saying the number of dots as quickly as they can. Then switch to dominoes, and have students report the number of dots on the smaller side, and then the larger side. When they're comfortable with quantities to 5 or 6, have them take turns drawing dominoes from a pile and finding the total number of dots on each by counting on from the larger quantity (e.g., 5 + 3 is 8 because it's 5 ... 6, 7, 8).
Two students are able to complete the activity with ease and are beginning to gain fluency with their addition facts.	CHALLENGE Pair students working at roughly the same level and invite them to try the Game Variation.	

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Individual Interviews

Located in Number Corner (Baseline and Quarterly Checkups)

Individual interviews are widely acknowledged to be one of the most effective ways to assess young students. Because we can vary the level of cognitive demand, increasing or scaling back as we interact with a student, interviews are especially useful in exploring individual thinking processes and problem-solving strategies.

The September write-up in the Number Corner Teachers Guide offers a Baseline Assessment designed to gauge incoming students' proficiency with key number skills and concepts that were targeted for mastery by the end of kindergarten. The Teachers Guide also offers an assessment (checkup) toward the end of each quarter as well. Each of these five Number Corner assessments includes a short interview and a set of paper-and-pencil tasks. The interviews focus on critical numeracy skills and concepts. For example, the interview portion of the first Number Corner checkup, conducted at the end of October, deals with addition and subtraction. Each of the three questions allows the teacher to find out how students are solving combinations to 10—counting all, counting on or back, making use of related facts, or answering from memory. This information is crucial to making instructional decisions that will help students work more efficiently and effectively, and is virtually impossible to get at via written tasks.

October | **Assessment** *class set, plus 1 copy for display*

NAME | **DATE**

Number Corner Checkup 1 Interview Response Sheet

Materials	Common Core State Standards Correlation
• Piece of 6" × 9" or larger construction paper • 10 Unifix cubes in one color	**1** 1.OA.5 OR 1.OA.6 **2** 1.OA.5 OR 1.OA.6, 1.OA.8 **3** 1.OA.5 OR 1.OA.6

1 Show the student a group of 5 Unifix cubes. Say, "I have 5 cubes. I am going to cover them with this screen and put 3 more cubes under the screen."
Slide 3 more cubes under the construction paper screen as the student watches. Say, "How many are there under the screen now?"

Student adds 3 to a screened quantity of 5. Circle student's response below.			
Responds incorrectly	Counts all* to get the correct answer	Counts on from 5 (or 3) to get the correct answer	Makes use of a related fact (e.g., 3 + 3) or gives the correct answer automatically

2 Point to the screen under which you still have 8 cubes. Say, "How many more cubes do I need to get to 10?"
If the student responded incorrectly to item 1, say instead, "There are 8 cubes under the screen. How many more do I need to get to 10?"

Student determines how many more need to be added to a screened quantity of 8 to get a total of 10. Circle student's response below.			
Responds incorrectly	Counts all* to get the correct answer	Counts on from 8 (or 2) to get the correct answer	Makes use of a related fact (e.g., 8 + 1) or gives the correct answer automatically

3 Place a row of 10 cubes on the table and ask the student to count them. Then cover the 10 cubes with the construction paper screen, and slide 3 of them out from under the screen for the student to see. Ask, "How many cubes are under the screen now?"

Student subtracts 3 from a screened quantity of 10. Circle student's response below.			
Responds incorrectly	Counts all* to get the correct answer	Counts back from 10 to get the correct answer	Makes use of a related fact (e.g., 10 – 5) or gives the correct answer automatically

* ***Counts all*** means that the student solves the problem using a strategy that involves counting every quantity by 1s, rather than counting on or counting back. For example, a student who counts all to solve problem 1 might count out 5 fingers on one hand, 3 fingers on the other, and then re-count all his fingers by 1s to get 8 in all. A student who counts all to solve problem 3 might count all 10 of her fingers one by one, then count 3 of those fingers one by one, put them down, and re-count the remaining fingers by 1s to get the answer, 7.

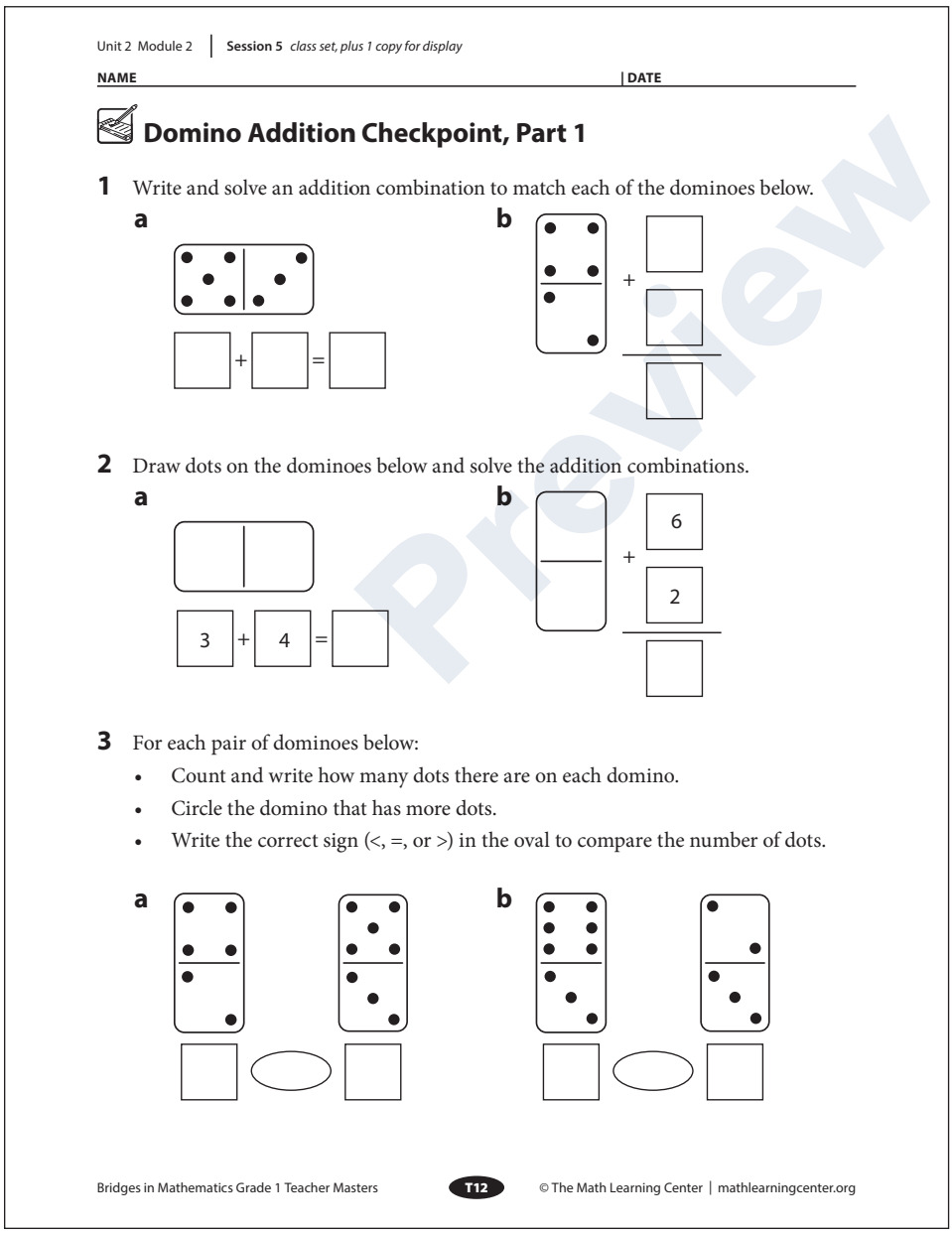
Number Corner Grade 1 Teacher Masters **T10**

Written Assessments

Located in Number Corner (Baseline and Quarterly Checkups) and Bridges (Checkpoints and Unit Assessments)

Although observation and interviews probably yield the most in-depth information about first-graders, paper-and-pencil tasks are another way to examine their development over the course of the year. In addition to a set of interview items, each Number Corner assessment includes several written tasks to be administered to the whole class. There are also two written assessments in each Bridges unit—a checkpoint at the end of the second module, and a unit assessment at the end of the third module (see examples from Unit 2 below). The checkpoints allow teachers to see how students are doing with key skills and concepts midway through the unit so they can modify instruction if necessary. The unit assessments are generally longer, more comprehensive in terms of the material covered in the unit, and more summative in nature.

