

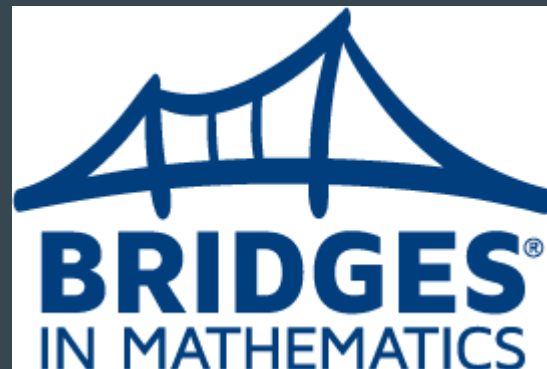
Math Program Implementation Highlights 2021-2022

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May 9, 2022

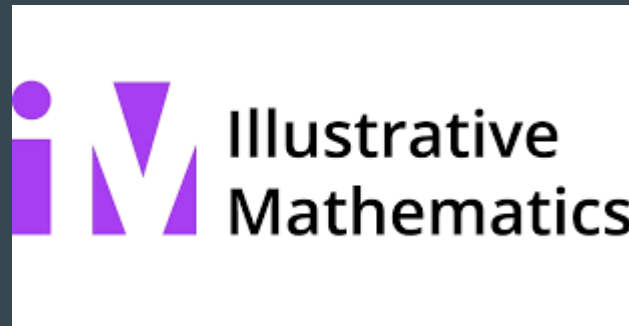
Bridges in Mathematics

Kindergarten - 5th grade



Illustrative Mathematics

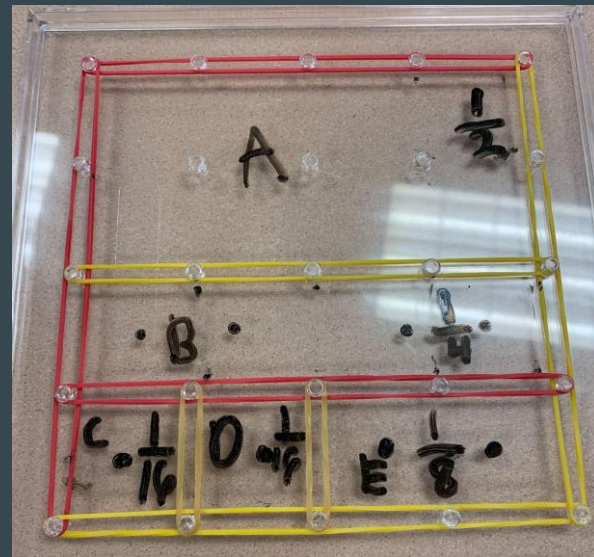
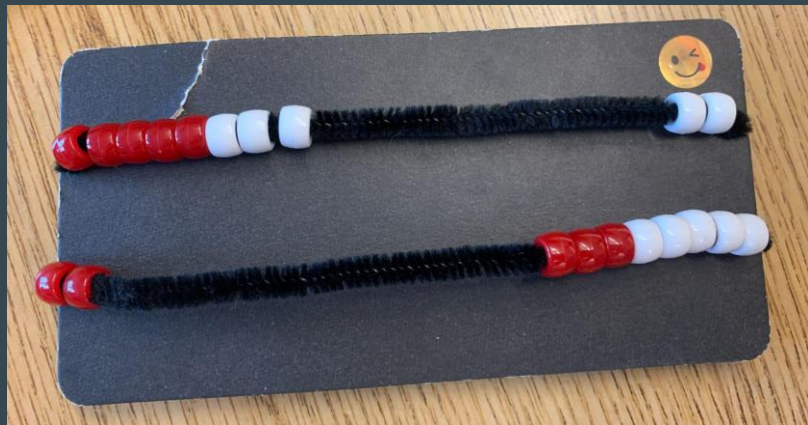
6th - 8th grade



Visual models

“Number racks are a great tool! The conversations that students have, have never been as strong.”

