Math Solutions
FOUNDED BY MARILYN BURNS

Math Solutions Professional Learning

AGENDA
CCR Number Talks: Whole Number Computation
Grades K–5

COURSE GOALS

This course is designed to help teachers:

- Strengthen their math content and pedagogical knowledge for the purpose of making math accessible to all students
- Understand how students learn mathematics
- Implement the instructional strategy of number talks in order to develop students' sense of number, procedural fluency, and communication of reasoning as called for in current state standards.

OUTCOMES

- Recognize number talks as a valuable classroom routine for making sense of mathematics, developing efficient computation strategies, communicating reasoning, and proving solutions
- Characterize the key components of number talks and understand the importance of each
- Explore ways to support students' development of common strategies for addition and subtraction
- Scribe student strategies that emphasize the important mathematical ideas inherent in the strategies
- Use models and tools that support student understandings and proficiencies with whole-number operations

OVERVIEW

This one-day course introduces teachers, math coaches, and curriculum specialists to the theory, structure, and focus of number talks. As participants interact throughout the day, they reflect on their current practices and target essential understandings about numbers and operations called for in their state standards.

Welcome, Introduction, and Overview

This introduction includes the course goals, an overview of number talks, and pertinent logistical information.

Preparing for Number Talks

In this session, participants engage in a number talk. Prior to beginning, they discuss four procedures and expectations essential to number talks.

BREAK

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Using Models and Tools to Anchor Student Strategies: Dot Images and Ten-Frames
Models and tools can be used in number talks to help students build understanding. In this session, participants consider how to use tools such as dot images and ten-frames to build a foundation that mathematics is about making sense with numbers and number relationships.

LUNCH

Using Tools to Anchor Student Strategies: Hundred Charts and Open Number Lines
In this session, participants continue to examine the use of tools—hundred charts and open number lines—to build a foundation that mathematics is about making sense with numbers and number relationships.

Examining Common Strategies
As participants engage in number talks, they identify common strategies that utilize ideas of counting, place value, and properties.

Scribing Students' Responses
Capturing each student's thinking gives other students access to the strategy. Considering which mathematical ideas to highlight and how you might record the strategy to emphasize those specific concepts is one of the roles of the teacher in a number talk. In this session, participants are given a series of multiplication and division problems that are used to conduct a number talk within their small group. As others in the group share their strategies, each participant practices recording strategies.

Reflection and course closing
In this session, participants reflect on the experiences of the course and the ways that these experiences will impact their classroom instruction. Time will also be spent on ideas for getting started with number talks in their classrooms.

Math Solutions Guiding Principles

Drawing upon academic work and our own classroom-grounded research and experience, Math Solutions has identified the following four instructional needs as absolutely essential to improving instruction and student outcomes:

- Robust Content Knowledge
- Understanding of How Students Learn
- Insight Into Individual Learners Through Formative Assessment
- Effective Instructional Strategies

These four instructional needs drive the design of all Math Solutions courses, consulting, and coaching. We consider them our guiding principles and strive to ensure that all educators:

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- Know the math they need to teach—know it deeply and flexibly enough to understand various solution paths and students' reasoning
- Understand the conditions necessary for learning, what they need to provide, and what students must make sense of for themselves
- Recognize each student's strengths and weaknesses, content knowledge, reasoning strategies, and misconceptions
- Have the expertise to make math accessible for all students, to ask questions that reveal and build understanding, and to help students make sense of and solve problems

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