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FOR MATHEMATICS

KCM Favorites Implementing Effective Teaching Practices Grades 9-12

Welcome!

Your host

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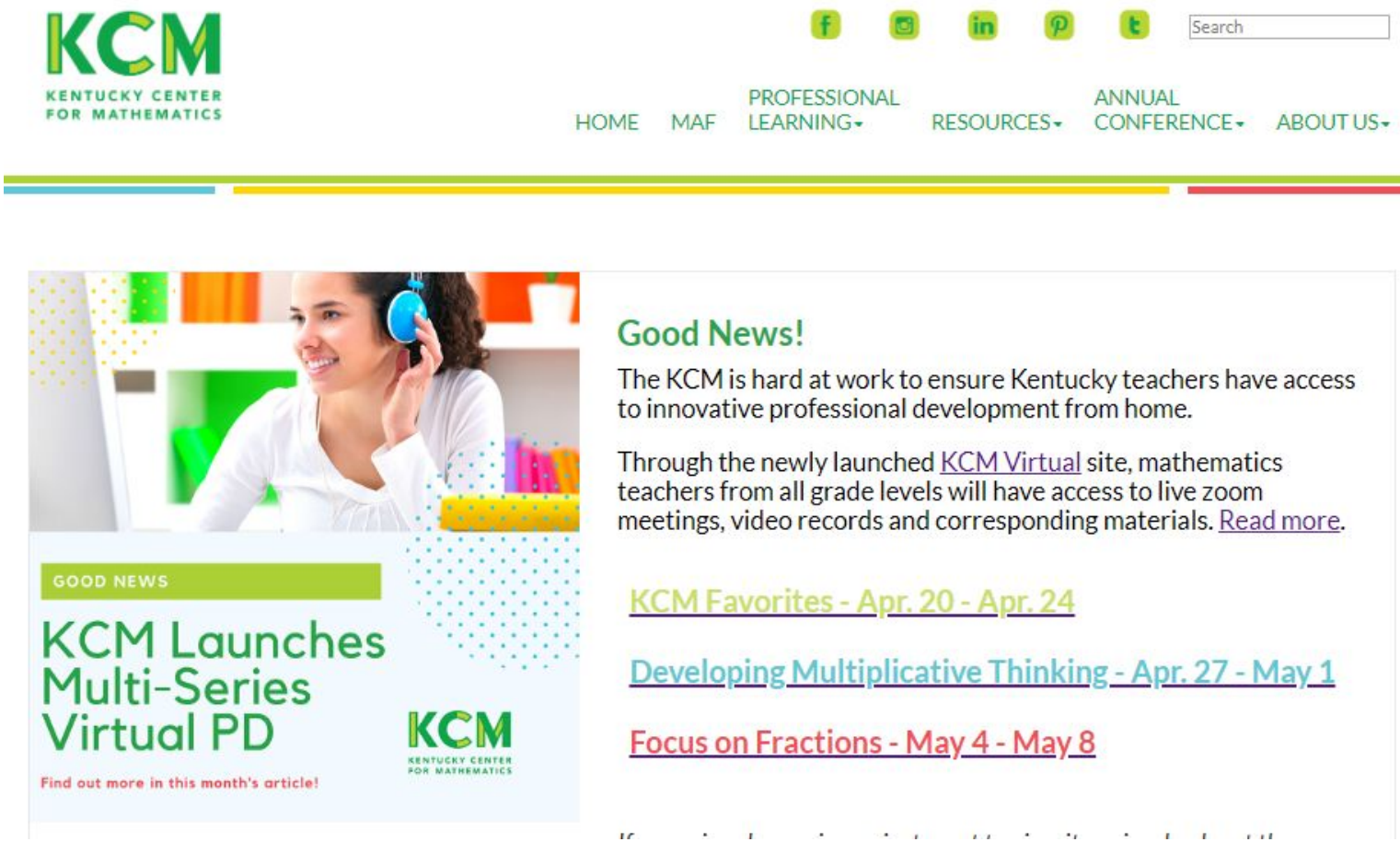

