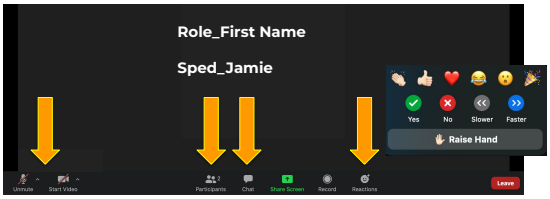
Welcome To Bridges Intervention

Zoom Housekeeping



Workshop Agenda

Live Session 1
Welcome & Workshop Goals

Live Session 2
Fluency with the Number Rack & Math Practices

Break

Live Session 3
Multiplication & Division Arrays

Live Session 4
Placement Assessment & Entry Points

Workshop Goals

Participants will understand:

- The components and structure of Bridges Intervention volumes
- The research behind Bridges Intervention's development
- The role of questioning, visualization, wait time, and the eight Mathematical Practices in implementation
- The use of placement assessments, progress monitoring tools, and scoring guides

Fluency with the Number Rack & Math Practices

Live Session 2

Why Visual Models?

"The different evidence that is coming from the neuroscientists tells us that our brain wants to think visually about maths. Building students' mathematical understanding doesn't just mean strengthening one area of the brain that is involved with abstract numbers, it means strengthening connections between areas of the brain and strengthening the visual pathways."

– Jo Boaler, youcubed.org

Number Frames

bridges intervention

Five-frame

Bundles & Sticks...to Tally Marks

Number Frames

bridges intervention

Five-frame

Ten-frame

Bundles & Sticks...to Tally Marks

Number Frames

bridges intervention

Five-frame

Ten-frame

Double ten-frame

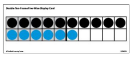
Bundles & Sticks...to Tally Marks

Number Frames

bridges intervention

Five-frame

Ten-frame



Double ten-frame

Bundles & Sticks...to Tally Marks

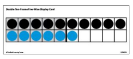
Craft sticks showing 7 as tallies

Number Frames

bridges intervention

Five-frame

Ten-frame



Double ten-frame

Bundles & Sticks...to Tally Marks

Craft sticks showing 7 as tallies

A bundle of 10 and 3 more makes 13

Number Frames

bridges intervention

Five-frame

Ten-frame

Double ten-frame

Bundles & Sticks...to Tally Marks

Craft sticks showing 7 as tallies

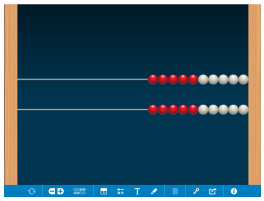
A bundle of 10 and 3 more makes 13

Tally marks showing 8

Let's Explore the Number Rack

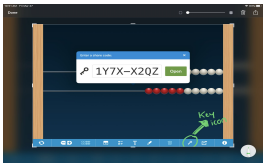
bridges intervention

What do you notice about this model?



Problem-Solving on the Number Rack

bridges intervention



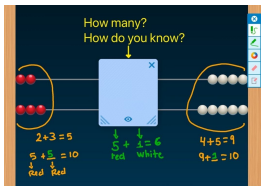
Click the key icon on the lower right and input the code in the picture.

Strengthening Connections

bridges intervention

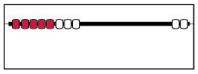
How does this example support:

- verbal
- quantitative
- symbolic



Number Racks

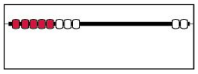
bridges intervention



"1, 2, 3, 4, 5, 6, 7, 8.
That's 8."

Number Racks

bridges intervention



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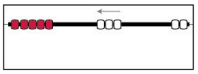
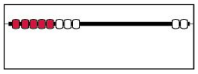


"First slide 5, and then
3 more makes 8."

Number Racks

bridges intervention



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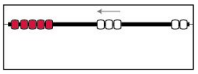

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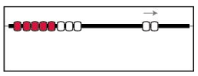

"I know it's 8 because
it's 2 less than 10."

Where Are the Math Practices?

bridges intervention

Habits of Mind of a Productive Mathematical Thinker	Reasoning and Explaining
MP.1 Make sense of problems and persevere in solving them.	**MP.2** Reason abstractly and quantitatively.
MP.6 Attend to precision.	**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.