Checkpoints tend to be fairly short and are designed to help teachers check up on students' progress with key skills and concepts in the middle of the unit.



Unit 2 Module 2 | **Session 5** *class set, plus 1 copy for display*

NAME | **DATE**

Domino Addition Checkpoint, Part 1

1 Write and solve an addition combination to match each of the dominoes below.

a

b

2 Draw dots on the dominoes below and solve the addition combinations.

a

b

3 For each pair of dominoes below:

- Count and write how many dots there are on each domino.
- Circle the domino that has more dots.
- Write the correct sign (<, =, or >) in the oval to compare the number of dots.

a

b

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Unit assessments are generally longer, more comprehensive, and summative with respect to the goals of the instruction in the unit.

Unit 2 Module 3 | **Session 5** *class set, plus 1 copy for display*

NAME | **DATE**

Unit 2 Assessment page 1 of 2

1 Draw the missing dots on the blank half of each domino. Then write an equation to match the domino.

Practice 5 ☐ + ☐ = ☐

a 5 ☐ + ☐ = ☐

b 6 ☐ + ☐ = ☐

c 7 ☐ + ☐ = ☐

2 Complete the fact family for the double-flap card shown. Then write a story problem to match one of the equations.

4 + 2 = ☐ ☐ + 2 = 6

6 – 4 = ☐ 6 – ☐ = 4

(continued on next page)

y for display

| DATE

3 + 3	6 + 2	5 + 5
4 + 4	5 + 2	7 + 2
8 + 2	7 + 3	2 + 2

4 Jack put 7 bugs in a jar. Some of them got away. Now there are only 3 bugs left in the jar. How many bugs got away? Use numbers, pictures, or words to solve the problem. Write the answer on the line.

_____ bugs got away.

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, interview results, 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 1, 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, 1I	Observation	**Bridges** Unit 1
	Quick Count Checkpoint	Written Assessment	**Bridges** Unit 1, Module 2, Session 5
	Unit 1 Group Assessment	Small Group Interview	**Bridges** Unit 1, Module 4, Session 5
	Baseline Assessment	Individual Interview & Written Assessment	**Number Corner** September
October	Work Place Guides for Work Places 2A, 2B, 2C, 2D, 2E, 2F	Observation	**Bridges** Unit 2
	Domino Addition Checkpoint Part 1	Written Assessment	**Bridges** Unit 2, Module 2, Session 5
	Domino Addition Checkpoint Part 2	Small Group Interview	**Bridges** Unit 2, Module 2, Session 5
	Unit 2 Assessment	Written Assessment	**Bridges** Unit 2, Module 3, Session 5
Nov/Dec	Number Corner Checkup 1	Interview & Written Assessment	**Number Corner** October
	Work Place Guides for Work Places 3A, 3B, 3C, 3D, 3E, 3F	Observation	**Bridges** Unit 3
	Combinations of Ten Checkpoint	Written Assessment	**Bridges** Unit 3, Module 2, Session 4
	Unit 3 Assessment	Written Assessment	**Bridges** Unit 3, Module 3, Session 5
January	Work Place Guides for Work Places 4A, 4B, 4C, 4D	Observation	**Bridges** Unit 4
	Numbers on a Line Checkpoint	Written Assessment	**Bridges** Unit 4, Module 2, Session 5
	Unit 4 Assessment	Written Assessment	**Bridges** Unit 4, Module 3, Session 5
	Number Corner Checkup 2	Interview & Written Assessment	**Number Corner** January
February	Work Place Guides for Work Places 5A, 5B, 5C, 5D, 5E, 5F	Observation	**Bridges** Unit 5
	Shapes Checkpoint	Written Assessment	**Bridges** Unit 5, Module 2, Session 5
	Unit 5 Assessment	Written Assessment	**Bridges** Unit 5, Module 3, Sessions 6 & 7
March	Work Place Guides for Work Places 6A, 6B, 6C	Observation	**Bridges** Unit 6
	Combinations & Stories Checkpoint	Written Assessment	**Bridges** Unit 6, Module 2, Session 5
	Unit 6 Assessment	Written Assessment	**Bridges** Unit 6, Module 3, Session 5

	Assessment Title	Assessment Type	Location
April	Number Corner Checkup 3	Interview & Written Assessment	**Number Corner** March
	Work Place Guides for Work Places 7A, 7B	Observation	**Bridges** Unit 7
	Numbers to 120 Checkpoint	Written Assessment	**Bridges** Unit 7, Module 2, Session 5
	Unit 7 Assessment	Written Assessment	**Bridges** Unit 7, Module 3, Session 5
May/June	Work Place Guides for Work Places 8A, 8B	Observation	**Bridges** Unit 8
	Time & Change Checkpoint	Written Assessment	**Bridges** Unit 8, Module 2, Session 4
	Unit 8 Assessment	Written Assessment	**Bridges** Unit 8, Module 3, Session 6
	Number Corner Checkup 4	Interview & Written Assessment	**Number Corner** May
	Grade 1 Comprehensive Growth Assessment (CGA)*	Interview & Written Assessment	**Bridges Assessment Guide** Comprehensive Growth Assessment

* The Grade 1 Comprehensive Growth Assessment (CGA), comprising 16 interview items and 22 written items, addresses every Common Core standard for first grade. It can be administered at the end of the school year as a summative assessment of all the CCSS for Grade 1, 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 1

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 first grader. If a 6- or 7-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 first grade?

Perhaps the best answer comes from the Common Core document itself. Text on page 13 characterizes the desired results of first grade instruction in this way:

1) Students [will] develop strategies for adding and subtracting whole numbers based on their prior work with small numbers. They [will be able to] use a variety of models, including discrete objects and length-based models, to model add-to, take-from, put-together, take-apart, and compare situations to develop meaning for the operations of addition and subtraction, and to develop strategies to solve arithmetic problems with these operations. Students [will] understand connections between counting and addition and subtraction. They [will be able to] use properties of addition to add whole numbers and to create and use increasingly sophisticated strategies based on these properties to solve addition and subtraction problems within 20. By comparing a variety of solution strategies, children [will] build their understanding of the relationship between addition and subtraction.

2) Students [will] develop, discuss, and use efficient, accurate, and generalizable methods to add within 100 and subtract multiples of 10. They [will be able to] compare whole numbers (at least to 100) to develop understanding of and solve problems involving their relative sizes. They [will be able to] think of whole numbers between 10 and 100 in terms of tens and ones. Through activities that build number sense, they [will] understand the order of the counting numbers and their relative magnitudes.

3) Students [will] develop an understanding of the meaning and processes of measurement, including underlying concepts such as iterating and the transitivity principle for indirect measurement.

4) Students [will] compose and decompose plane or solid figures and build understanding of part-whole relationships as well as the properties of the original and composite shapes. As they combine shapes, they [will be able to] recognize them from different perspectives and orientations, describe their geometric attributes, and determine how they are alike and different, to develop the background for measurement and for initial understandings of properties such as congruence and symmetry.

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 1. 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 1. In this chart, we see that addition and subtraction facts, properties of operations, story problems, counting, place value, and double-digit addition and subtraction are deemed more important than telling time, data, and geometry.

Cluster	Major Clusters	Supporting Clusters	Additional Clusters
Operations and Algebraic Thinking			
Represent and solve problems involving addition and subtraction.	●		
Understand and apply properties of operations and the relationship between addition and subtraction.	●		
Add and subtract within 20.	●		
Work with addition and subtraction equations.	●		
Number and Operations in Base Ten			
Extend the counting sequence.	●		
Understand place value.	●		
Use place value understanding and properties of operations to add and subtract.	●		
Measurement and Data			
Measure lengths indirectly and by iterating length units.	●		
Tell and write time.			●
Represent and interpret data.		●	
Geometry			
Reason with shapes and their attributes.			●

Assessments in Grade 1 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 story problems, addition and subtraction facts and strategies to 20, place value, and double-digit computation. By contrast, time telling, data analysis, and geometry skills receive quite a bit less attention, and the assessment of those skills is generally tied more tightly to the period of instruction in the program rather than being spread over the year.