-elementary teacher



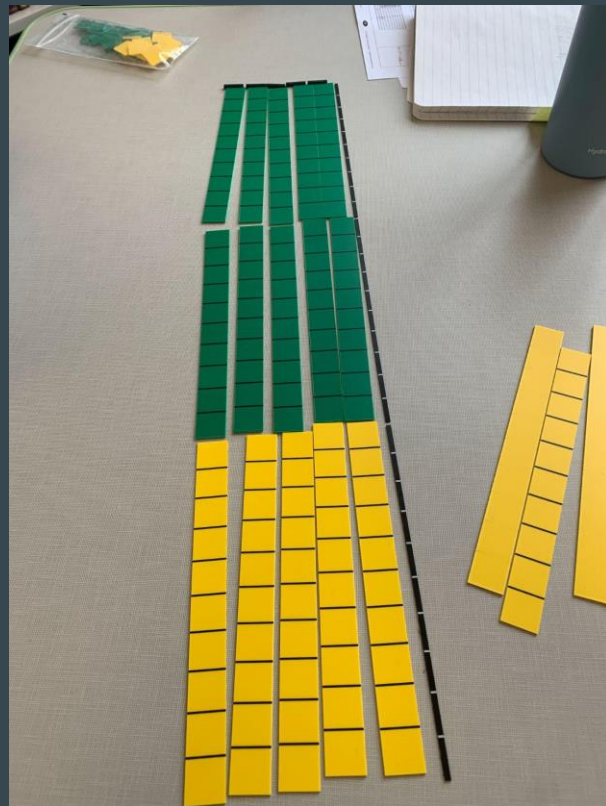
“Visuals are super duper helpful for me because I get overwhelmed so I like to draw pictures.”

-elementary student

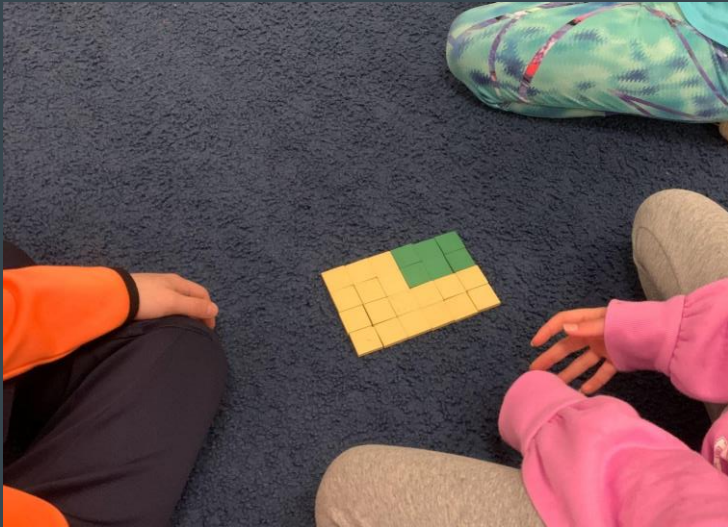
Visual models

“I overheard some students in the bus line the other day - they had a huge 16x17 popit and were trying to figure out how many pops were on it. They were breaking it into smaller arrays to figure it out - right there in the bus line! They are applying what they're learning.”

-elementary teacher



Visual models



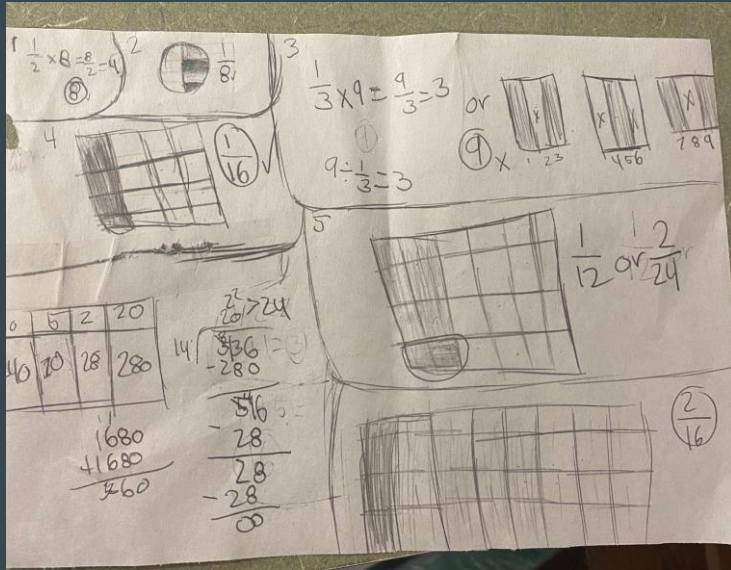
“I’ve been liking learning about division because I’ve been curious about it for awhile. My mom tried to teach me, but it didn’t make any sense. The way I learned in class really helped me. We drew circles and dots.”