Using the Number Rack

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Where Are the Math Practices?

bridges intervention

Habits of Mind of a Productive Mathematical Thinker	Reasoning and Explaining
MP.1 Make sense of problems and persevere in solving them.	**MP.2** Reason abstractly and quantitatively.
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	MP.7 Look for and make use of structure.
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Ten-Minute Break

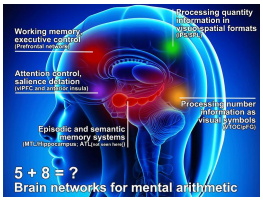
Multiplication & Division Arrays

Live Session 3

Jo Boaler's Research – Visual Mathematics

Our brains are made up of 'distributed networks,' and when we handle knowledge, different areas of the brain light up and communicate with each other. [...]

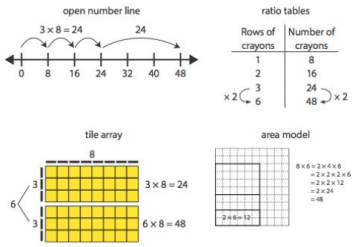
Neuroimaging has shown that even when people work on a number calculation, such as 12 × 25, with symbolic digits (12 and 25) our mathematical thinking is grounded in visual processing.



From *Seeing As Understanding: The Importance of Visual Mathematics for Our Brain and Learning* by Jo Boaler, Professor of Mathematics Education, with Lang Chen, Stanford Cognitive and Systems Neuroscience Lab, Cathy Williams & Montserrat Cordero, youcubed (retrieved from youcubed.org)

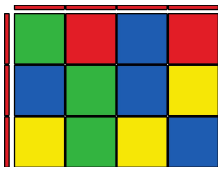
Visual Math = Accessible Math Instruction

bridges intervention



Dimensions & Area

bridges intervention



Dimensions & Area

bridges intervention

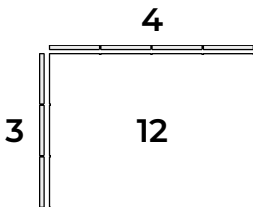
4

3

12

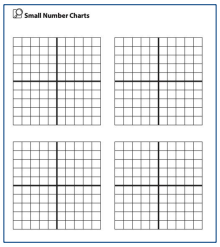
3 × 4 = 12

Dimensions & Area



$12 \div 3 = 4$

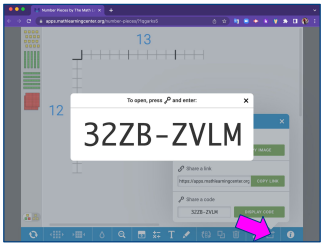
Representational with Grid Paper



Array Model Video

Base Ten Pieces

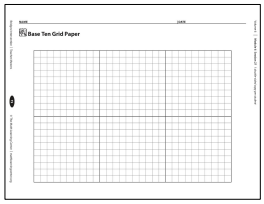
Base Ten Pieces



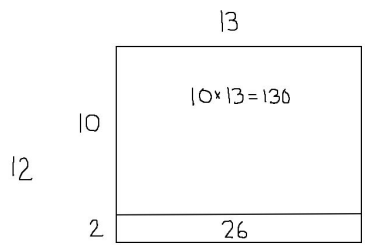
Using Grid Paper

Concrete → Representational → Abstract

What would 12x13 look like using grid paper?



Sketching Arrays



$$\begin{array}{r} 13 \\ \times\ 12 \\ \hline 26 \\ +\ 130 \\ \hline 156 \end{array}$$

Placement Assessment & Entry Points

Volume Placement Assessment

1. **Read directions for administering the Volume Placement Assessment.**
   - What did you learn?
   - What Visual Models will students use?
   - During which part of the assessment will they use these tools?