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 1 involve observation and interview rather than written tasks, and written tasks often ask the students to show their thinking or explain 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 below indicates the level of cognitive demand involved in several different CCSS standards for Grade 1 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	**1.NBT.1** Count to 120, starting at any number less than 120. In this range, read and write numerals.	Show the student a number between 0 and 120, and ask her to write the next six numbers in the counting sequence.
Level 2: Skills & Concepts	**1.NBT.2** Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases: a. 10 can be thought of as a bundle of ten ones. b. The numbers from 11 to 19 are composed of a ten and 1–9 ones. c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one–nine tens and 0 ones.	Give the student a collection of craft sticks, including several bundles of 10 and 20 loose sticks. Ask the student to give you 13 of the sticks. If the student counts out 13 one by one, ask if he can show you 13 a different way. Repeat with a larger 2-digit number such as 48.
Level 3: Strategic Thinking	**1.NBT.4** Add within 100 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 and explain the reasoning used.	Pose a 2-digit addition problem and make manipulatives (e.g., bundles & sticks) to the student. Ask the student to solve the problem and explain her thinking verbally or on paper, using drawings, numbers, or words.
Level 4: Extended Thinking	**1.NBT.5** Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.	Mark a number—34, for example—on a number line, and ask the student to move a marker from 0 to 34 using jumps of 1, 5, or 10. Explain that he can move either forward or backward along the line on any jump, but is limited to jumping only 1, 5, or 10 on any given move. When he has found a solution, ask him to find several others. Then challenge him to accomplish the task in the *fewest* possible moves, and explain his reasoning. ***Student*** *I can get there in only 5 jumps.* ***Teacher*** *Really! Tell me how.* ***Student*** *I can jump up to the 10, then the 20, then the 30. That's 3 jumps. Then I can take another jump of 5 forward, and jump 1 backward to get to 34.*

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 1 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 first grade standards involve a degree of cognitive demand beyond Level 1 (recall and recognition). Even a relatively simple skill, such as counting to 120, is made more complex in that students are expected to be able to start at any number in the range of 0 to 120 and count forward successfully to 120. While students are expected to master counting to 100 in kindergarten, the numbers between 100 and 120 are particularly challenging. It is not at all unusual for first graders to report that the next number after 100 is 200, rather than 101. Nor is it unusual for students who can count successfully to 109 to suddenly jump from there to 200. Furthermore, this particular skill is part of a larger conceptual complex that requires a deep and thorough understanding of place value—something that takes most first graders months to develop.

Standard 1.OA.1 provides another good example of the rigor and complexity the Common Core Standards demand. This standard has to do with using addition and subtraction within 20 to solve a dozen different types of word problems (add to, result unknown; take from, change unknown; put together/take apart, both addends unknown, and so on). Can we not teach and expect mastery of the easier types of word problems earlier in the school year? Certainly, but in the end, students need to be able to comprehend what any given problem is asking, employ viable strategies using the information provided, demonstrate good number sense in the process, and explain and justify their thinking. This requires that they develop a rich network of interconnected skills and concepts, which takes time and many varied layers of experience and application. While we might reasonably expect incremental progress through the year in the two major first grade learning progressions (addition and subtraction, and place value), the whole of each progression is much 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 1 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
K.CC.2 Count forward beginning from a given number within the known sequence (instead of having to begin at 1).		●												
K.OA.1 Represent addition and subtraction with objects, fingers, mental images, drawings, sounds, acting out situations, verbal explanations, expressions, or equations.		●												
K.OA.2 Solve addition and subtraction word problems, and add and subtract within 10.		●												
K.OA.3 Decompose numbers less than or equal to 10 into pairs in more than one way, and record each decomposition by a drawing or equation.		●												
K.OA.4 For any number from 1 to 9, find the number that makes 10 when added to the given number, and record the answer with a drawing or equation.		●												
K.NBT.1 Compose and decompose numbers from 11 to 19 into ten ones and some further ones, and record each composition or decomposition by a drawing or equation; understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.		●												
1.OA.1 Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions.			M3, S5 Unit 2 Assessment	●	M3, S5 Unit 3 Assessment		●		M2, S5 Combinations & Stories Checkpoint M3, S5 Unit 6 Assessment	●	M3, S5 Unit 7 Assessment			●
1.OA.2 Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20.				●							M3, S5 Unit 7 Assessment			●
1.OA.3 Apply properties of operations as strategies to add and subtract.			M3, S5 Unit 2 Assessment				●				M3, S5 Unit 7 Assessment			●
1.OA.4 Understand subtraction as an unknown-addend problem. For example, subtract 10 – 8 by finding the number that makes 10 when added to 8.			M3, S5 Unit 2 Assessment		M2, S4 Combinations of Ten Checkpoint M3, S5 Unit 3 Assessment		●		M3, S5 Unit 6 Assessment					●
1.OA.5 Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).	M4, S5 Unit 1 Assessment		M2, S5 Domino Addition Checkpoint, Part 1	●			●							●
1.OA.6 Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten; decomposing a number leading to a ten; using the relationship between addition and subtraction; and creating equivalent but easier or known sums.	M2, S5 Quick Count Checkpoint M4, S5 Unit 1 Assessment		M2, S5 Domino Addition Checkpoint, Parts 1 & 2 M3, S5 Unit 2 Assessment	●	M2, S4 Combinations of Ten Checkpoint M3, S5 Unit 3 Assessment		●		M2, S5 Combinations & Stories Checkpoint M3, S5 Unit 6 Assessment					●

NC – Number Corner, **M#** – Module number, **S#** – Session number, **CGA** – Comprehensive Growth Assessment

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

Grade 1 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
1.OA.7 Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false.									M3, S5 Unit 6 Assessment				●	●
1.OA.8 Determine the unknown whole number in an addition or subtraction equation relating to three whole numbers.			M3, S5 Unit 2 Assessment	●	M2, S4 Combinations of Ten Checkpoint M3, S5 Unit 3 Assessment	M3, S5 Unit 4 Assessment	●		M3, S5 Unit 6 Assessment				●	●
1.NBT.1 Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.	M4, S5 Unit 1 Assessment				M3, S5 Unit 3 Assessment	M2, S5 Numbers on a Line Checkpoint M3, S5 Unit 4 Assessment	●			●	M2, S5 Numbers to 120 Checkpoint M3, S5 Unit 7 Assessment	M3, S6 Unit 8 Assessment	●	●
1.NBT.2 Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:					M3, S5 Unit 3 Assessment		●			●				●
1.NBT.2a 10 can be thought of as a bundle of ten ones, called a "ten."					M3, S5 Unit 3 Assessment					●				●
1.NBT.2b The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.					M3, S5 Unit 3 Assessment					●				●
1.NBT.2c The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).										●				●
1.NBT.3 Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.			M2, S5 Domino Addition Checkpoint, Part 1				●					M2, S4 Time & Change Checkpoint M3, S6 Unit 8 Assessment		●
1.NBT.4 Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, 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 and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.					M3, S5 Unit 3 Assessment	M2, S5 Numbers on a Line Checkpoint M3, S5 Unit 4 Assessment					M2, S5 Numbers to 120 Checkpoint M3, S5 Unit 7 Assessment	M2, S4 Time & Change Checkpoint M3, S6 Unit 8 Assessment	●	●
1.NBT.5 Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.						M2, S5 Numbers on a Line Checkpoint M3, S5 Unit 4 Assessment					M3, S5 Unit 7 Assessment	M2, S4 Time & Change Checkpoint M3, S6 Unit 8 Assessment	●	●
1.NBT.6 Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10–90 (positive or zero differences), 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 and explain the reasoning used.						M2, S5 Numbers on a Line Checkpoint M3, S5 Unit 4 Assessment					M2, S5 Numbers to 120 Checkpoint M3, S5 Unit 7 Assessment	M2, S4 Time & Change Checkpoint M3, S6 Unit 8 Assessment	●	●

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

Grade 1 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
1.MD.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object.														●
1.MD.2 Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.												M3, S6 Unit 8 Assessment	●	●
1.MD.3 Tell and write time in hours and half-hours using analog and digital clocks.										●		M2, S4 Time & Change Checkpoint M3, S6 Unit 8 Assessment		●
1.MD.4 Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.				●								M3, S6 Unit 8 Assessment		●
1.G.1 Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.								M2, S5 Shapes Checkpoint M3, S6 & 7 Unit 5 Assessment		●				●
1.G.2 Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.								M2, S5 Shapes Checkpoint M3, S6 & 7 Unit 5 Assessment		●				●
1.G.3 Partition circles and rectangles into two and four equal shares, describe the shares using the words halves, fourths, and quarters, and use the phrases half of, fourth of, and quarter of. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.								M3, S6 & 7 Unit 5 Assessment		●			●	●

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

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 Math 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 **MP.1** Make sense of problems and persevere in solving them. **MP.6** Attend to precision.	**Reasoning and Explaining** **MP.2** Reason abstractly and quantitatively. **MP.3** Construct viable arguments and critique the reasoning of others.
	Modeling and Using Tools **MP.4** Model with mathematics. **MP.5** Use appropriate tools strategically.
	Seeing Structure and Generalizing **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.