-elementary student

Visual models

“Can I draw this to help me think about it?”

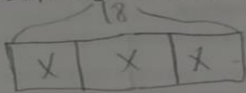
-middle school student



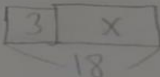
Visual Models

3. For each equation, draw a tape diagram that represents the equation.

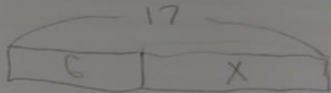
a. $3 \cdot x = 18$



b. $3 + x = 18$



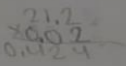
c. $17 - 6 = x$



(From Unit 6, Lesson 1.)

4. Find each product.

$(21.2) \cdot (0.02)$



$(2.05) \cdot (0.004)$

(From Unit 5, Lesson 8.)

5. For a science experiment, students need to find 25% of 60 grams.

- Jada says, "I can find this by calculating $\frac{1}{4}$ of 60."
- Andre says, "25% of 60 means $\frac{25}{100} \cdot 60$."

Do you agree with either of them?

“Having the workbooks is helpful because it gives them structure for note taking and staying engaged in the discussion.. The visual models connect explicitly to the mathematical concepts.”

-middle school teacher

Strategies

$$6 + __ = 10$$

“I figured this out because I counted 6 on my fingers and there were 4 sticking down, so I knew it was 4.”

-elementary
student

“ $8 + 9$ is 17. You just take one from the 8 and give it to the 9 (to make 10) then what you have left is 7. And $7 + 10$ is 17.”

-elementary student

“ $\frac{2}{4}$ is a half and $\frac{4}{8}$ is a half. So they're the same (equivalent).”

-elementary student

Strategies

“Problem strings help to bring out a lot of different strategies and allow all kids to show their thinking. They build upon previous knowledge, which allows them to build on what they know and extend their thinking.”

-middle school
teacher

“If drawing pictures doesn’t help me figure out a division problem, then I use multiplication or try something else.”

-elementary student

“At first I thought, ‘Uh oh! I don’t know how to do this!’ but then I made a chart and I was like, ‘Oh! I can do this!’”

-elementary student

Strategies - a middle school conversation...

“I like using numbers, not pictures.”

“It’s the opposite for me. The numbers confuse me, but the visuals help. The color-coding helps.”

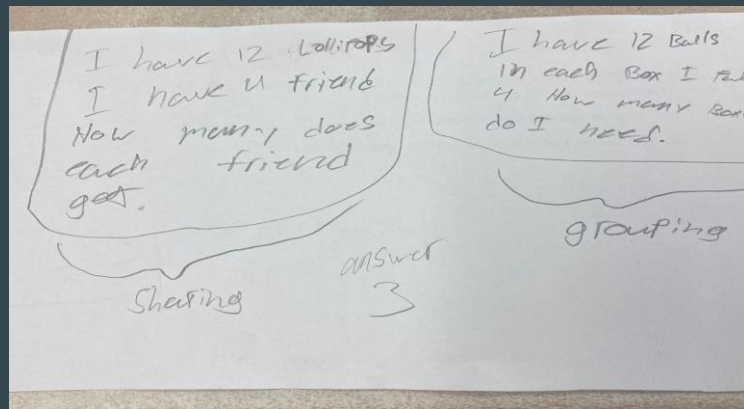
“I’m in the middle. I like to use the numbers and visuals together. I connect the numbers.”

-middle school students

Mathematical Progressions

“The natural progression of the program at first can be hard, but then as you follow along, you realize how much work kids did. The varied strategies they use are very powerful instead of one size fits all. They are able to build toward more efficient strategies.”

-middle school teacher



Making Sense of Problems and Persevering Through Them

“It feels easier than any other year. I got way more than I usually get and even if was something I thought I should have learned when i was younger, I was able to get it now.”

-middle school student

“Questions are challenging without being confusing. It’s an accessible challenge for all learners.”

-middle school teacher

Making Sense of Problems and Persevering Through Them

Lesson 4 Practice Problems

1. Select all the equations that describe each situation and then find the solution.

a. Kiran's backpack weighs 3 pounds less than Clare's backpack. Clare's backpack weighs 14 pounds. How much does Kiran's backpack weigh?