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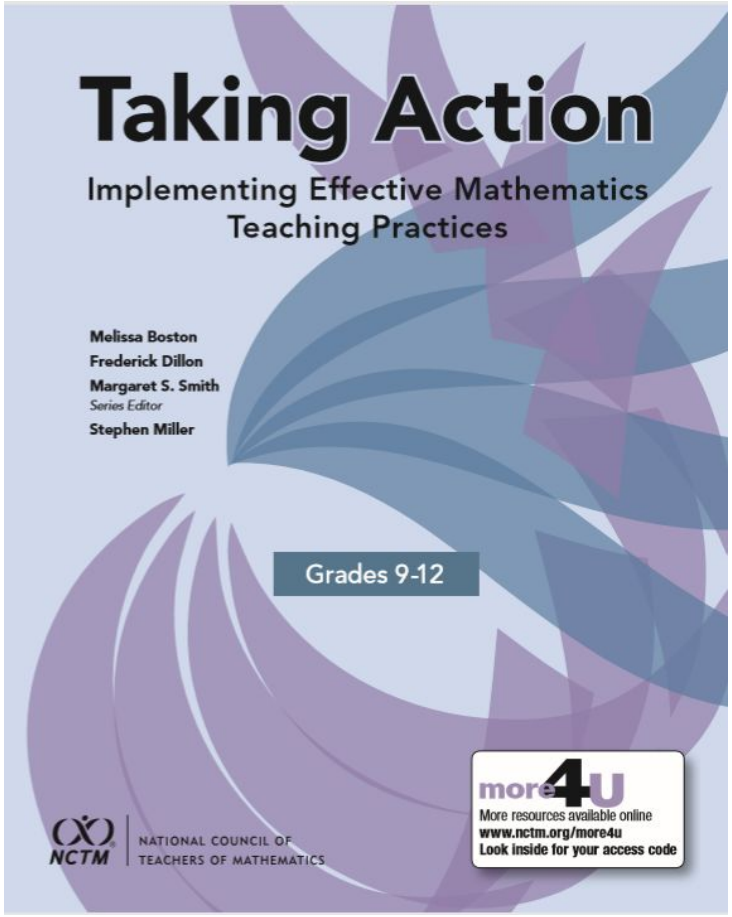

Boston, M., Dillon, F. L., Smith, M. S., & Miller, S. (2017). Taking action: Implementing effective mathematics teaching practices in grades 9-12. Reston, VA: National Council of Teachers of Mathematics.

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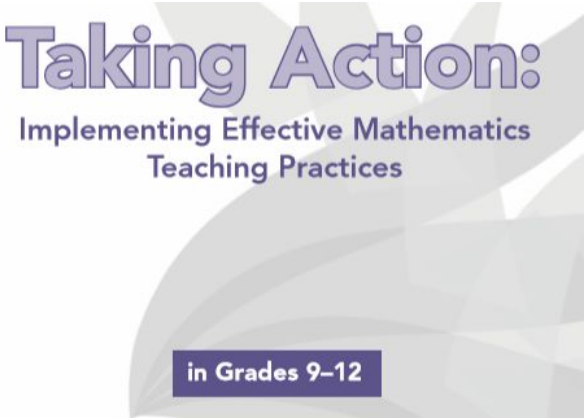
Why I Love This Book

- ➔ Describes *Mathematics Teaching Practices* through lens of secondary practitioner
- ➔ Provides specific suggestions on *how* teachers can implement practices in secondary classrooms
- ➔ Actively engages readers with specific artifacts of classroom practice (e.g., mathematics tasks, narrative cases of classroom instruction, video clips, student work samples).



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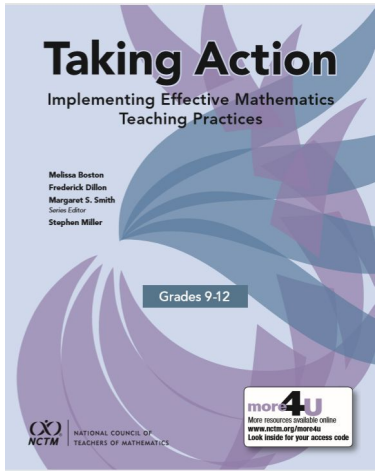
About the Authors

Melissa Boston Frederick Dillon Margaret Smith Stephen Miller



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Mathematics Teaching Practices