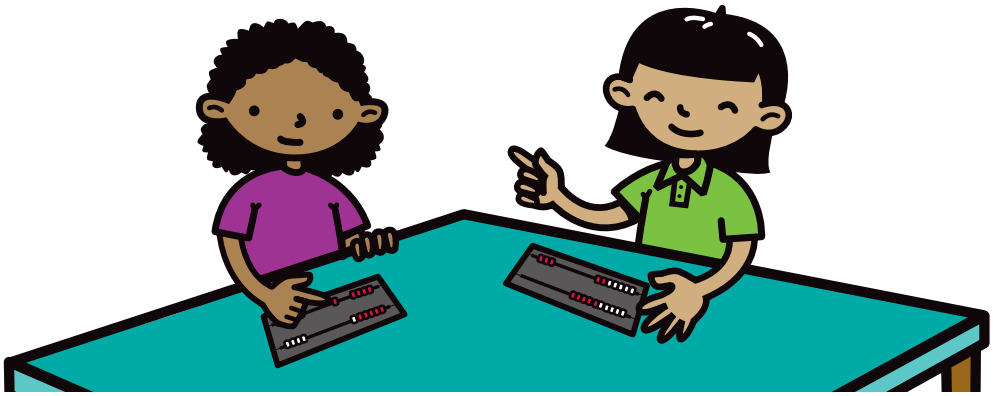
» Juanita Copley

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 1?

It is impossible to address and assess these practices without having a very 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 first grade? How do we know when a 6-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 first grade adapted 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.	As the teacher uses thoughtful questioning and provides opportunities for students to share thinking, Grade 1 students become conscious of what they know and how they solve problems. They make sense of task-type problems, find an entry point or a way to begin the task, and are willing to try other approaches when solving the task. They ask themselves, "Does this make sense?" Grade 1 students' conceptual understanding builds from their experiences in Kindergarten as they continue to rely on concrete manipulatives and pictorial representations to solve a problem, eventually becoming fluent and flexible with mental math as a result of these experiences.
	MP. 6 Attend to precision.	Mathematically proficient students in Grade 1 attend to precision in their communication, calculations, and measurements. They are able to describe their actions and strategies clearly, using grade-level appropriate vocabulary accurately. Their explanations and reasoning regarding their process of finding a solution becomes more precise. In varying types of mathematical tasks, first grade students pay attention to details as they work. For example, as students' ability to attend to position and direction develops, they begin to notice reversals of numerals and self-correct when appropriate. When measuring an object, students check to make sure that there are not any gaps or overlaps as they carefully place each unit end to end to measure the object (iterating length units). Mathematically proficient first grade students understand the symbols they use (=, >,<) and use clear explanations in discussions with others. For example, for the equation 4 + 1 = 3 + 2, a proficient student who is able to attend to precision states, "Four plus one is the same as three plus two because they both add up to five."
Reasoning & Explaining	**MP. 2** Reason abstractly and quantitatively.	Mathematically proficient students in Grade 1 recognize that a number represents a specific quantity. They use numbers and symbols to represent a problem, explain thinking, and justify a response. For example, when solving the problem: "There are 60 children on the playground. Some children line up. There are 20 children still on the playground. How many children lined up?" First grade students may write 20 + 40 = 60 to indicate a Think-Addition strategy. Other students may illustrate a counting-on by tens strategy by writing 20 + 10 + 10 + 10 + 10 = 60. The numbers and equations written illustrate the students' thinking and the strategies used, rather than how to simply compute, and show how the story is decontextualized as it is represented abstractly with symbols.
	MP. 3 Construct viable arguments and critique the reasoning of others.	Mathematically proficient students in Grade 1 continue to develop their ability to clearly express, explain, organize and consolidate their math thinking using both verbal and written representations. Their understanding of grade-appropriate vocabulary helps them to construct viable arguments about mathematics. For example, when justifying why a particular shape isn't a square, a first grade student may hold up a picture of a rectangle, pointing to the various parts, and reason, "It can't be a square because, even though it has 4 sides and 4 corners, the sides aren't all the same size." In a classroom where risk-taking and varying perspectives are encouraged, mathematically proficient students are willing and eager to share their ideas with others, consider other ideas proposed by classmates, and question ideas that don't seem to make sense.
Modeling & Using Tools	**MP. 4** Model with mathematics.	Mathematically proficient students in Grade 1 model real-life mathematical situations with manipulatives, sketches, and/or equations, and check to make sure that their models accurately match the problem context. They also use tools, such as tables, to help collect information, analyze results, make conclusions, and review their conclusions to see if the results make sense and revising as needed.
	MP. 5 Use appropriate tools strategically.	Mathematically proficient students in Grade 1 have access to a variety of concrete (e.g. three-dimensional solids, ten frames, number racks, number lines) and technological tools (e.g., virtual manipulatives, apps, interactive websites) and use them to investigate mathematical concepts. They select tools that help them solve and/or illustrate solutions to a problem. They recognize that multiple tools can be used for the same problem, and choose those that make best sense, given their current level of development. For example, a child who still counts all may choose linking cubes to solve a combination such as 5 + 6. A student who has started to recognize the relationship between addition facts may model and solve the combination on a physical or virtual number rack, noting that 5 + 6 is 11 because it is 1 more than 5 + 5. As the teacher provides numerous opportunities for students to use educational materials, first grade students' conceptual understanding and higher-order thinking skills are developed.

Structure & Generalizing	**MP. 7** Look for and make use of structure.	Mathematically proficient students in Grade 1 carefully look for patterns and structures in the number system and other areas of mathematics. For example, while solving addition problems using a number rack, students recognize that regardless whether you show 7 on the top row and 4 on the bottom or vice versa, they both equal 11 (commutative property). When decomposing two-digit numbers, students realize that the number of tens they have constructed coincides with the digit in the tens place. When exploring geometric properties, first graders recognize that certain attributes are critical (number of sides and vertices), while other properties, such as size, color and orientation, are not.
	MP. 8 Look for and express regularity.	Mathematically proficient students in Grade 1 begin to look for regularity in problem structures when solving mathematical tasks. For example, when adding three one-digit numbers students look for doubles or combinations of 10. Thus, when solving 8 + 7 + 2, a student may say, "I know that 8 and 2 equal 10 and then I add 7 more. That makes 17. It helps to see if I can make a 10 out of 2 numbers when I start." Further, students use repeated reasoning while solving a task with multiple correct answers. For example, in the task "There are 12 hot air balloons in the sky. Some are above the clouds and some are below. How many of each could there be?" first graders may use a number rack to show 6 and 6. They may then add one more bead to the top row and remove one from the bottom row to make another combination that totals twelve—7 + 5. They may repeat this process several times until they have a sequence of combinations, and then note the patterns that exist in the sequence.