☒ $x + 3 = 14$
☒ $3x = 14$
☒ $x = 14 - 3$
☒ $x = 14 + 3$

$x = 11$ pounds

b. Each notebook contains 60 sheets of paper. Andre has 5 notebooks. How many sheets of paper do Andre's notebooks contain?

☒ $y = 60 + 5$
☒ $y = 5 \cdot 60$
☒ $\frac{y}{5} = 60$
☒ $5y = 60$

$y = 300$ sheets

2. Solve each equation.

a. $2x = 5$

$\frac{2x}{2} = \frac{5}{2}$
 $x = \frac{5}{2} = 2\frac{1}{2}$

b. $y + 1.8 = 14.7$

$y + 1.8 = 14.7$
 $-1.8 \quad -1.8$
 $y = 12.9$

c. $6 = \frac{1}{2}z$

$6 = \frac{1}{2}z$
 $\frac{6}{\frac{1}{2}} = \frac{\frac{1}{2}z}{\frac{1}{2}}$
 $12 = z$

d. $3\frac{1}{2} = \frac{1}{4} + w$

$3\frac{1}{2} = \frac{1}{4} + w$
 $3\frac{1}{2} - \frac{1}{4} = \frac{1}{4} + w - \frac{1}{4}$
 $3\frac{1}{4} = w$

e. $2.5t = 10$

$\frac{2.5t}{2.5} = \frac{10}{2.5}$
 $t = 4$

“If you don’t know what to do, you might try a different strategy. That could help.”

-middle school student

“I like to try big numbers because it helps my brain grow.”

-elementary student

“I’m much better at regrouping this year.”
-elementary student

Making Sense of Problems and Persevering Through Them

“The program naturally lends itself to open-ended questions which leads to deeper thinking.”

-elementary teacher

“Division is hard for me. I’m still working on it.”

-elementary student

“It really helps that the problems are connected to the real world.”

-middle school student

4.3: Choosing Equations to Match Situations
Circle all of the equations that describe each situation. If you get stuck, consider drawing a diagram. Then find the solution for each situation.

1. Clare has 8 fewer books than Mai. If Mai has 26 books, how many books does Clare have?

☒ $26 - x = 8$
☐ $x = 26 + 8$
☒ $x + 8 = 26$
☒ $26 - 8 = x$
 $x = 18$

$x + 8 = 26$
 $-8 -8$
 $x = 18$

2. A coach formed teams of 8 from all the players in a soccer league. There are 14 teams. How many players are in the league?

☐ $y = 14 \div 8$
☒ $\frac{y}{8} = 14$
☒ $\frac{1}{8}y = 14$
☒ $y = 14 \cdot 8$
 $y = 112$

$\frac{1}{8}y = 14$
 $\frac{1}{8}y \cdot 8 = 14 \cdot 8$
 $y = 112$

$14 \cdot 8 = \frac{14}{1} \cdot \frac{8}{1} = \frac{112}{1} = 112$

3. Kiran scored 223 more points in a computer game than Tyler. If Kiran scored 409 points, how many points did Tyler score?

☒ $223 = 409 - z$
☐ $409 - 223 = z$
☐ $409 + 223 = z$
☒ $409 = 223 + z$
 $z = 186$

