



KENTUCKY CENTER
FOR MATHEMATICS

Constructing Number Sense

Fluency within 100

Welcome!

Your host:

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Kentucky Center for Mathematics

- KCM seeks to advance the knowledge and practice of effective mathematics teaching and learning, encompassing early childhood through adult education.
- KCM provides and develops statewide leadership, facilitate professional learning experiences, and cultivate innovation with the aim of improving mathematics education, practice and policy.

KCM Yearly Numbers

29 math courses taught

73 cohorts of teachers

Over 1000 KY teachers
attending

Over 182 days of
math professional learning

Over \$150,000 of math
materials directly in the hands
of teachers

109 school districts

300 KY schools

100 principals trained

>5000 students impacted

KCM Annual Math Conference
national prominence

Closing the achievement gap
for our KY math students.

Math Achievement Fund
intervention students (3000)
had an average of 10 percentile
points gained as a direct result
of KCM trained math
interventionists.

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www.kentuckymathematics.org



HOME

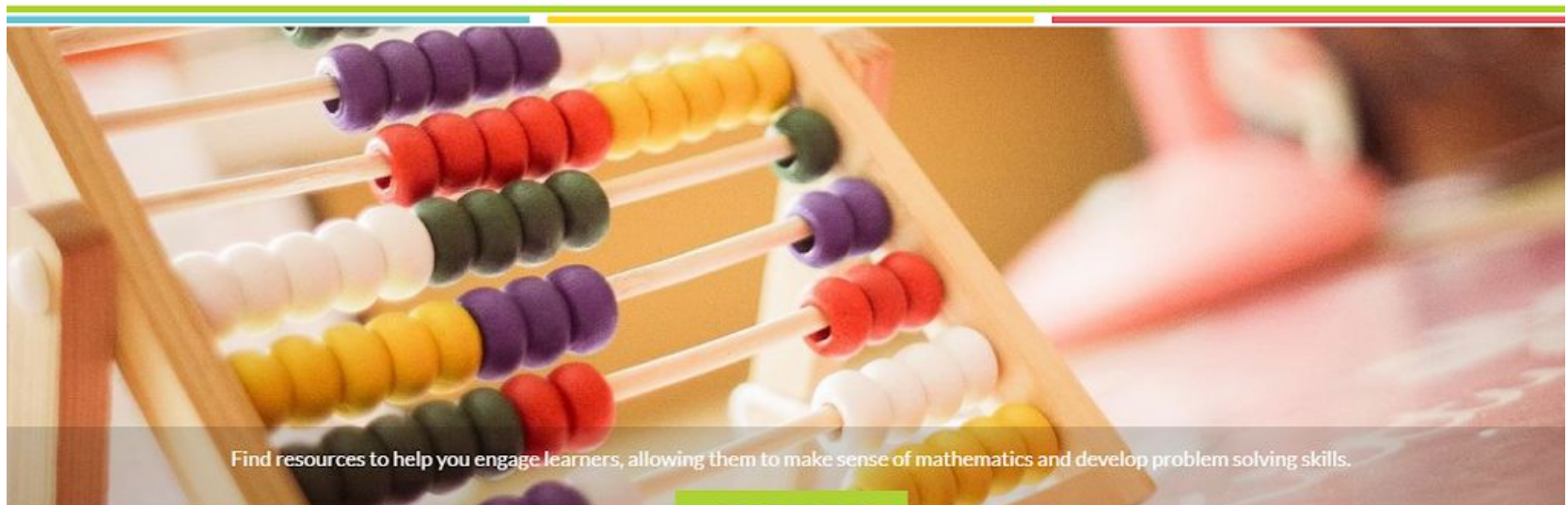
MAF

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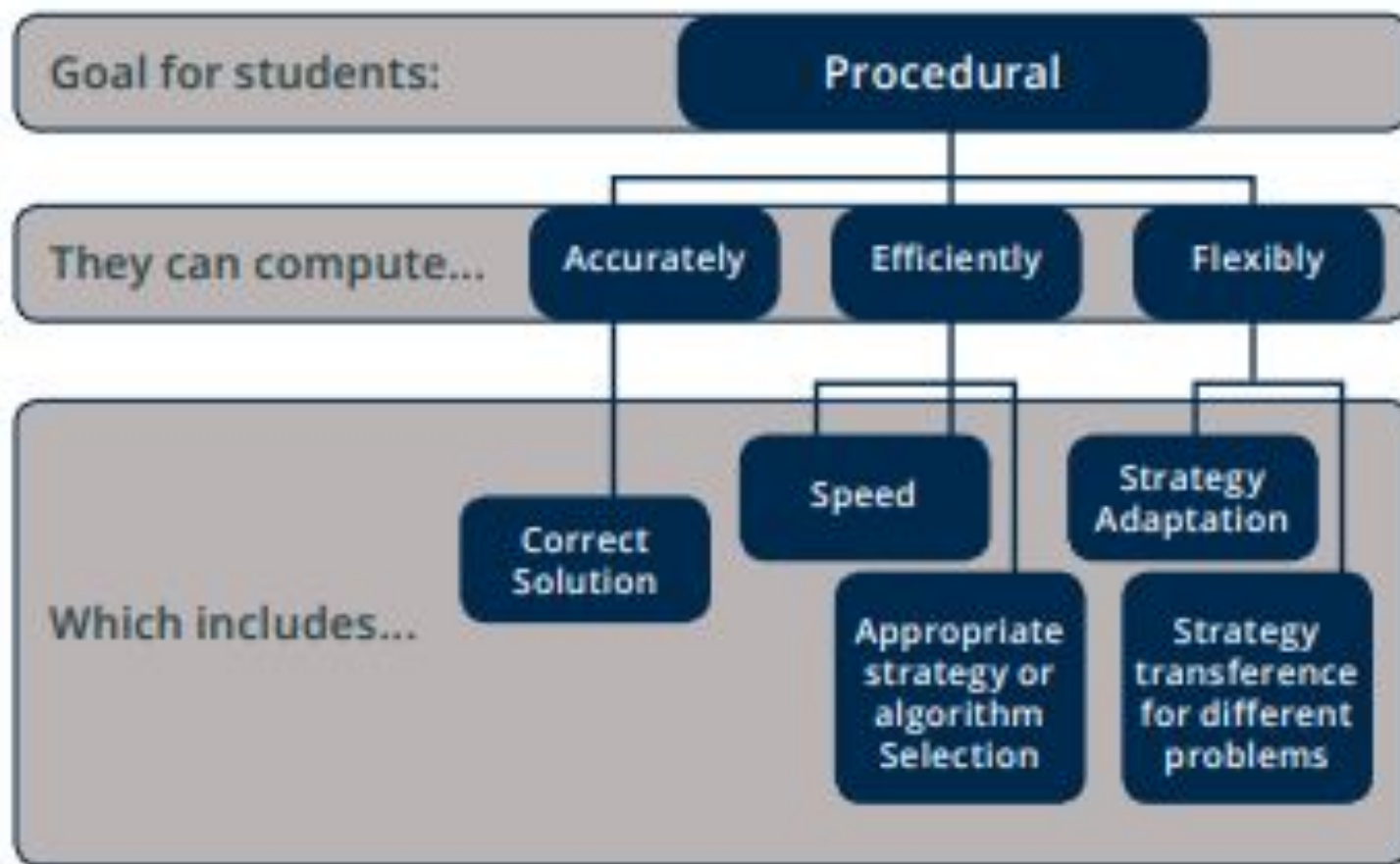
Find resources to help you engage learners, allowing them to make sense of mathematics and develop problem solving skills.



Today's Agenda

- Where is the Research?
- Looking at where the standards live
- Video of using the Math Rack
- Move Along
- Ten More or Ten Less
- Make My Number
- Questions or comments

Research



Source: Bay-Williams, J. M., & Stokes Levine, A. (2017). *The Role of Concepts and Procedures in Developing Fluency*. In D. Spangler & J. Wanko (Eds.) *Enhancing Professional Practice with Research Behind Principles to Actions*. Reston, VA: NCTM

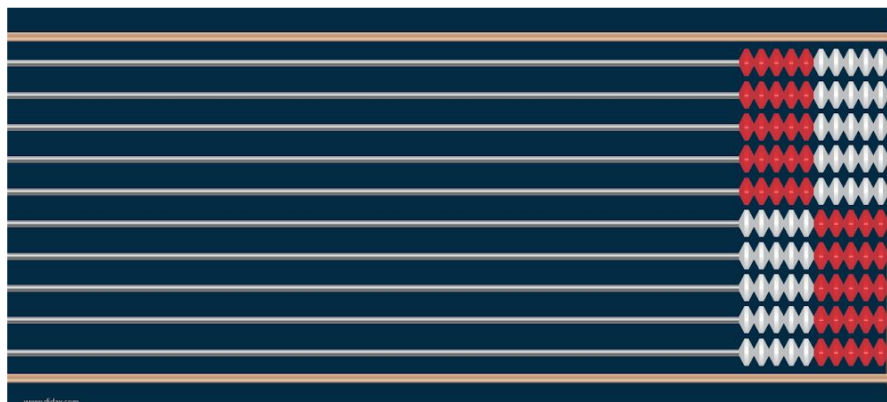
What the research says...