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 among young students. We need to observe our students in action during daily instruction, at Work Places, and in individual and small group interview 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 model and 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 Unifix cubes, pattern blocks, the number rack, counting mats, whiteboards and pens, paper and pencil, and virtual tools such as the number rack and geoboard apps. Talk with students about their choices from time to time, and encourage them to explain why, for example, they've chosen the number rack instead of the cubes 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 or whole group discussions, but it means that you have to establish the idea of listening to and learning from one another as a classroom norm, as challenging as this can be for first graders. The care and respect you demonstrate in listening to each member of your classroom community will serve as an important model to your students.
- **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 dialog in many of the sessions and workouts for modeling possible questioning techniques. Beyond

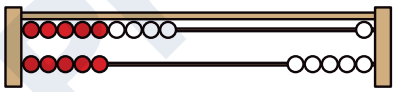
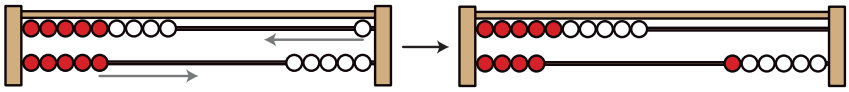
these examples, we find that there are key questions that elicit specific math practices. Some of these are listed on the chart on the next page .

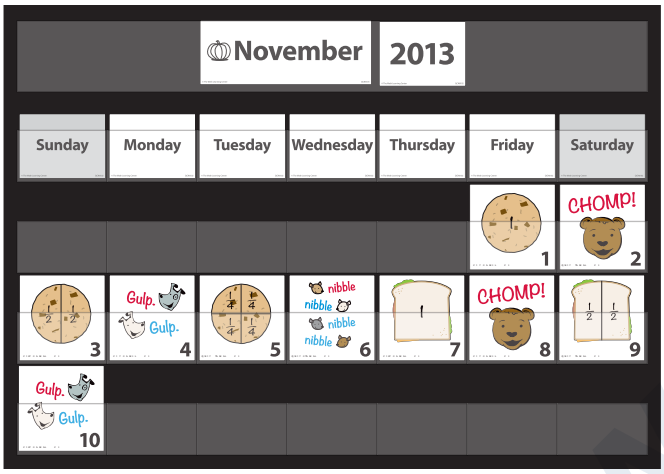
Math Practice		Questions That Elicit the Desired Behavior
Habits of Mind	**MP.1** Make sense of problems and persevere in solving them. **MP.6** Attend to precision.	• What do you think that problem is asking? • How would you describe this problem in your own words? • What might you do to get started? • 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 a shape that has 4 sides that are all the same length? • Yes, that shape is round all the way around, and rolls like a ball. Can anyone think of the name mathematicians use for this shape?
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 10? • How many more do you need to make 50? • Which team is winning our game so far? By how much? • What number do you hope you spin next in this game? Why? • What equation might we use to match the beads on the top and bottom rows of the number rack? 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? • 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 draw a picture to show your thinking? • Can you label your drawing with numbers? • What equation might we use to represent this situation? • Would you prefer to use bundles & sticks or a number line drawing to help solve this problem? • How might you use the number rack to show this situation? • Would you rather use the number rack you made with beads or the number rack 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, picture, pattern, 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? • How are these shapes alike? How are they different? • What do you notice about the numbers in this list?

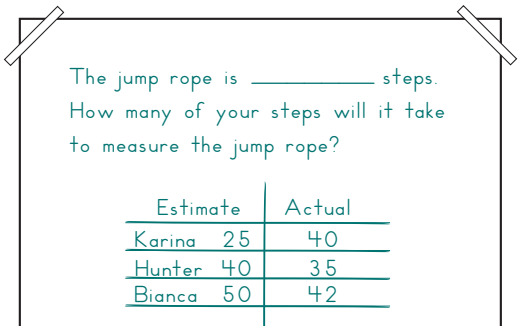
Looking for the Math Practices in All the Right Places, Part 1

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 1, and gives an example of each.

MP	Activity from Bridges or Number Corner Grade 1
MP.1, MP.6 MP.3 MP.4, MP.5	**Problem Solving** **Unit 6 Module 2, Session 5: Pick Two to Make Twenty** The teacher plays a game with the class in which teams take turns choosing two out of three possible numbers that come closest to 20 when added, without going over. This is a thorny problem for many first graders, and the discussion surrounding each turn is often animated. ***Teacher*** *OK, it's your turn, and here are the three numbers your team uncovered. Talk to the person next to you—which two of these numbers come closest to 20 without going over?* **8** **9** **12** ***Students*** *All you have to do is pick the biggest, so it's 9 and 12.* *I don't think that works this time. If you go 12 + 10, that's 22, so 12 + 9 would be 21. It's too big.* *Well, what about 8 and 9?* *That's 17 because it's just 1 more than 8 and 8.* *Wait! Twelve and 8 make exactly 20 because if you count, you get 12 … 13, 14, 15, 16, 17, 18, 19, 20.* *That's what I got. 12 is like 10 and 2 more, and you can put the 2 with the 8, so that's 10 and 10!*
MP.1, MP.6 MP.2, MP.3 MP.4, MP.5 MP.7, MP.8	**Numeric Problems** **Units 1, 2, 3, and 6** First graders use a variety of models, including the number rack, to show and solve addition combinations to 20. The number rack is particularly effective in eliciting a variety of efficient strategies for solving such combinations. *Teacher I'm going to write an addition combination on the board. I'd like you to build it on your number rack, solve it, and share your strategy with your partner. Then I'll call on a few folks to share their thinking with the group.* 9 + 5 ***Student A*** *I put 9 in the top row and 5 in the bottom. Then I just counted 9 … 10, 11, 12, 13, 14.*  ***Student B*** *I put my beads the same way, but I could see 5 and 5 red, and then 4 more white, so it's 14.* ***Student C*** *I put 9 on top and 5 on the bottom, but then I got an idea to move 1 bead off the bottom row and give it to the top, so now it's 10 + 4, and that's 14.* 

MP	Activity from Bridges or Number Corner Grade 1
MP.1, MP.6 MP.3 MP.4 MP.7, MP.8	**Pattern Problems** **November Number Corner: Calendar Grid Workout** Each day, a new marker is posted in the Calendar Grid pocket chart. In November, the sequence is designed to introduce fractions—halves and fourths. 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 mid-month, students' predictions are rich with the language of fractions.  ***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.* ***Student A*** *It has to be a sandwich today.* ***Teacher*** *Thumbs up if you agree that the picture on today's marker will be a sandwich. Hmm … lots of thumbs up. How do you know?* ***Students*** *Because yesterday was 2 dogs eating. Today, it has to be food.* *It goes in a pattern, like food, eating, food, eating, food, eating, so today is food.* *First it was cookies for the food, and now it's sandwiches.* ***Teacher*** *Can you predict how the sandwich will look?* ***Students*** *I think it will be cut into 4 parts.* *Me too, because first you get a whole thing, like a whole cookie or a whole sandwich.* *That's why there's a bear after those, because bears need a lot of food.* *Then next, it's something cut in half, like that cookie is cut in half and then the sandwich is.* *The next cookie is cut into 4 pieces, so it would be like that for the sandwich.* *Those are called* fourths. *I know that because I always ask my mom to cut my sandwich in fourths.*

MP	Activity from Bridges or Number Corner Grade 1
MP.6 MP.2 MP.5	**Measuring Problems** **Unit 1 Module 4: Session 3 How Long Is the Jump Rope?** In Grade 1, students measure length in non-standard units. This sometimes raises some interesting problems, as in the session where the class estimates and then measures the length of a jump rope in heel-to-toe steps.  *Teacher It only took 25 of my heel-to-toe steps to measure this jump rope. Why did the next three people get different answers? Talk to the person next to you about this, and then I'll call on some people to share their thinking.* *Student A I think it took 40 for me because my feet aren't as big as yours.* *Student B It only took me 35 steps, maybe because my feet are bigger yours—see?* *Student C I think it's going to take a different number for different people because everyone's feet are different. Can I be next?*
MP.2, MP.3 MP.4, MP.5	**Story Problems** **Unit 8 Module 4: Session 4, The Baby and Me** This session is part of a module that invites students to think about some of the ways they've changed since they were born. In Session 4, students compare their own height, foot length, arm length, and head circumference with those of a visiting baby. An open number line provides a good model for showing and solving some of the larger comparison problems. Like the number rack, the open number line is a tool that can be used in a variety of different ways to solve a problem.