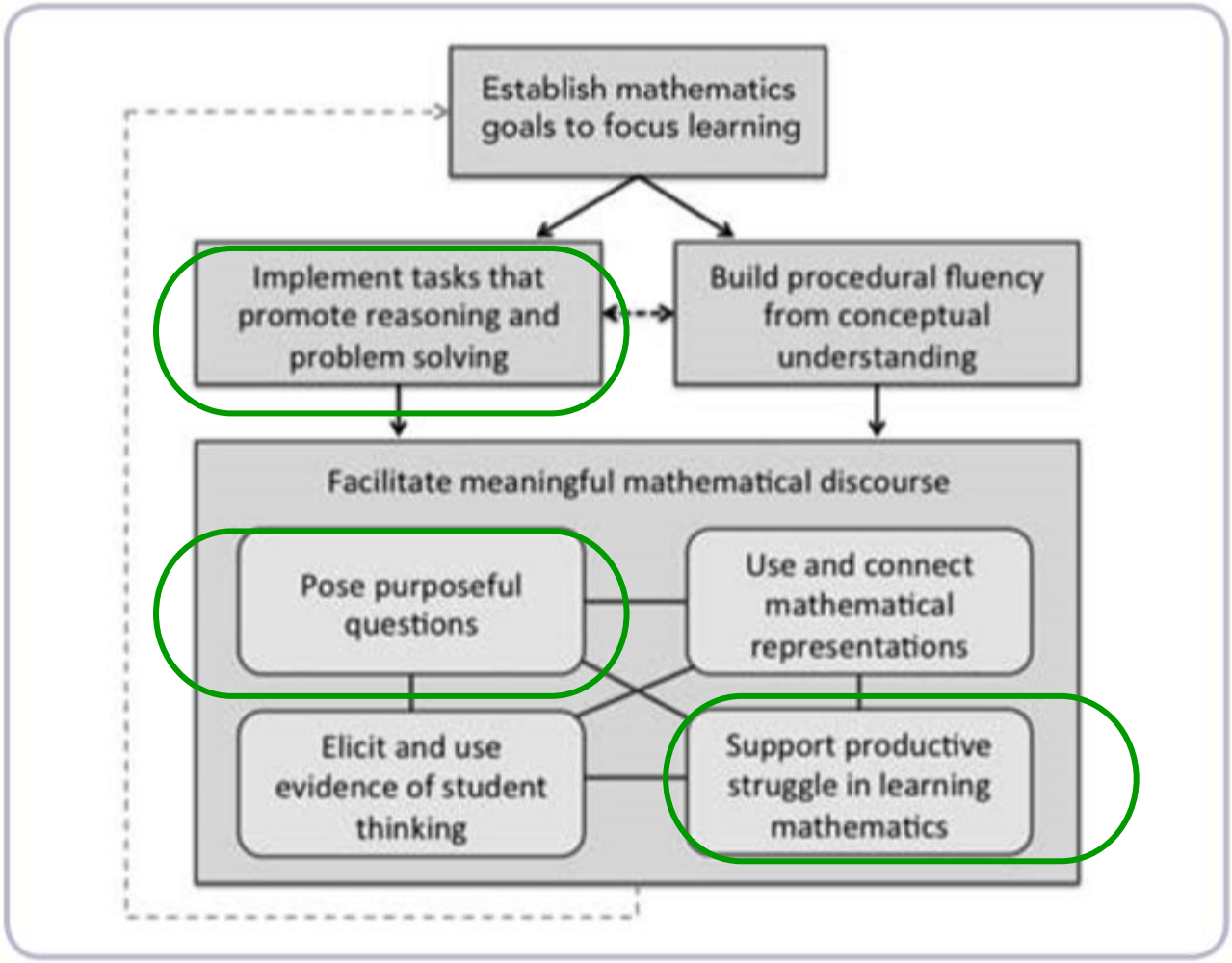

Fig. 10.1. A framework for mathematics teaching that highlights the relationships between and among the eight effective teaching practices

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Key Features

Analyzing Teaching and Learning (ATL) activities invite the reader to actively engage with specific artifacts of classroom practice (e.g., mathematics tasks, narrative cases of classroom instruction, video clips, student work samples).

Taking Action in Your Classroom provides specific suggestions regarding how a teacher can begin to explore specific teaching practices in her or his classroom.