Placement Assessment & Scoring Guide

- **Read through the Placement Assessment with your students in mind.**
  - What concepts and skills are being assessed?
  - How does this Placement Assessment progress from Part 1 to Part 2 to Part 3?
- **Read through the scoring guide.**
- **Think about and discuss how the scoring guide helps determine a starting point.**

Placement Assessment Volume 6

- **Examine the student work.**
  - What does the student understand?
- **With a partner, score the student work using the scoring guide.**
  - What do you notice?
  - What do you wonder?
  - Where would you begin?
- **Debrief**

Entry Points

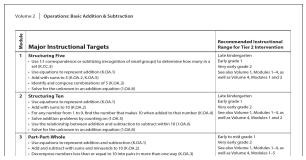
- Give students the gift of time with the models and strategies in Unit 1 and Sept. Number Corner.
- Use the support suggestions in the Bridges sessions, Work Places & Number Corner.
- Gather data from:
  - **Teacher recommendations**
  - **Unit Post-Assessments & Number Corner Checkups**
  - **Bridges Intervention Placement Assessments as needed**
- Be flexible! Work between volumes.
- By grade, by standard?

Entry Points

- Give students the gift of time with the models and strategies in Unit 1 of your core curriculum.
- Gather data from:
  - **Teacher recommendations**
  - **Unit Post-Assessments**
  - **District Assessments such as STAR or MAP**
  - **Bridges Intervention Placement Assessments as needed**
- Be flexible! Work between volumes.
- By grade, by standard?

Instructional Targets

Starting Points provides information about modules and suggested starting places based on specific grade-level standards and expectations.



Volume 2 | Operations: Basic Addition & Subtraction

Module	Major Instructional Targets	Recommended Instructional Range for Tier 2 Intervention
1	**Structuring Five** • Use 1:1 correspondence or subitizing (recognition of small groups) to determine how many to add (K.CC.5) • Use counters to represent addition (K.OA.1) • Add with sums to 5 (K.OA.2, K.OA.5) • Identify and compose combinations of 5 (K.OA.3) • Solve for the unknown in an addition equation (1.OA.8)	Late kindergarten Early grade 1 Very early grade 2 See also Volume 1, Modules 1–4, as well as Volume 4, Modules 1 and 2
2	**Structuring Ten** • Use equations to represent addition (K.OA.1) • Add with sums to 10 (K.OA.2) • Decompose numbers ≤ 10 (K.OA.3) at the number that makes 10 when added to that number (K.OA.4) • Solve addition problems by counting on (1.OA.5) • Use the relationship between addition and subtraction to subtract within 10 (1.OA.6) • Solve for the unknown in an addition equation (1.OA.8)	Late kindergarten Early grade 1 Very early grade 2 See also Volume 1, Modules 1–5, as well as Volume 4, Modules 1 and 2
3	**Part-Part-Whole** • Use equations to represent addition and subtraction (K.OA.1) • Add and subtract with sums and minuends to 10 (K.OA.2) • Decompose numbers less than or equal to 10 into pairs in more than one way (K.OA.3)	Early to mid grade 1 Very early grade 2 See also Volume 1, Modules 1–4, as well as Volume 4, Modules 1–5

Working by Standard

Grade 1

Skill		Volume 1	Volume 2	Volume 3	Volume 4
1.OA.1	Solve addition and subtraction story problems within 20				Modules 1–6
1.OA.5	Count on/count back to add & subtract	Modules 4–6	Modules 2, 3		Modules 3–5
1.OA.3 **1.OA.4** **1.OA.6**	Add & subtract within 20 using strategies and properties	Modules 4–6	Modules 2, 4–7	Module 2	Modules 3–6
1.OA.7	Understand that the equal sign indicates equivalence		Modules 5–7		
1.OA.8	Solve for the unknown in an addition or subtraction equation	Module 6	Modules 1–3, 5, 6		Modules 3–6
1.NBT.1	Count to 120, starting at any number less than 120	Modules 4–6			
1.NBT.1	Read & write numerals to 120	Modules 4–6		Modules 1, 3	
1.NBT.2	Understand 2-digit place value	Module 5		Modules 1, 2	
1.NBT.3	Compare 2-digit numbers; record the results with >, =, and <	Module 5		Module 1	
1.NBT.4	Add within 100	Module 5		Modules 2, 3	
1.NBT.5	Mentally find 10 more or 10 less than a 2-digit number			Modules 1, 2	

Set 1 or Set 2 Overview, Section 2: Navigating the Resources

Bridges Assessment Guide

bridges intervention

See the Assessment Guide for more help with support and intervention.