The sessions and workouts listed on 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 1 CCSS Correlations on the Bridges Educator site. There you can view all the Bridges sessions and Number Corner workouts that are most strongly associated with each math practice.

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 1 Correlations on the Bridges Educator site for the sessions and workouts most likely to elicit particular Math Practices.

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

Section 4

Assessment as a Learning Opportunity

There is no question that even first graders can participate in an informed way in their own learning, setting goals and monitoring their progress toward meeting those goals. One of the easiest and most effective ways to help students become active participants in their own learning is through the use of learning targets.

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

Setting 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.

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 6 Module 3

Unit 6
Module 3
Session 1

Session 1
Penguin Problems: Joining

Summary

This session is the first of several that revolve around penguin story problems with sums and minuends to 20. Today's focus is addition (adding to and putting together). The teacher poses three types of problems: result unknown (9 + 5 = ?), change unknown (9 + ? = 14), and start unknown (? + 5 = 14). Teacher and students work together to model and solve several story problems on the number rack, recording equations to match. This gives students numerous opportunities to apply the addition fact strategies they've been studying recently—Doubles, Doubles Plus or Minus One, Add Tens, and Add Nines. They then complete a related assignment in their Student Books and go out to Work Places.

Skills & Concepts

- Solve addition story problems with sums to 20 involving situations of adding to and putting together, with unknowns in all positions (1.OA.1)
- Use strategies to add with sums to 20 (1.OA.6)
- Solve for the unknown in an addition equation involving 3 whole numbers (1.OA.8)
- Make sense of problems and persevere in solving them (1.MP.1)
- Construct viable arguments and critique the reasoning of others (1.MP.3)
- Look for and make use of structure (1.MP.7)

Materials

Copies	Kit Materials	Classroom Materials
Problems & Investigations Penguin Problems: Joining		
TM T1 Swimming Penguins **SB 42–43** More Swimming Penguin Problems	• demonstration number rack	• student number racks (class set) • a piece of copy paper to mask portions of the display master
Work Places in Use		
5C Cube Predictions (introduced in Unit 5, Module 2, Session 4) **5D** Pyramid Predictions (introduced in Unit 5, Module 2, Session 5) **5E** Triangular Prism Predictions (introduced in Unit 5, Module 4, Session 1) **5F** Shape Sorting & Graphing (introduced in Unit 5, Module 4, Session 2) **6A** Spin to Win Bingo (introduced in Unit 6, Module 1, Session 4) **6B** What's Missing (introduced in Unit 6, Module 2, Session 4)		

HC – Home Connection, **SB** – Student Book, **TM** – Teacher Master
Copy instructions are located at the top of each teacher master.

Vocabulary

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

add*
addition
equation*
join
story problem
strategy
sum or total*
unknown number

Bridges in Mathematics Grade 1 Teachers Guide 3 © The Math Learning Center | mathlearningcenter.org

A teacher might examine the front material 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 use a strategy that is faster than counting one by one to solve addition combinations to 20.*
>
> *I can use the words* sum *or* total *when I describe the results of adding two numbers.*
>
> *I can keep working until I solve a problem, even if it seems hard.*

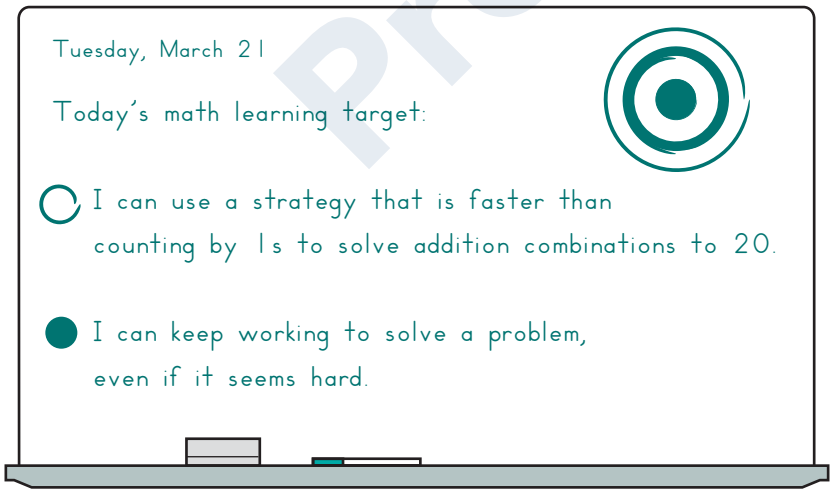
These are only three of many possible learning targets for this particular session. Other content targets might deal with reading and solving addition story problems, writing equations to represent story problems, or using an empty box in the correct place in an equation to show the unknown. Other vocabulary 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, listening to a partner explain his or her thinking, or being able to restate a classmate's explanation or strategy. 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, or directly after the warm-up activity.

Some teachers even make a drawing of a target on the board to accompany the display, like this:



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 mini-assessment in the process, as illustrated in the dialog below.

> ***Teacher*** *Our first learning target today was to use strategies that are faster than counting one by one to solve addition combinations to 20. What if we had a problem to solve where there were 8 penguins in the water and then*

7 more came to join them, and we wanted to find out how many there were in all? Talk to the person sitting next to you, and then I'll call on people to share with the class.

Student *I would start with the 8 and remember it. Then I'd keep counting 7 more on my fingers to get the answer.*

Teacher *So you would count on from 8 to get the total? Let's all try that idea, ready?*

Students *8… 9, 10, 11, 12, 13, 14, 15.*
It makes 15 penguins in all.
That's what I got, but I had a different way.

Teacher *How did you solve the problem?*

Student *I know 7 and 7 is 14, so I just put on 1 more, and that's 15.*

Teacher *So, you used an addition double that you already knew, and worked from there. I'm going to write these strategies on this piece of paper here at the easel so we can all see them.*

Student *Can I tell a way with a different double? I went 8 and 8 is 16, and then I took 1 away because it was really 8 and 7.*

8 penguins in the water. 7 more penguins jumped in.
How many in all?

Our strategies:

- Count on 8… 9, 10, 11, 12, 13, 14, 15
- Use a double 7 + 7 = 14, and one more is 15
  8 + 8 = 16, and one less is 15

Teacher *Did anyone use a different strategy?*

Student *I did! I took 2 from the 7 and gave it over to the 8 to make 10. Then I just added 10 + 5, and that's easy—it's 15.*

Teacher *So you used a Make Ten strategy, didn't you? Can anyone explain this strategy again so I can add it to our chart?*

Student *Well, 7 is the same as 5 and 2. You can take the 2 and put it on the 8 to make 10, and then you just go 10 + 5.*

8 penguins in the water. 7 more penguins jumped in.
How many in all?

Our strategies:

- Count on 8… 9, 10, 11, 12, 13, 14, 15
- Use a double 7 + 7 = 14, and one more is 15
  8 + 8 = 16, and one less is 15
- Make a ten 8 + 7 7 = 5 + 2
  8 + 2 = 10 10 + 5 = 15

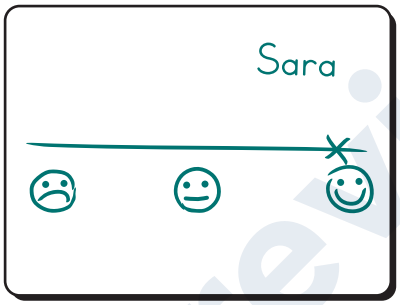
> ***Teacher*** *So how do you think we did with our first goal? How are we doing at finding ways to solve addition problems that are faster than counting one by one? Show thumbs up if you think we hit the bull's-eye, thumbs sideways if you think we're not really there yet, and thumbs down if you're still not sure about this skill. OK— looks like lots of bull's-eyes!*

The whole process takes about 5 minutes and can be conducted either before or after the students go to Work Places. The point is to make the goals of your lessons transparent to the students, and involve them in evaluating their own progress toward those goals. It's important to remember that these targets and the students' evaluations don't generally reflect total mastery. Any of the targets mentioned earlier in this section might be repeated many times over the year as students work their way to performing skills and understanding concepts at increasingly sophisticated and challenging levels, and exercising the math practices more fully from one month to the next.

Other Ways to Encourage Student Reflection

Learning Lines

At the end of an activity, 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.



