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FOUNDED BY MARILYN BURNS

Shake, Rattle, and Roll: Using Games in Math Workshop, Grades 3-5

Le'Vada Gray

Friday, November 2, 2018

8:30—10:00 AM

2018 North Carolina Council of Teachers
of Mathematics Conference

Oak B



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Inspire A CULTURE OF **MATH ACHIEVEMENT**

Discuss

- What are you currently experiencing/hearing about implementing the new NC Instructional Frameworks?
- How are you seeing the Mathematical Practices in your classrooms?

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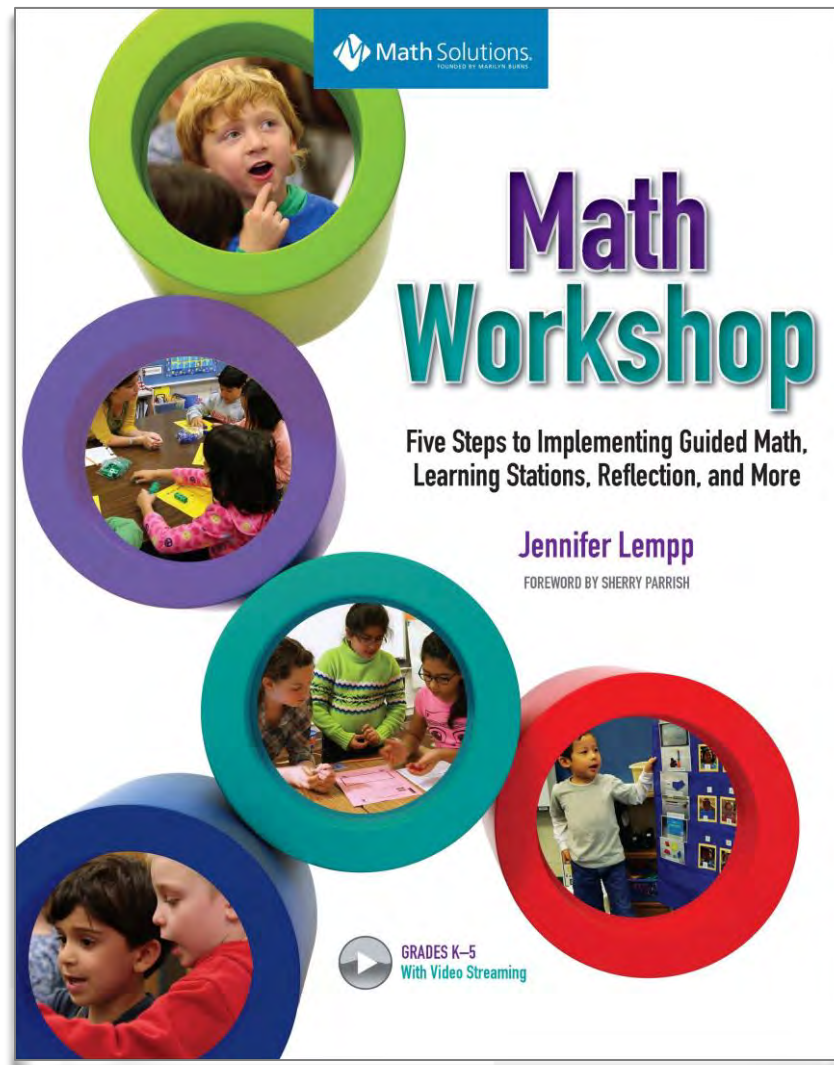
Questions to Consider:

- What are the benefits of using games during Math Workshop to support student learning?
- How do you implement mathematics games during your instruction?
- What is your role in developing conceptual understanding and meaningful practice in your classrooms/schools?

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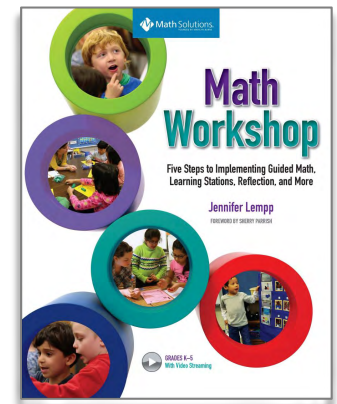
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Connecting Research and Practice



What is Math Workshop?

- An approach to teaching mathematics that places students at the center of math work.
- **Main goal:**
 - to develop mindset that all students have the confidence to do math.
 - Instructional approach designed to meet the needs of all math learners.



Three Buckets



Math Workshop: Five Steps to Implementing Guided Math, Learning Stations, Reflection, and More, Grades K-6 (A Multimedia Professional Learning Resource). Copyright ©2017 by Math Solutions a division of Houghton Mifflin Harcourt Publishing Company

“Underserved students thrive in learning environments where collaboration and positive relationships are present.”