History of Manipulatives

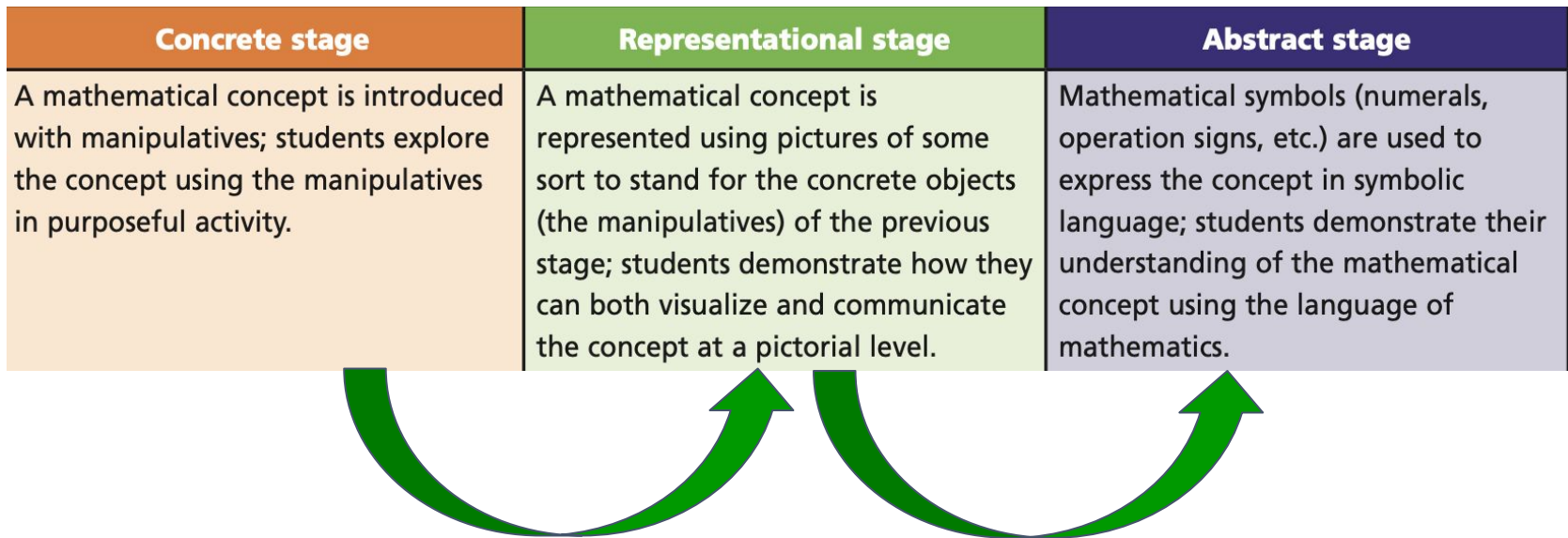
- The ancient Civilizations of Asia used counting boards.
- The ancient Romans modified counting boards to create the world's first abacus.
- The Chinese abacus, which came centuries later, may have been an adaptation of the Roman abacus.
- Mayans and Aztecs both had counting devices that featured corn kernels strung on string or wires that were stretched across a wooden frame.
- The late 1800's saw the invention of the first true manipulatives for teaching mathematical concepts.
- Since the early 1900's, manipulatives have come to be considered essential in teaching mathematics at all grade levels.

Research continued:

- To gain a deep understanding of mathematical ideas, students need to be able to integrate and connect a variety of concepts in many different ways. Clements (1999) calls this type of deep understanding “Integrated-Concrete” knowledge.
- The effective use of manipulatives can help students connect ideas and integrate their knowledge so that they gain a DEEP understanding of mathematical concepts.