> ***Student*** *I didn't understand that problem where we had to figure out how many penguins were hiding behind the hill, but I kept trying until I got it. I'm going to mark an X next to the face with the smile.*

Exit Cards

At the end of an activity or session, give students each a 3″ × 5″ index card or a small piece of scratch paper and ask them to respond to one final question or problem, or use quick sketches or words to show one thing they learned during math class.

Before & After

First graders enjoy comparing work samples from earlier and later in the school year. You might save samples of students' work from early in the school year and later in the year, and let them examine the samples side by side, looking for differences. For example, students are asked to solve two story problems on the Baseline and the first three Number Corner checkups. Even though the problems are different each time, students enjoy comparing their work from one quarter to the next to see how they've grown and changed. Their observations range from noting improvements in their handwriting, to using tally marks or other quick sketches instead of drawings of the objects in the problem, to labeling their sketches more effectively or showing the answer more clearly, to using equations instead of drawings to represent and solve problems.

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."

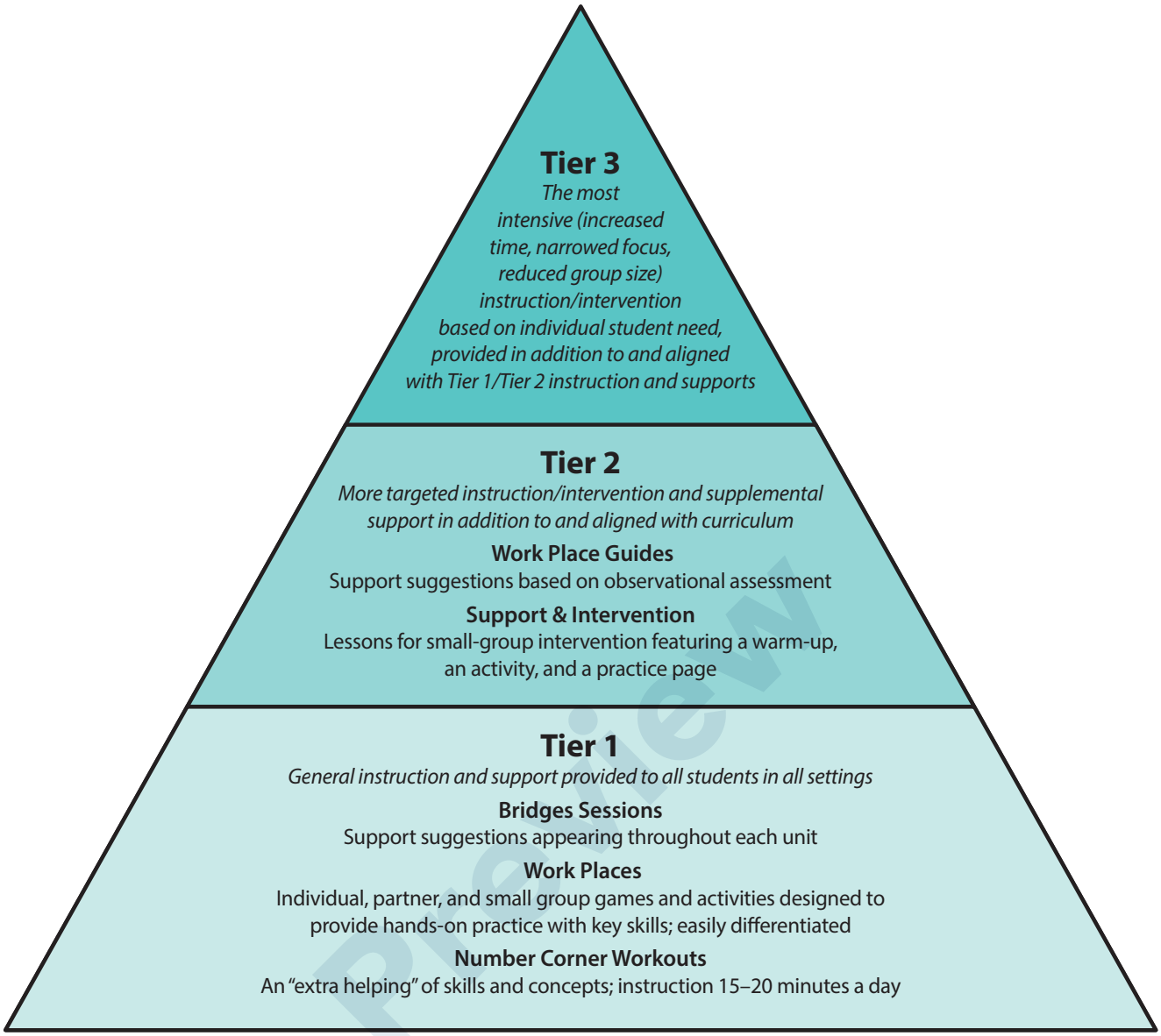
Gresham and Little go on to identify the important role of classroom teachers:

> 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 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 7 Module 1 | **Session 4** *1 copy kept in a clear plastic sleeve and stored in the Work Place bin*

Work Place Guide 7A Two Turns to Build

Summary

In this partner game, players spin a Tens Spinner and roll a 0–5 die to determine the number of craft sticks to collect. They do this again and then add the two quantities together. Students show with sketches, numbers, or words how they arrived at their total. Players compare their totals, and the player with the greater total wins.

Skills & Concepts

- Use >, =, and < symbols to record comparisons of two 2-digit numbers (1.NBT.3)
- Use concrete models to add with sums to 100 (1.NBT.4)
- Relate strategies for adding with sums to 100 to written methods, and use written methods to represent those strategies (1.NBT.4)
- Add with sums to 100 using strategies that involve adding tens to tens and ones to ones (1.NBT.4)

Materials

Copies	Kit Materials	Classroom Materials
TM T5 Work Place Guide 7A Two Turns to Build **TM T6** Work Place Instructions 7A Two Turns to Build **TM T7** 7A Work Mat **TM T8** 7A Two Turns to Build Record Sheet	• craft sticks: 36 bundles of 10 (6 per player) and 60 single sticks (10 per player) • 3 Tens Spinners • 3 dice numbered 0–5	

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
A student struggles to add the 10s and the 1s (20 + 4 = 24, for example).	SUPPORT Have the student practice collecting 10s and adding on 1s.	Have the student just spin and collect the 10s, counting aloud ("10, 20, 30"). Then they roll the die and count on that many more ("31, 32, 33, 34"). Repeat as necessary.
Several students struggle to record their work.	SUPPORT Gather the students in a small group and play together, every student working with the same numbers. Record, with their input, on a whiteboard, and have them do the same on their record sheets.	If a student spins 30 and rolls 2, the entire group works with 30 and 2, and so on.
A student completes the activity quickly and easily and appears to make little use of the craft sticks.	CHALLENGE Invite the student to play Game Variation A.	
English-Language Learners Use the following adaptations to support the ELL students in your classroom.		
• Sit down with an ELL student and play the game at least once. • Model counting by 10s and 1s throughout the game ("10, 20, 30, 31, 32, 33, 34, 35").		

3 Administer the Baseline Assessment (found in the Number Corner Teachers 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 is risky to make hard-and-fast judgments about incoming first 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 either this year or in second grade.

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 resources found

on 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 part of the Curriculum section of the Bridges Educator site may be used as a source of Tier 2 instruction, 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.

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 1. 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 the 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. An online search will bring up several sites that offer these screeners free of charge.

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 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 gives specific direction about how to assign points. Attention is also paid to how the student responds. Consider the example below, taken from the scoring guide for Number Corner Checkup 2.

Item	CCSS	Points Possible
1 Add 4 to a screened quantity of 7 to get 11	1.OA.6	**0 pts.** Incorrect **1 pt.** Correct—counts all **2 pts.** Correct—counts on **3 pts.** Correct—uses known fact or answers automatically

While it would be easier to simply award one point on the basis of whether or not the student gets the correct answer, the point of this interview item is to determine what strategy a student is using to solve an addition combination above 10. Since the ability to work from a known fact (such as 7 + 3) or answer automatically is the desired end-point of instruction, that strategy is awarded the highest number of points. However, students are still given credit for using less efficient strategies such as counting all or counting on. The idea is to ascertain what students can do and how they do it, rather than to assign a score based on right or wrong.