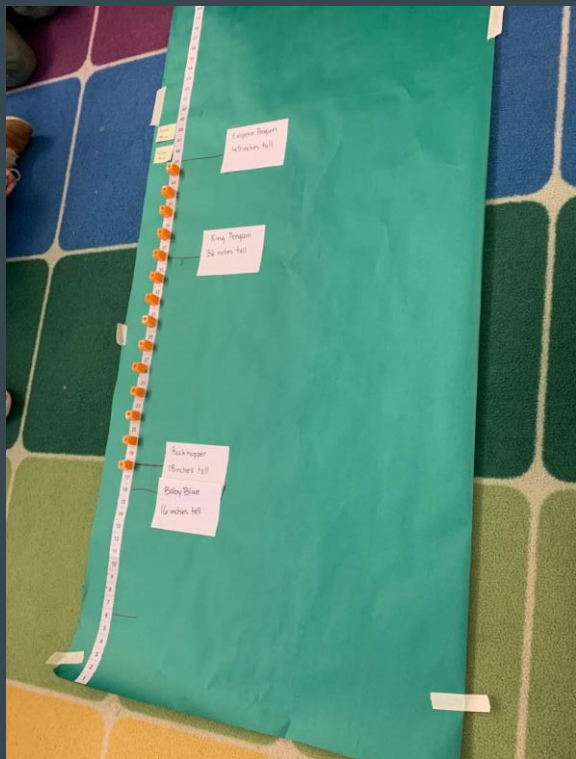
$409 = 223 + z$
 $-223 -223$
 $186 = z$

4. Mai ran 27 miles last week, which was three times as far as Jada ran. How far did Jada run?

☒ $3w = 27$
☐ $w = \frac{1}{3} \cdot 27$
☒ $w = 27 \div 3$
☐ $w = 3 \cdot 27$
 $w = 9$

$3w = 27$
 $\frac{3w}{3} = \frac{27}{3}$
 $w = 9$

Sharing thinking

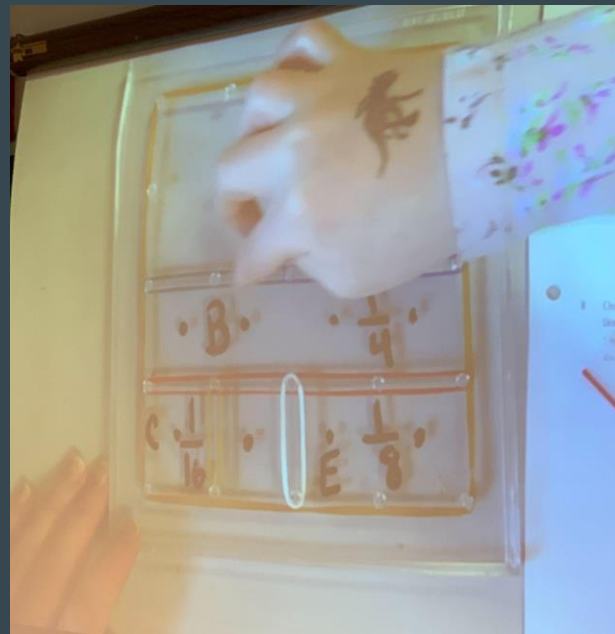


“I’ve always had lots of math talk in my classroom, but having the support and structure for student discussion from the program has helped me reach more students. There is explicit teaching around explaining your thinking.”

-elementary teacher

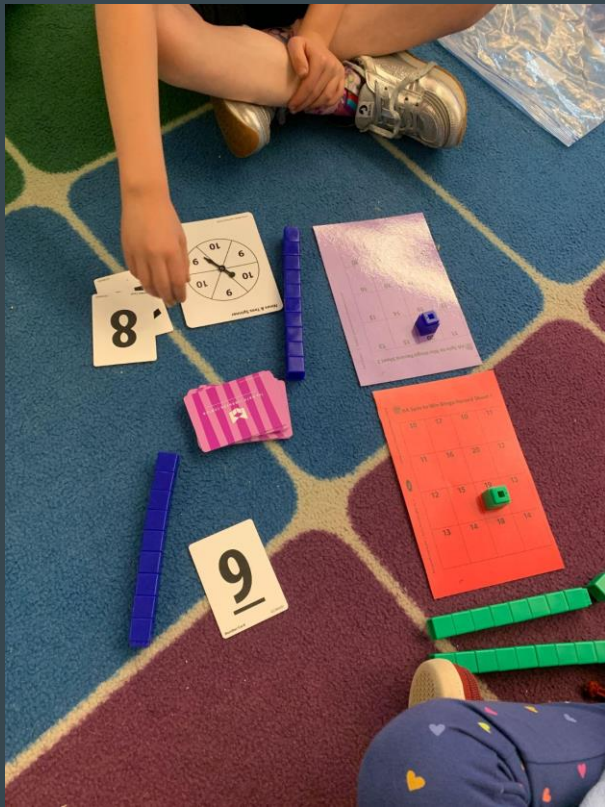
Student engagement

“Discussions happen everyday, exploring the reasoning behind the math - the “why”. All students can add to the conversation, no matter their math knowledge. That’s what I love about it.”
-elementary teacher



“It’s one of the better math years I’ve had because there’s something for everybody.”
-middle school student