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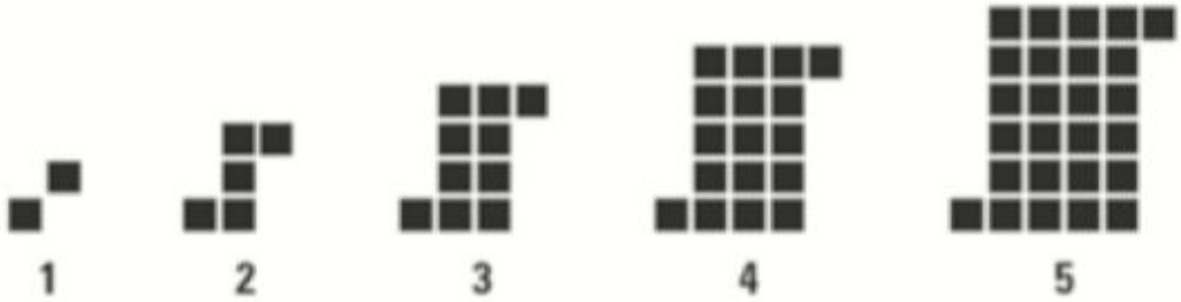
Tasks

The S-pattern Task

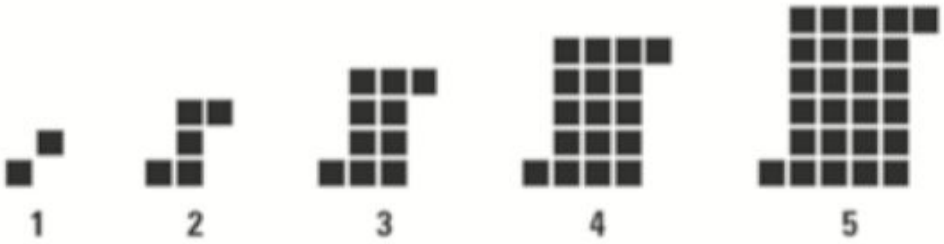


1. What patterns do you notice in the set of figures?
2. Sketch the next two figures in the sequence.
3. Describe a figure in the sequence that is larger than the 20th figure without drawing it.
4. Determine an equation for the total number of tiles in any figure in the sequence. Explain your equation, and show how it relates to the visual diagram of the figures.
5. If you knew that a figure had 9,802 tiles in it, how could you determine the figure number? Explain.
6. Is there a linear relationship between the figure number and the total number of tiles? Why or why not?

Adapted from Foreman and Bennett (1995).

Support Productive Struggle

The S-pattern Task



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What are ways to support productive struggle in completing high ceiling task?

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Questions

Assessing Questions	Advancing Questions
• Based closely on the work the students have produced • Clarify what the students have done and what they understand about what they have done • Provide information to the teacher about what the students understand	• Use what students have produced as a basis for making progress toward the target goal of the lesson • Move students beyond their current thinking by pressing them to extend what they know to a new situation • Press students to think about something they are not currently thinking about
Teacher STAYS to hear the answer to the question.	*Teacher WALKS AWAY, leaving students to figure out how to proceed.*

Fig. 5.4. Characteristics of assessing and advancing questions (Developed by Victoria Bill and Margaret Smith 2008)