Moving students through the stages of mathematics

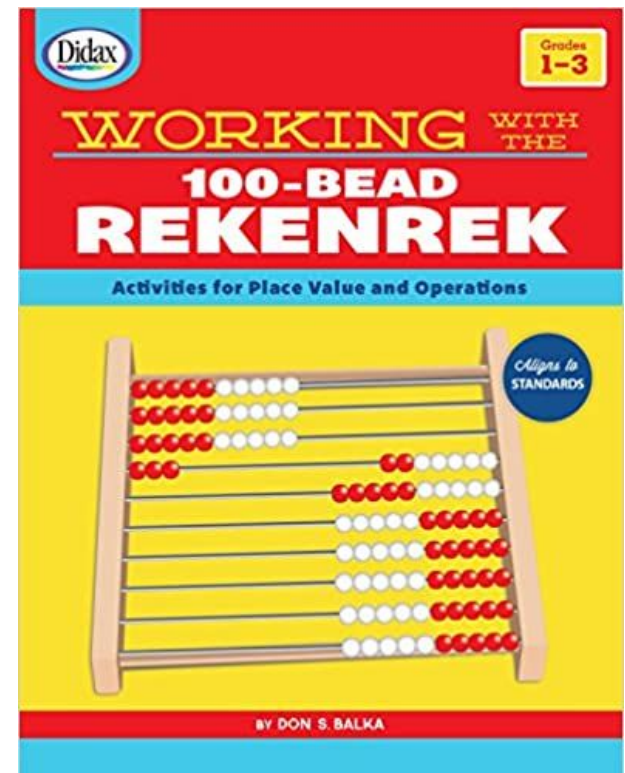


Standards we will cover today

KY.2. NBT.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations and/or the relationship between addition and subtraction.

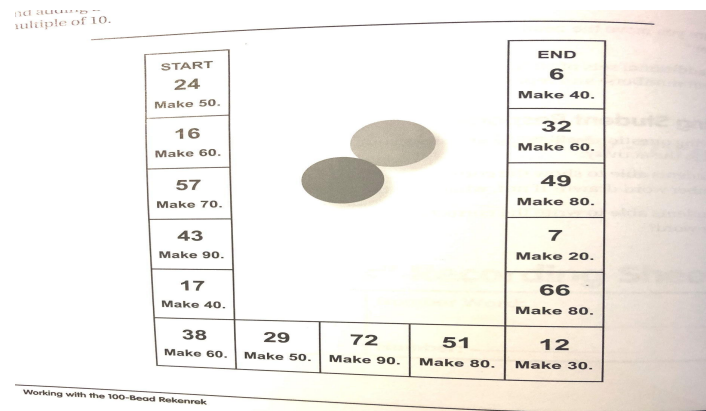
KY.2.NBT.9 Explain why addition and subtraction strategies work, using place value and the properties of operations.

Introduction to the Rekenrek



Move Along

- Move Along is an addition activity, not a game. You are going to place your marker on the START space of your activity sheet.
- In the first START space, you see '24 Make 50.' Use your Rekenreks to make 24 first. Then figure out what you need to do to make 50.
- On a separate sheet of paper, write a number sentence that shows your addition.
- Then move to the next space.



[Move Along](#)

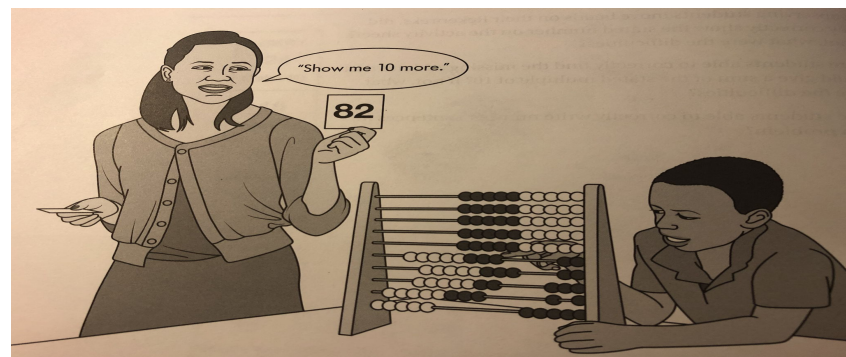
Ten More or Ten Less

“I’m going to show you a Number Card between 20 and 100.

When I do, I want you to show me 10 more or 10 less than this number on your Math Rack.”

When you finish, write a number sentence comparing the two numbers. Use the correct symbol for greater than or less than.

Continue the same way for different numbers.