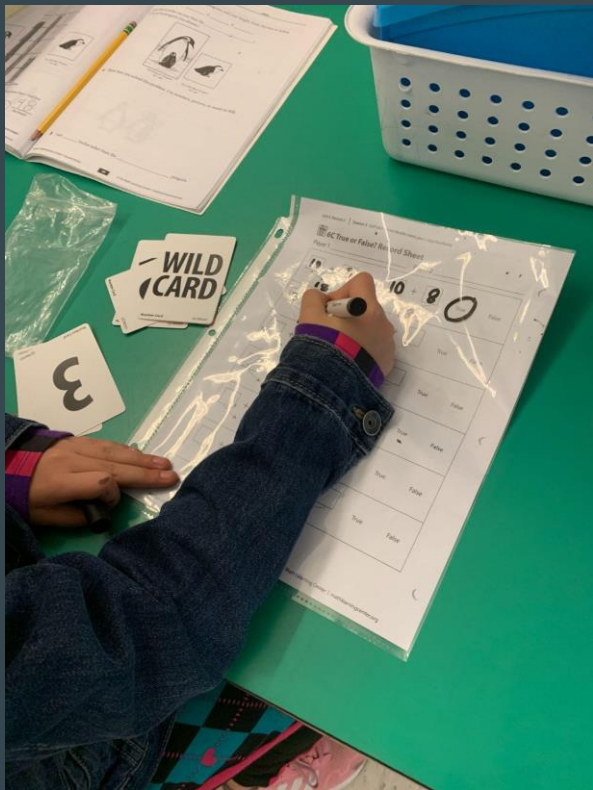
Work Places and hands-on activities



“Work Places are a good challenge and are enjoyable.”
-middle school teacher

“I like doing the games because you’re still doing math, but in a really fun way.”
-elementary student

Work Places and hands-on activities



“I like working with a partner because if you don’t know something, you can just ask your partner!”...

“...Yeah! Like how she’s teaching me this game!”
-elementary students

Work Places and hands-on activities



“I like math center time (Work Places) because you get to choose a math game that you want to do.”

-elementary student

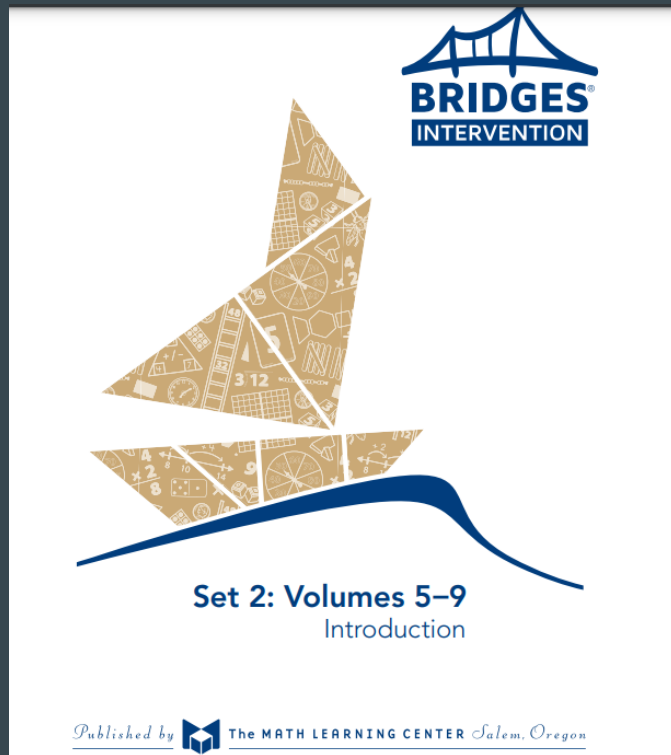
“The activities that IM includes gets the students more engaged. For example making drink mixes for ratios was a real life example that was age appropriate and relevant to their lives and the math

-middle school teacher

Intervention

“It is great to have a research-based, systematic math intervention connected to our core program. We’ve seen student success and rapid growth in number sense and fluency.”

-middle school teacher



Last Thoughts

“Thank you for investing in the kids - it’s already paying dividends.”

-elementary teacher

“Math is my favorite subject because I understand it.”

-middle school student

“The first year is always an experiment, but there has been a lot of learning. There is distributed practice, and as we progress through years, it will get better and better. We are learning to trust the distributed practice.”

-middle school teacher