Here is another example, also taken from the scoring guide for Number Corner Checkup 2.

Item	CCSS	Points Possible
1b Solve a story problem that involves figuring out how many to remove from 9 to get 3. *6*	1.OA.1 1.OA.8	**3 pts.** (See scoring scale below.)
Scoring Scale for Solving Story Problems (3 points possible for each problem): • 1 point for using the information given in the problem (e.g., the numbers and the situation) • 1 point for using a viable strategy that could lead to the answer; strategies may include drawings, equations, numeric representations, etc. • 1 point for showing the correct answer		

In this case, a student who is able to use the information given in the problem and demonstrate a strategy that could lead to the correct answer is able to score 2 points, even if he doesn't get the correct answer. Why not award 1 point for the correct answer and be done with it? Again, we're interested in looking at what the student can do. Representing and solving a story problem is a complex operation. If a student can gather the information from the problem and use it in some constructive fashion, perhaps making a drawing labeled with the relevant numbers or writing and solving an equation, he may be further along than the student who simply writes the answer. This is doubly important given that the Common Core standards value practices such as making sense of a problem, modeling with mathematics, and communicating effectively.

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 collection. 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 Combinations of Ten Checkpoint in Unit 3. This checkpoint, like the others that appear at the midpoint of each unit, is formative, designed to help teachers make instructional decisions (slow down or speed up the rate of instruction; reteach a certain skill or concept to the whole class; pull 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* **15 pts.**

* 4–15 points: Working at Tier 1 or Tier 2 Level
3 points or fewer: May need Tier 3 Support

The example below is taken from the Unit 3 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* 31 pts.

* Meeting Standard	24–31 points (75–100% correct)
Approaching Standard	16–23 points (50–74% correct)
Strategic	8–15 points (25–49% correct)
Intensive	7 points or fewer (24% or less correct

The cut scores and the designations assigned to each range in the second example 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 parents 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.

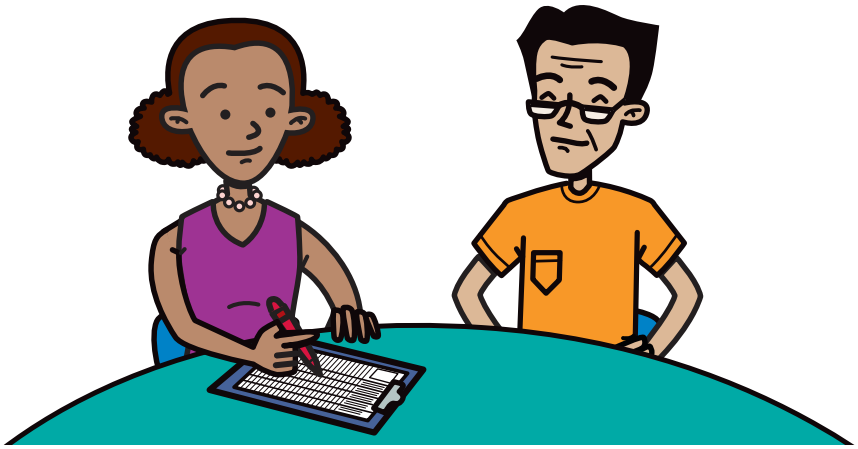
In contrast to years past, when grade level standards varied from one state, one district, or even one school to another, most states have adopted the common, coherent, rigorous, and focused goals set by the Common Core State Standard Initiative. It is safe to anticipate that we will have support from a variety of organizations, ranging all the way from the federal and state government to the National PTA, in communicating grade-level expectations to parents. In fact, as of this writing, the PTA has made available a set of parent guides that explain the Common Core State Standards at each grade level and offer tips about how parents 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 helpful resources 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 parents 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 parents 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 1 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 of weaknesses. During conferences, you can provide even more information for parents by sharing samples of students' work, including notable responses to interview and written 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 1 Math Progress Report: First Quarter

Assessment Schedule: September through late October/early November

CCSS	Needing	Meeting	Exceeding
1.OA.1		Solves addition and subtraction story problems to 10	
1.OA.5		Counts on to add and counts back to subtract	
1.OA.6		Adds and subtracts to 10	
1.OA.8		Finds the unknown number in an addition equation	
1.NBT.1		Counts by ones and by tens to 60; reads and writes numbers to 60	
1.NBT.3		Uses the symbols >, =, and < to compare two numbers	
1.MD.4		Reads a graph and answers questions about the data	

Comments

Grade 1 Math Progress Report: Second Quarter

Assessment Schedule: November–January

CCSS	Needing	Meeting	Exceeding
1.OA.1		Solves addition and subtraction story problems to 12	
1.OA.4		Solves subtraction combinations using related addition facts (e.g., 10 – 8 = 2 because 8 + 2 = 10)	
1.OA.5		Counts on to add and counts back to subtract	
1.OA.6		Develops strategies for adding to 20 and subtracting to 10	
1.OA.8		Finds the unknown number in addition and subtraction equations	
1.NBT.1		Counts by ones and by tens to 120; reads and writes numbers to 120	
1.NBT.2		Understands that the two digits of a 2-digit number tell how many tens and ones there are in the number	
1.NBT.3		Compares pairs of 2-digit numbers using the symbols >, =, and <	
1.NBT.4		Adds 2-digit numbers that are multiples of 10, such as 30 + 40 and 20 + 50	
1.NBT.5		Finds 10 more or 10 less than various 2-digit numbers	
1.NBT.6		Subtracts 2-digit numbers that are multiples of 10, such as 40 – 20 and 60 – 30	

Comments

Grade 1 Math Progress Report: Third Quarter

Assessment Schedule: February–March

CCSS	Needing	Meeting	Exceeding
1.OA.1		Solves addition and subtraction story problems to 20	
1.OA.4		Solves subtraction combinations using related addition facts (e.g., 14 – 10 = 4 because 10 + 4 = 14)	
1.OA.6		Uses strategies for adding and subtracting to 20	
1.OA.6		Demonstrates fluency with addition and subtraction facts to 10	
1.OA.7		Understands the meaning of the equal sign and identifies equations that involve addition and subtraction as true or false (e.g., 7 = 3 + 4 is true; 10 – 2 = 4 + 1 is false)	
1.OA.8		Finds the unknown number in addition and subtraction equations	
1.NBT.1		Reads numbers between 100 and 120.	
1.NBT.2		Understands that the two digits of a 2-digit number tell how many tens and ones there are in the number	
1.MD.3		Tells and writes time to the hour and half-hour on analog and digital clocks	
1.G.1		Identifies and describes 2- and 3-D shapes	
1.G.2		Puts shapes together to make larger shapes	
1.G.3		Divides circles and rectangles into two and four equal parts, and describes the parts using words like *halves, half of, fourths, quarters, a fourth of*	

Comments

Grade 1 Math Progress Report: Fourth Quarter

Assessment Schedule: April–May

CCSS	Needing	Meeting	Exceeding
1.OA.2		Solves story problems that involve adding three numbers	
1.OA.3		Understands the commutative and associative properties of addition (e.g., 2 + 3 is the same as 3+ 2 and 3 + (4 + 5) is the same as (3 + 4) + 5)	
1.NBT.1		Counts by ones and by tens to 120; reads and writes numbers to 120, and can represent a number of objects up to 120 with a written numeral	
1.NBT.3		Compares pairs of 2-digit numbers using the symbols >, =, and <	
1.NBT.4		Adds 2-digit numbers (e.g., 30 + 40, 50 + 7, 24 + 39) using at least two different strategies; can explain how these strategies work	
1.NBT.5		Finds 10 more or 10 less than various 2-digit numbers and explains the reasoning behind the answer	
1.NBT.6		Subtracts 2-digit numbers that are multiples of 10 (e.g., 50 – 30 and 70 – 40 using at least two different strategies; can explain how these strategies work	
1.MD.1		Puts 3 objects in order by length; compares the lengths of 2 objects indirectly by using a third object	
1.MD.2		Measures length using non-standard units such as Popsicle sticks, linking cubes, and so on	
1.MD.3		Tells and writes time to the hour and half-hour on analog and digital clocks	
1.MD.4		Constructs and reads graphs, and answers questions about the data	

Comments