<http://www.didax.com/apps/100-bead-rekenrek/>

Make My Number



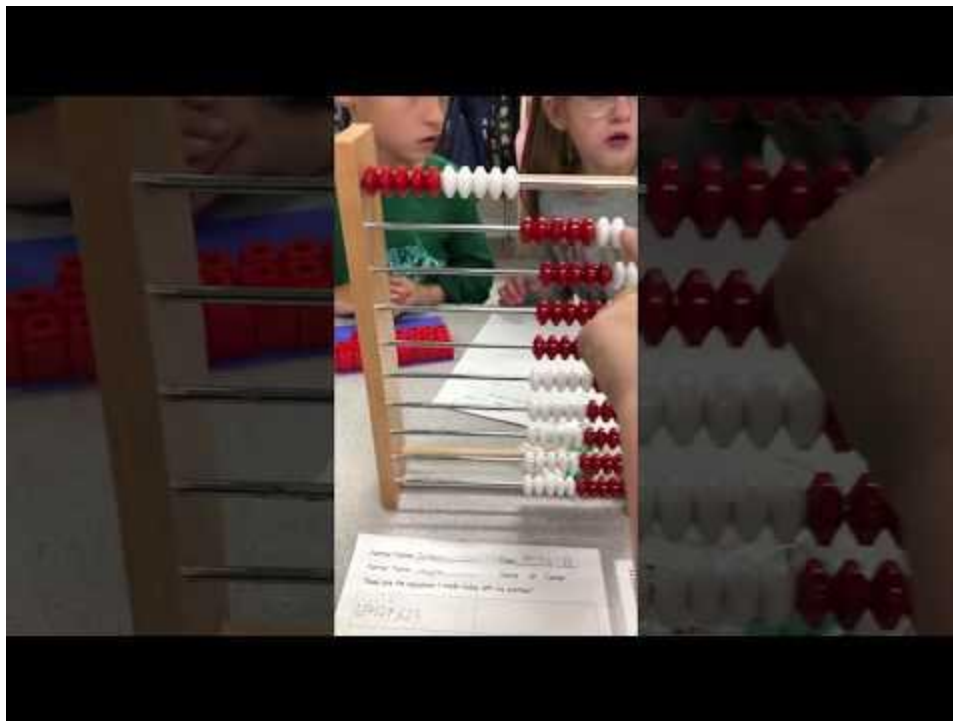
Read a "Make My Number Card."

The child will start with 15 (for example.) Ask the child to make it 40.

Pay attention how the child builds 40 from 15. Ask the child "How can you add in the least amount of pushes?"

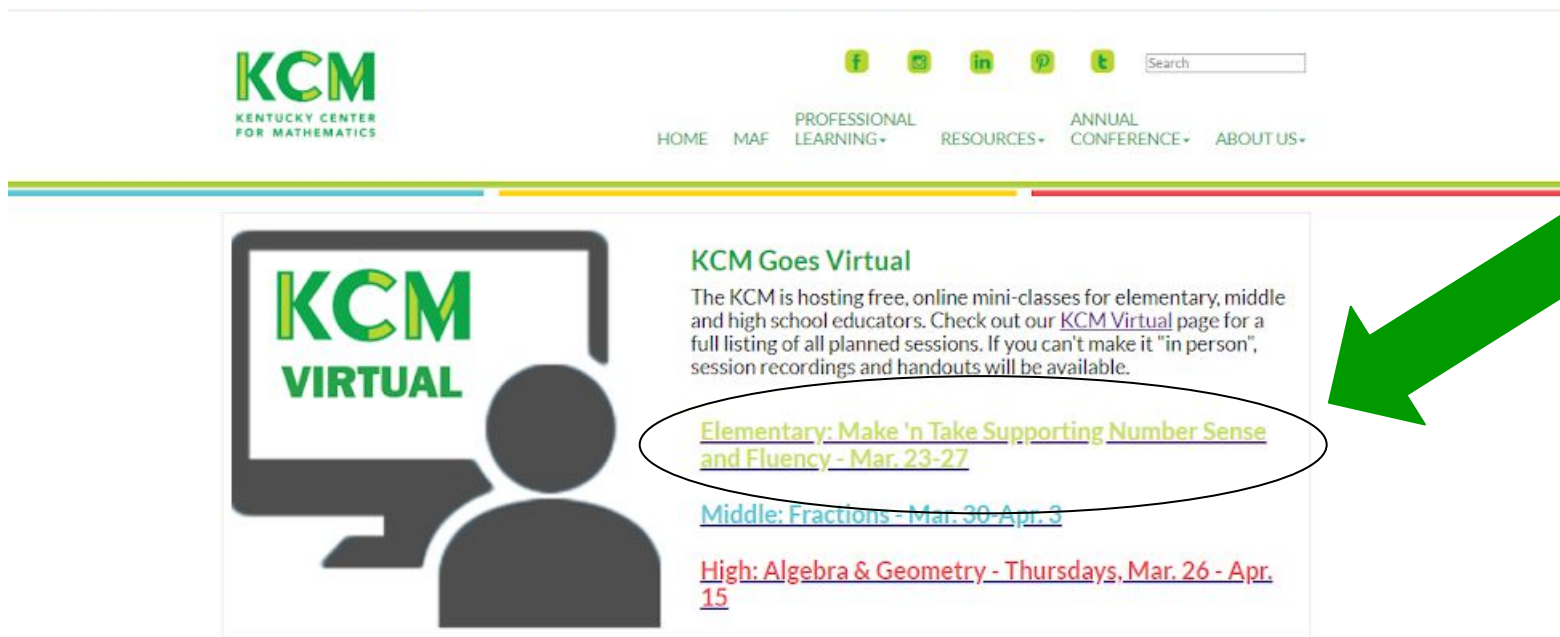
Write a number sentence to make the operation just performed.

