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Common Core: Connecting the Standards for  
Mathematical Practice to the Standards for Content  
– Number and Operations in Base Ten

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## Session Description:

Students need opportunities to explore mathematical ideas with guidance that helps them use the structure and properties of our number system to build their number sense and computational facility. This session examines how to structure and facilitate those opportunities and connect standards of mathematical practice to standards for content.

# Common Core

## Standards for Mathematical Content

- Understanding
- Procedures

"Students who lack understanding of a topic may rely on procedures too heavily. Without a flexible base from which to work, they may be less likely to . . . deviate from a known procedure to find a shortcut. In short, a lack of understanding effectively prevents a student from engaging in the mathematical practices."

# Common Core

## Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

# Common Core

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# Your Individual Task

- Read the mathematical practice assigned to your section of the room.
- Make notes about what the words mean to you and what it looks like in the classrooms.

Be ready to share with a colleague in 5 minutes.

# Your Group Task

- With 3 or 4 colleagues around you discuss your notes and classroom examples and come to a shared understanding of the practice.

You will have about 4 minutes for that task.

# Common Core State Standards

## Number and Operations Thread



# Common Core State Standards

As you read these standards for whole number operations, what stands out?

**“using strategies based on place value, properties of operations, and/or the relationships between operations”**

# Number Sense

- understands relationships, properties, and procedures
- is able to explain and justify one's actions on numbers
- is able to use strategies appropriately and efficiently

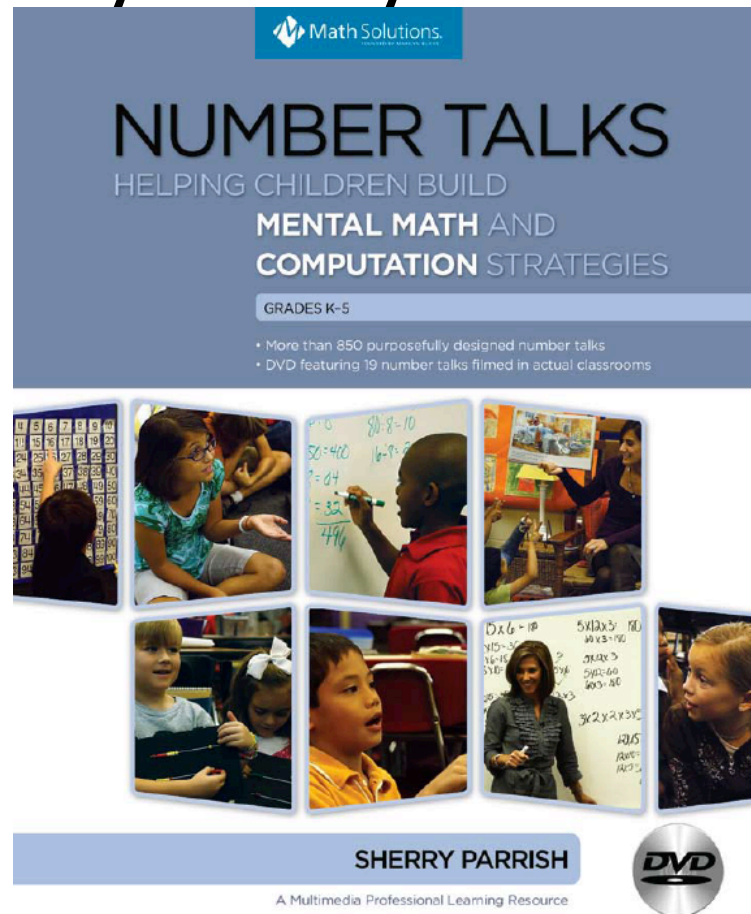
# Number Talks

# What is a Number Talk?

A 5 to 15 minute  
classroom conversation around  
purposefully crafted computation  
problems that are solved  
mentally.

