Math Solutions
FOUNDED BY MARILYN BURNS

Math Solutions Professional Learning

AGENDA
Number Talks: Fractions, Decimals, and Percentages
Grades 3-7

OVERVIEW
This one-day course focuses on number talks that build conceptual understanding of fractions, decimals, and percentages. Participants learn how to use this routine as a vehicle to focus on the essential understandings of rational numbers and develop a robust fluency.

OUTCOMES
- Facilitate number talks to draw attention to student thinking and bring their reasoning to the forefront of the class
- Shift instruction about rational numbers from procedure- and rule-based toward sense-making and understanding
- Highlight contexts and models during number talks to develop and anchor flexible and efficient strategies for reasoning and computing with rational numbers

Opening
This introduction includes the learning outcomes, overview of the course, and pertinent logistical information. In addition, the group works together to build a community for learning.

Integrating Principles and Essentials for Successful Number Talks
During this session, participants examine the ongoing struggle students have with rational numbers and discuss the reason this needs to change. They consider how the routine of number talks shifts instruction from focusing on procedures to developing sense making and understanding. The session concludes with a look at four foundational principles of number talks and ten essentials for getting started.

Framing Number Talks that Build Fractional Reasoning
Participants explore six big ideas essential in developing fractional reasoning. They examine how interchangeable use of contexts and models in number talks gives students more opportunities to deepen their understanding and think flexibly about fractional relationships.

Examining Number Talks that Connect Fractions, Decimals, and Percentages
Fractional reasoning forms the basis of understanding for decimals and percentages as representations of part of a whole. In this session, participants examine number talks that connect fractions to percentages, that connect fractions to decimals, and that connect the three.

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Representing Student Strategies During Number Talks
An important part of a number talk is making students' thinking public and accessible to other students. In this session, participants consider ways to record a student's strategy numerically to highlight the student's thinking. Additionally, participants consider how supporting students' ideas with a model may help other students follow and understand another's thinking.

BREAK

Using Number Talks to Develop Fraction Multiplication Strategies
Number talks help learners focus on developing strategies to build their understanding of multiplying fractions. In this session, participants consider how students lay a foundation for algebraic reasoning as they use multiplication strategies that rely on decomposing fractions and the properties of operations.

Closing
Participants take time to reflect on the experiences of the day and ways that these experiences will positively impact their classroom instruction.

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:

- 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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