Second grade student using math rack



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KCM Goes Virtual

The KCM is hosting free, online mini-classes for elementary, middle and high school educators. Check out our [KCM Virtual](#) page for a full listing of all planned sessions. If you can't make it "in person", session recordings and handouts will be available.

[Elementary: Make 'n Take Supporting Number Sense and Fluency - Mar. 23-27](#)

[Middle: Fractions - Mar. 30-Apr. 3](#)

[High: Algebra & Geometry - Thursdays, Mar. 26 - Apr. 15](#)

Upcoming Virtual Professional Learning

Week of March 23-27, 2020 2:00 -2:30 pm EST



Virtual Make 'n Take

With KCM Regional Consultants

Monday, March 23rd Fluency within 10
<https://nku.zoom.us/j/557268655>

Tuesday, March 24th Fluency within 20
<https://nku.zoom.us/j/827307599>

Wednesday, March 25th Fluency within 100
<https://nku.zoom.us/j/310467581>

Thursday, March 26th Fluency with x and /
<https://nku.zoom.us/j/290819568>

Friday, March 27th More fluency with x and /
<https://nku.zoom.us/j/311187020>

KCM is here to support teachers!

Contact me:

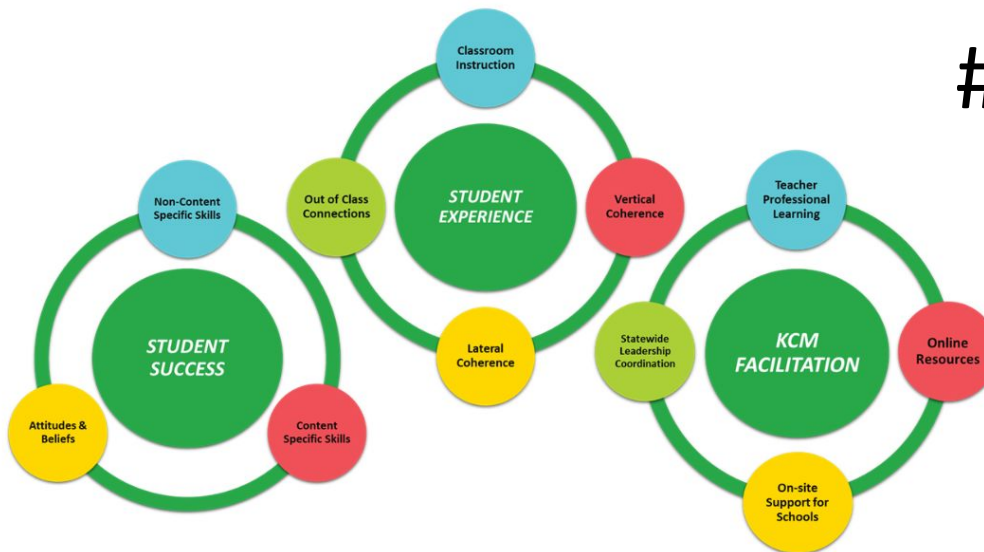
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KCM Support for Educators

- Kentucky Center for Mathematics is here to support our KY educators
- We aspire to be a national leader in mathematics education



#BetterTogether
#TeamKCM