Bridges Intervention

Bridges Intervention offers resources for small-group instruction for Tier 2 students within the Response to Intervention (RtI) framework. Here are some specific suggestions for using Bridges Intervention at this point in the school year.

- Basic addition and subtraction facts: Volume 2, Modules 7–10
- Two-digit addition and subtraction: Volume 3, Modules 6–8
- Two-digit addition and subtraction in story problem contexts: Volume 4, Modules 7 and 8
- Reading, writing, and understanding numbers to 1,000: Volume 3, Module 9

See the Starting Points section of each volume's introduction for more detail about choosing the right materials for your students, and read the Bridges Intervention Overviews for additional information before using these resources.

Work Places

bridges intervention

Domain	Standard	Work Places
OA	Represent and solve problems involving multiplication and division.	
	3.OA.1	2A, 2B, 2C, 5A
	3.OA.2	5A, 5C
	3.OA.3	2A, 5A
	3.OA.4	Not addressed in Work Places
	Understand properties of multiplication and the relationship between multiplication & division.	
	3.OA.5	2C, 2D
	3.OA.6	5B, 5D
	Multiply and divide within 100.	
	3.OA.7	2C, 2D, 5B, 5C, 5D
	Solve problems involving the four operations, and identify and explain patterns in arithmetic.	
	3.OA.8	5A
	3.OA.9	1A

Assessment Tools for Data Collection

bridges intervention

Bridges Intervention Progress Monitoring, Volume 6 Module 2

SCHOOL:	TEACHER:	DATE:

	Items				TOTAL
	Written Progress Monitoring			Individual Interview	
ITEM DESCRIPTION >	1a–c. Multiplies single digits by 10; completes comparison statements to match multiplication equations.	2. Multiplies single digits by 10; multiplies 10 by single digits.	3. Fills in number words to make true statements about tens and hundreds.	4. Solves 2 pairs of related combinations: 3 × 3 and 3 × 30; 4 × 3 and 4 × 30. Agrees with the statement that the second combination in each pair is 10 times as much as the first, and builds a model or makes a sketch to prove it.	
ANSWERS >	a) fifty, 50 is 10 times as many as 5 b) seven, 7 is 10 times as many as 70 c) seventy, 70 is 10 times as many as 7	90, 150, 99, 60	three, seven, forty, sixty	3, 30, 12, 120; explanations will vary. Example 1: The student sets out 3 rows of 3 and 3 rows of 30 and counts out that 3 is 9 and that half of the first collection is 5, the total of the second collection is 50, and explains that 90 is 10 times as many as 9. Example 2: The student sketches a 3-by-3 array on the grid paper. Then she sketches a 3-by-30 array and points out that 3 is 10 times as many as the first and labels each part of the 3-by-3 sketch as a unit.	
CCSS >	3.OA.7, 4.OA.1	3.OA.7	4.NBT.1	3.OA.7, 4.OA.1, 4.NBT.1, 4.NBT.5	Total possible points:
POSSIBLE POINTS >	3	1	2	4	10
SCORING DETAILS >	1 pt. for each entirely correct response	1 pt. for all 4 correct	2 pts. 4 correct 1 pt. 2–3 correct 0 pts. 0–1 correct Do not penalize students for incorrect spellings.	2 pts. for each pair of combinations: 1 pt. for the correct answers to both combinations 1 pt. for a reasonable demonstration/explanation, supported by a model or a sketch, of the fact that the the second combination is 10 times as much as the the first combination	

Student Names	(1–3)	(1–1)	(0–2)	(0–4)	(2–10)
Pat	3	1	1	3	7
Pa-da	3	1	1	3	8
					0
					0

Reflections

Reflecting on the Goals

Participants will understand:

- The components and structure of Bridges Intervention volumes
- The research behind Bridges Intervention's development
- The role of questioning, visualization, wait time, and the eight Mathematical Practices in implementation
- The use of placement assessments, progress monitoring tools, and scoring guides

Reflection

What is one thing you learned during the workshop or one thing that was meaningful or important?

MLC Support

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800-575-8130
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