Gray, L. (2018, September 13). Building Community with MATH 180, Blog post. Retrieved from <http://www.mathsolutions.com>.

Daily Lesson Structure

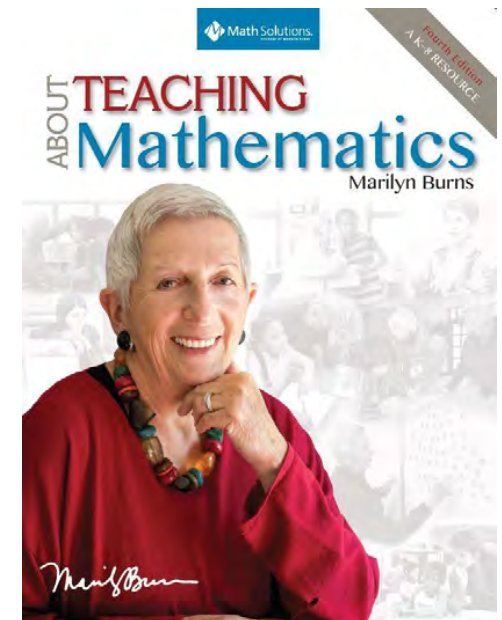
Task and Share		Focus Lesson, Guided Math, and Learning Stations			Guided Math and Learning Stations	
5 minutes	Number Sense Routine	5 minutes	Number Sense Routine		5 minutes	Number Sense Routine
30 minutes	Math Task	15 minutes	Focus Lesson		45 minutes	Guided Math Learning Stations
20–25 minutes	Math Share & Reflection	30 minutes	Guided Math	Learning Stations	5–10 minutes	Reflection
		5–10 minutes	Reflection			

Seven Characteristics of Math Workshop

1. Students doing most of the math
2. Students making choices
3. Students enthusiastically talking about their mathematical thinking and reasoning with each other
4. Teachers facilitating, clarifying, connecting, monitoring, and collecting data as students solve problems
5. Students working collaboratively
6. Teachers allowing students to struggle with challenging mathematics
7. Teachers working with small groups and/or individual students

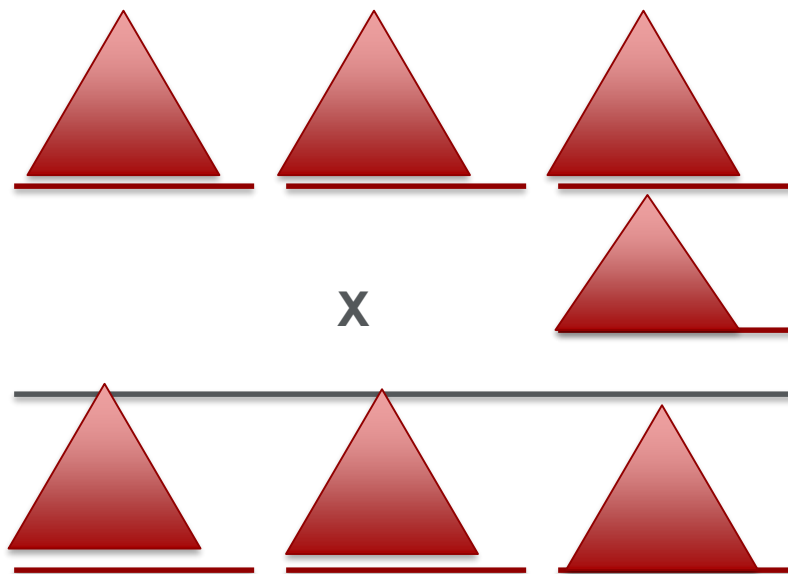
Four Strikes and You're Out

- Mental computation
- Relationship between operations



Four Strikes and You're Out

0 1 2 3 4 5 6 7 8 9



“I think I need a _____ because _____.”

Four Strikes and You're Out

0 1 2 3 4 5 6 7 8 9

A multiplication problem is shown with four red squares representing digits. The first factor is a two-digit number with a red square in the tens place and a red square in the ones place. The second factor is a two-digit number with a red square in the tens place and a red square in the ones place. The product is a three-digit number with a red square in the hundreds place and a red square in the ones place. The multiplication is represented as:

$$\begin{array}{r} \square \\ \hline \square \end{array} \times \begin{array}{r} \square \\ \hline \square \end{array} = \begin{array}{r} \square \\ \hline \square \end{array}$$

“I think I need a _____ because _____.”

