KCM Favorites

Math Fact Fluency:
60+ Games and Assessment Tools
to Support Learning and Retention

Jennifer Bay-Williams
and Gina Kling
Welcome!

Your host

Bonny Davenport
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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](#).

**KCM Favorites - Apr. 20 - Apr. 24**

*Developing Multiplicative Thinking - Apr. 27 - May 1*

*Focus on Fractions - May 4 - May 8*
KCM Favorite

by Jennifer Bay-Williams and Gina Kling
Reasons Why I Love This Book!

If You're Riding a Horse and It Dies, Get Off
by Jim Grant and Cfaa Tiner
Illustrated by Nathan Bundy
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THANK YOU

Jennifer Berg, University of Louisville
Suantha Healy, University of Louisville
Alana Balthazar, Henderson County School District
Sarah Jackson, Jefferson County School District
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KCM
KENTUCKY CENTER FOR MATHEMATICS
Jennifer M. Bay-Williams, PhD, is a mathematics teacher educator at the University of Louisville, Kentucky. She has written many articles and books related to K–12 mathematics education, including the popular *Elementary and Middle School Mathematics: Teaching Developmentally* and the related three-book series, *Teaching Student-Centered Mathematics*. Other recent books include *Everything You Need for Mathematics Coaching, On the Money* (financial literacy), and *Developing Essential Understanding of Addition and Subtraction*. Bay-Williams is a national leader in mathematics education, having served as a member of the National Council of Teachers of Mathematics (NCTM) Board of Directors, secretary and president of the Association of Mathematics Teacher Educators (AMTE), lead writer for the *Standards for Preparing Teachers of Mathematics* (AMTE, 2017), and a member of the TODOS: Mathematics for ALL Board of Directors. Bay-Williams taught elementary, middle, and high school students in Missouri and in Peru. She currently works in elementary classrooms in the Louisville area, helping teachers and students attain basic fact fluency while also developing strong mathematical identities. Follow Bay-Williams on Twitter (@JBayWilliams) or contact her directly at j.baywilliams@louisville.edu.

Gina Kling is fortunate to serve the mathematics education community in a variety of ways. Since 2011, she has worked as a curriculum developer for the elementary mathematics curriculum *Everyday Mathematics* (based at the University of Chicago) with a focus on grades K–3. Recently she served as the grade 1 lead author for the *Everyday Mathematics 4 State Editions*, the author of the *Everyday Mathematics 4 Quick Looks Activity Book*, and one of the authors of *Everyday Mathematics for Parents: What You Need to Know to Help Your Child Succeed*. Kling has taught mathematics content and methods courses for the past 15 years at Western Michigan University in Kalamazoo, Michigan, and is also currently completing a doctoral degree in K–12 mathematics education at Western Michigan University. For more than a decade, Kling has focused her research on helping children learn basic math facts in meaningful ways and often shares her work through professional development with practicing teachers across the country. She has authored numerous articles on teaching and assessing basic facts and remains active in the elementary classroom today as a mathematics coach, engaging children in developing fact fluency. Kling can be contacted directly at gina.garza-kling@wmich.edu.
Podcast With the Authors

Do Your Students Have Math Fact Fluency?

Episode: 192
Featuring Jennifer Bay-Williams and Gina Kling

60+ Games and Assessment Tools to Support Learning and Retention
Fundamental 1: Mastery Must Focus on Fluency

Figure 1.1. What Procedural Fluency Is and What It Looks Like

The four components (bolded) are interrelated. Appropriate strategy selection is required for efficiency and flexibility.
Our Standards

Build procedural fluency from conceptual understanding.

Effective teaching of mathematics builds fluency with procedures on a foundation of conceptual understanding so that students, over time, become skillful in using procedures flexibly as they solve contextual and mathematical problems.
Fundamental 2: Fluency Develops in Three Phases

Phase 1: Counting
Student counts with objects or mentally.

Phase 2: Deriving
Uses reasoning strategies based on known facts.

Phase 3: Mastery
Efficiently produces answers
Fundamental 3: Foundational Facts Must Precede Derived Facts

Addition Fact Fluency Flexible Learning Progression

- Doubles
  - Near Doubles: Use a double to find the sum. $6 + 8 = 6 + 6 + 2$
  - Making 10: Move some from one addend to the other to make a 10. $6 + 8 = 10 + 4 = 14$
  - Pretend-a-10*: Think of an 8 or 9 as a 10, and adjust answer. $6 + 8 \rightarrow 6 + 10 = 16 \rightarrow 16 - 2 = 14$

*Also called Compensation and Use 10; we have found that young learners remember the strategy and distinguish it from Making 10 when we use this name. Research indicates that this strategy is more accessible than Making 10, and therefore should be explicitly taught (Baroody, Eiland, Reid, & Paliwal, 2016).
Fundamental 3: Foundational Facts Must Precede Derived Facts

*We acknowledge that all the derived fact strategies are break apart (distributive property) strategies. We focus on specific ways to break apart (e.g., adding a group) and move towards generalizing the Break Apart strategy.
Fundamental 4: Timed Tests Do Not Assess Fluency

If timed tests are not aligned with fluency, are ineffective formative assessment tools, may impede progress, and cause anxiety, why do we use them?
Timed Test Alternatives

1. Journal Writing
2. Observations
3. Interviews
4. Self Assessments
5. Strategy Quizzes
Fundamental 5: Students Need Substantial and Enjoyable Practice

Stories

Quick Looks

Games

More than 40 easy-to-make, easy-to-use games that provide engaging fact practice!
Families and Facts

CHECK OUT OUR EXCELLENT
FAMILY MATH RESOURCES

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KCM Favorite

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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
Follow Us!

www.kentuckymathematics.org
KCM is here to support you!

Contact me

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