# Number Talks: Helping Children Build Mental Math and Computation Strategies

by Sherry Parrish



# A Multiplication String

- $2 \times 15 \times 6$
- $5 \times 12 \times 3$
- $4 \times 5 \times 3 \times 3$
- $12 \times 15$

# 12 X 15

- What evidence do you see of students' use of strategies based on place value, properties of operations, and/or the relationships between operations?
- Which mathematical practices did students exhibit?
- What did the teacher do to support students' development of the mathematical practices?

Insert video here





# $12 \times 15$

- What evidence indicates student understanding of place value?
- How do the student strategies exhibit number sense?
- How do the teacher and students connect math ideas throughout the number talk?
- Which mathematical practices did students exhibit?
- What did the teacher do to support students' development of the mathematical practices?

## About these fifth graders . . .

- Shades Crest Elementary, Hoover Alabama
- 21 students
- 25% have transferred into the school within the last year
- Filming was done in early October of 2009
- In recent years the school population has become more diverse.
- School-wide implementation of Number Talks

# Four Strikes and You're Out

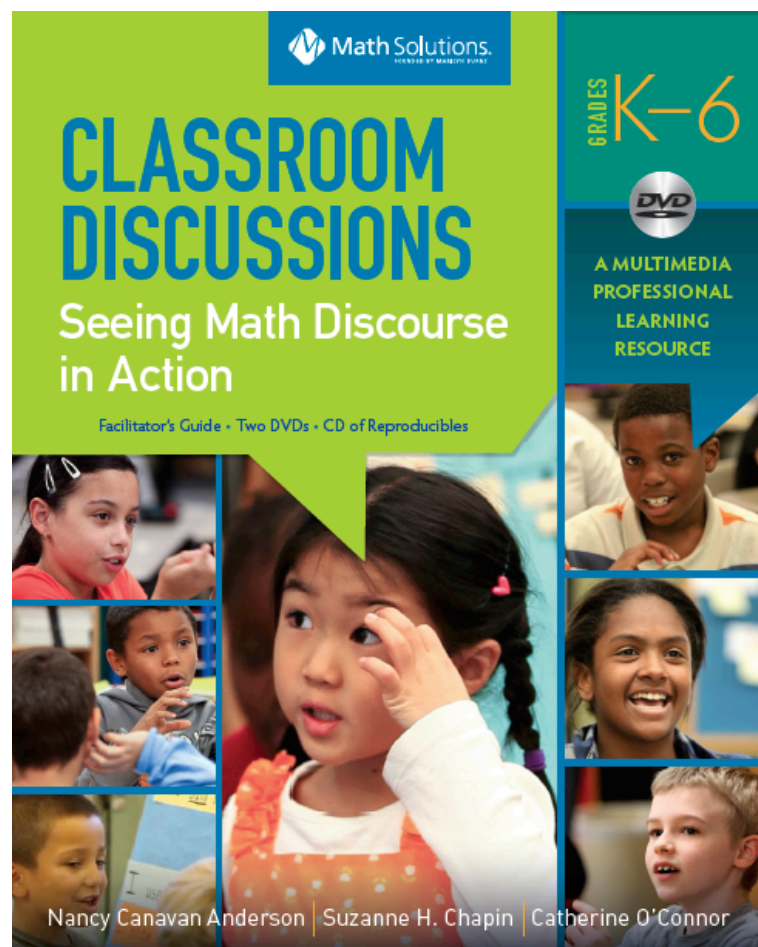
0 1 2 3 4 5 6 7 8 9

\_\_\_\_ + \_\_\_\_ = \_\_\_\_

Strikes \_\_\_\_\_

# Classroom Discussions: Seeing Math Discourse in Action

Anderson, Chapin, O'Connor



# Four Strikes and You're Out

- What evidence do you see of students' use of strategies based on place value, properties of operations, and/or the relationships between operations?
- What mathematical practices does this task support?

Insert video here



# Four Strikes and You're Out

- What evidence do you see of students' use of strategies based on place value, properties of operations, and/or the relationships between operations?
- What mathematical practices does this task support?

# Thinking about your work .....

- What experiences do teachers need to begin to deeply understand the mathematical practices and their role in guiding students' development?
- What foundation have you already built?
- What's next?





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**link to slides:**

<http://mathsolutions.com/presentation>