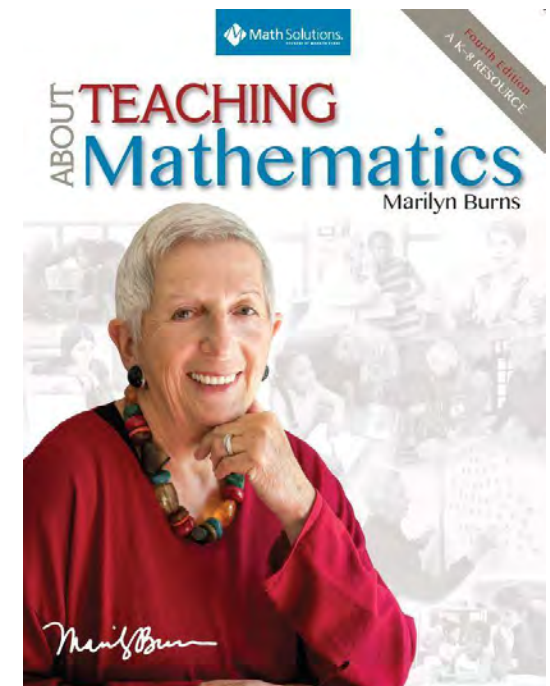
Four Strikes and You're Out

- Identify the core mathematical goal for the game (grade level)
- Design a new version of Four Strikes
- Play the game with another set of partners.

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Fraction Riddles



Riddle #1

Clue #1: $\frac{1}{2}$ of the tiles are red.

Clue #2: $\frac{1}{3}$ of the tiles are blue.

Clue #3: There is one green tile and one yellow tile.

Clue #4: There are 12 tiles.

Riddle #2

Clue #1: $\frac{2}{5}$ of the tiles are red.

Clue #2: The number of green tiles and blue tiles are the same.

Clue #3: There are $\frac{3}{4}$ as many green tiles as red tiles.

Clue #4: There are 10 tiles.

Partner Task

- **Generate a riddle using no more than 20 tiles.**
- **Write your riddle on an index card. Use vocabulary relevant to your grade level.**
- **Exchanges your riddle with another pair and solve the riddle.**
- **Discuss any aspects of the riddle, as needed.**

Processing Fraction Riddles

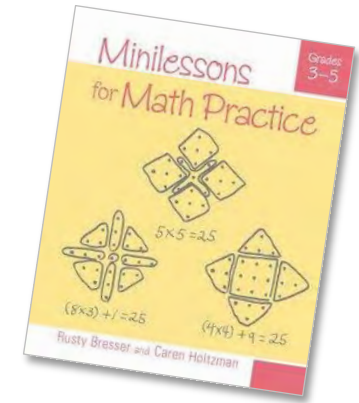
- **What mathematical concepts does this activity support?**
- **In what ways did your group support your learning?**

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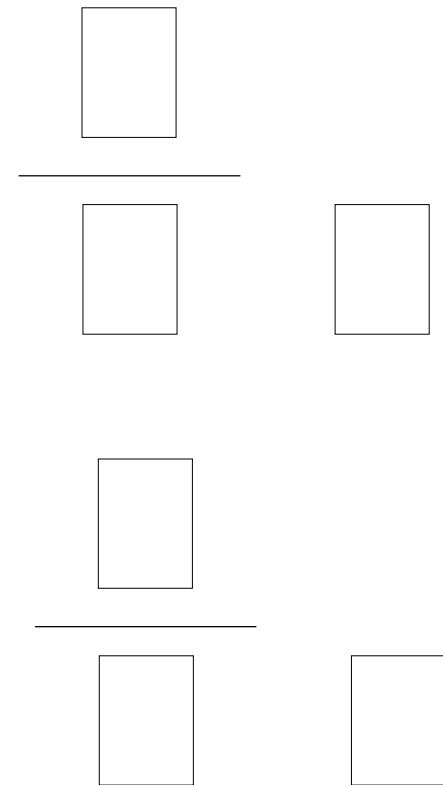
Comparing Fractions

- Connect symbols with visual images
- Explore relationship between numerator and denominator
- Create models to build understanding



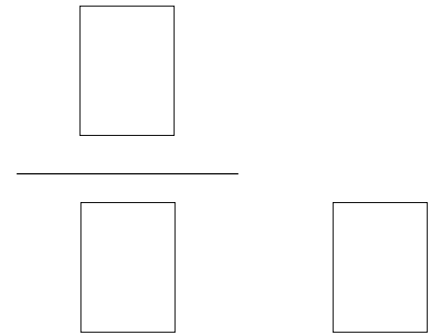
Comparing Fractions

- Draw a blank “game board”
- Roll die three times
- Individually decide where you want to place each number
- Compare with numbers and a model (ex. pictures, number line)



Comparing Fractions

- Play a round with a partner
- Include a drawing and/or a number line



Comparing Fractions

- **What conceptual understanding can students learn from this experience?**
- **How does this experience connect to content standards and mathematical practices?**

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Processing

Based on the your experiences during this session:

- Describe how these games can support your students during Math Workshop.
- Identify challenges you may encounter as you implement games.
- Share one thing you're ready to implement as a result of this session.

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Thank You