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Representations

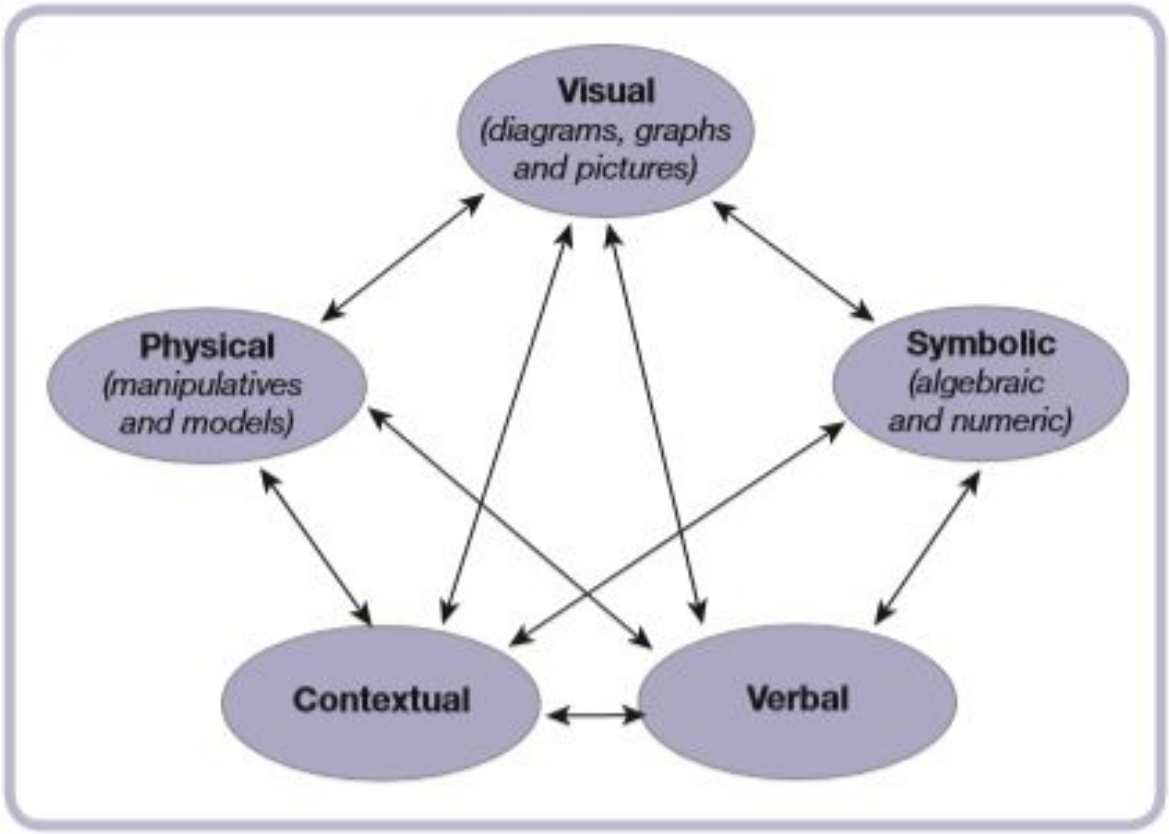

Fig. 6.1. Different representations and the connections between them (Adapted from NCTM, 2014, p. 25)

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Equity

Go deep with mathematics. Develop students' conceptual understanding, procedural fluency, and problem solving and reasoning.

Leverage multiple mathematical competencies. Use students' different mathematical strengths as a resource for learning.

Affirm mathematics learners' identities. Promote student participation and value different ways of contributing.

Challenge spaces of marginality. Embrace student competencies, value multiple mathematical contributions, and position students as sources of expertise.

Draw on multiple resources of knowledge (mathematics, language, culture, family). Tap students' knowledge and experiences as resources for mathematics learning.

Fig. 1.2. The Five Equity-Based Mathematics Teaching Practices (Adapted from Aguirre, Mayfield-Ingram, and Martin 2013, p. 43)

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Favorite Quote

"Develop students' conceptual understanding through visual models, representations, and drawing on students' prior knowledge before moving to more formal methods and procedures".

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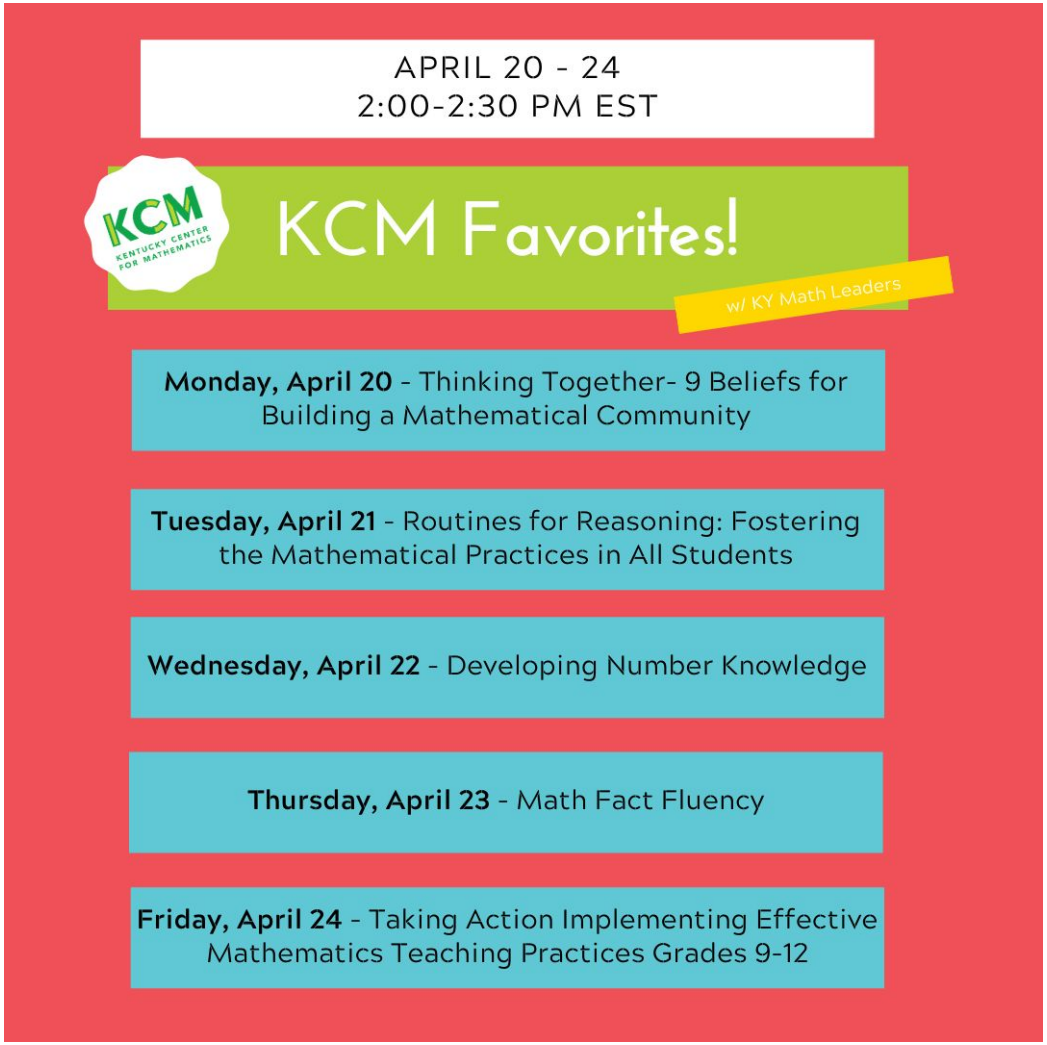

