Welcome!

Your host

Dee Crescitelli

Director
Kentucky Center for Mathematics
cresciteld1@nku.edu
KCM Website

www.kentuckymathematics.org

Good News!
The KCM is hard at work to ensure Kentucky teachers have access to innovative professional development from home.

Through the newly launched KCM Virtual site, mathematics teachers from all grade levels will have access to live zoom meetings, video records and corresponding materials. Read more.

Elementary: Make 'n Take Supporting Number Sense and Fluency - Mar. 23-27
Middle: Fractions, Decimals & Percents - Mar. 30-Apr. 3
High: Algebra & Geometry - Thursdays, Mar. 26 - Apr. 16
KCM Favorite

Mine is well-loved!
Why I Love This Book

How many Student Math Practices can you name off the top of your head?
Why I Love This Book

Avenues of Thinking!

➔ MP1 Make Sense of Problems & Persevere in Solving Them

➔ MP2 Reason Abstractly & Quantitatively

➔ MP7 Look for & Make Use of Structure

➔ MP8 Look For & Express Regularity in Repeated Reasoning
Why I Love This Book

MP1
Make Sense of Problems and Persevere in Solving Them

MP2
Quantities and Relationships

MP3 MP4 MP5 MP6

MP4 MP5

MP5

MP6

MP7
Structure

MP3 MP4 MP5 MP6

MP8
Repetition

MP3 MP4 MP5 MP6
About the Authors

Grace Kelemanik

Amy Lucenta

Susan J. Creighton
Why Routines?
Core Elements

1) articulation of a math practice goal
2) individual think time
3) partner work
4) full-group discussion of ideas
5) final math practice reflection
6) access through multiple modalities
7) liberal use of math practice-focused prompts
Guiding Principles

“This focus on mathematical reasoning brings to life two of our guiding principles for math practice development: the regular use of cognitively demanding work, and fostering a view of mathematics as interconnected, making sense and doable with effort.”

(p. 22)
Routines for Reasoning

MP2: Reasoning Abstractly and Quantitatively
Routines for Reasoning

MP7: Look For and Make Use of Structure
Routines for Reasoning

1. **Launch Routine**
   - **THINKING GOAL**: Reason with repetition

2. **Notice Repetition**
   - **Individual Think Time**
   - **Pairs**
   - **Share**

3. **Generalize Repetition**
   - **Individual Think Time**
   - **Pairs**

4. **Discuss Generalization**
   - **Individual Think Time**
   - **Pairs**
   - **Share, Discuss, & Annotate**

5. **Reflect on Your Thinking**
   - **Individual Write Time**
   - **Pairs**
   - **Share & Record**

**MP8:** Recognize and Express Regularity in Repeated Reasoning
Routines for Reasoning

Enter a Problem and Sustain Thinking

3 Reads

1. Launch Routine
   THINKING GOAL
   Read like a mathematician

2. First Read: Understand the Context
   Individual Think Time
   Share & Record

3. Second Read: Interpret the Question
   Individual Think Time
   Pairs
   Share, Discuss, & Record

4. Third Read: Identify Important Information
   Pairs
   Share, Discuss, & Record

5. Reflect on Your Thinking
   Individual Write Time
   Pairs
   Share & Record
Essential Instructional Strategies

- Ask-yourself Questions
- Annotation
- Sentence frames and sentence starters
- The Four Rs – repeat, rephrase, reword, record
How do you use the 4Rs?

If it’s possible that not everyone heard a response...

...then the teacher has one or two students repeat what was said.

If
- the idea is a key part of the lesson, or
- The teacher wants to check to see if students understand what was said, or
- The teacher isn’t sure what a student has responded...

...then the teacher has a few students rephrase the idea using different words.
How do you use the 4Rs?

If there is specific language students can use to express this idea more precisely...

...then the teacher prompts students to **reword** the idea using more precise language.

If there are important ideas, words, or images being shared that students would benefit from seeing visually...

...then the teacher should **record** these ideas to help students process or remember key concepts and participate in the conversation.
And the 5th strategy is …
Make it Routine!
Teaching students to think and reason is perhaps the greatest challenge we face as math educators, and these routines provide clear pathways to do so.
Handouts

Making Sense of the Math Practices

**Use these practices to ENTER A PROBLEM**

- **MP1:** Make sense of problems and persevere in solving them
- **MP2:** Reason abstractly and quantitatively
- **MP3:** Construct viable arguments and critique the reasoning of others
- **MP4:** Model with mathematics
- **MP5:** Use appropriate tools strategically
- **MP6:** Attend to precision
- **MP7:** Look for and make use of structure
- **MP8:** Look for and express regularity in repeated reasoning

Adapted from: Routines for Reasoning: Fostering the Mathematical Practices in All Students
Handouts

All of these are part of your handout packet!
KCM Favorite

Heinemann

Amazon
KCM Favorite

APRIL 20 – 24
2:00-2:30 PM EST

KCM Favorites!

Monday, April 20 - Thinking Together- 9 Beliefs for Building a Mathematical Community

Tuesday, April 21 - Routines for Reasoning: Fostering the Mathematical Practices in All Students

Wednesday, April 22 - Developing Number Knowledge

Thursday, April 23 - Math Fact Fluency

Friday, April 24 - Taking Action Implementing Effective Mathematics Teaching Practices Grades 9-12
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KCM is here to support you!

Contact me

Dee Crescitelli
Director
Kentucky Center for Mathematics
cresciteld1@nku.edu