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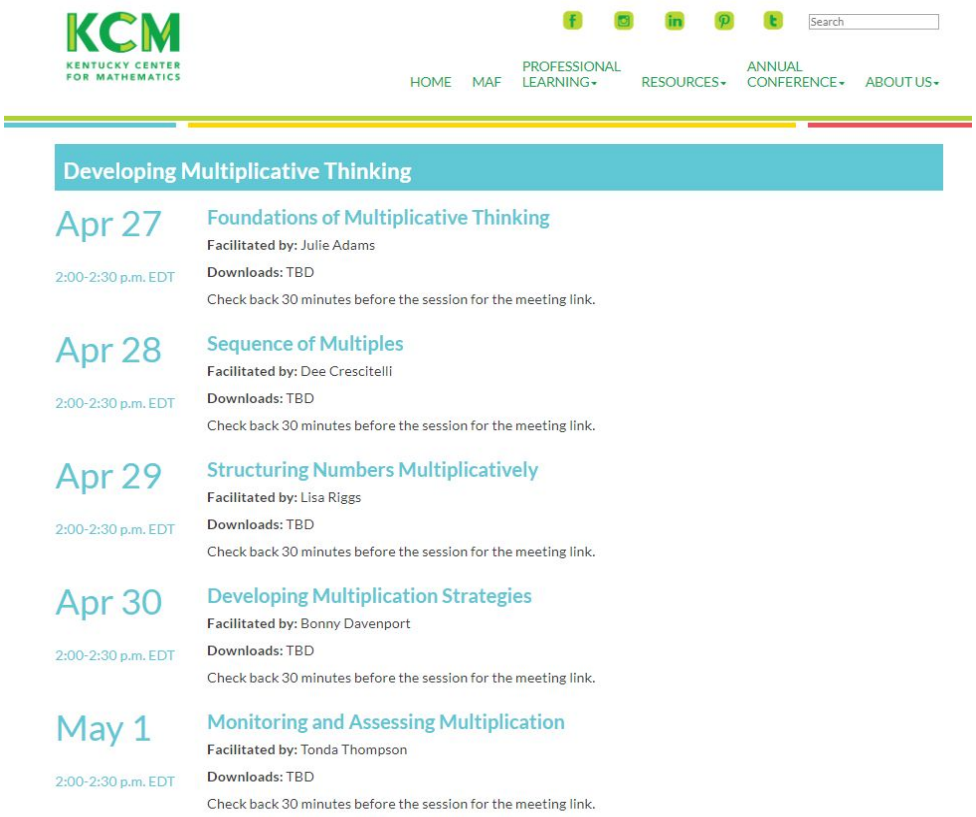

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KCM is here to support you!

Contact me

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