Math Solutions
FOUNDED BY MARILYN BURNS

AGENDA
Developing Number Sense

GOALS

- Characterize and understand teaching strategies for building number sense
- Explain and use the role of talk to support learning of mathematics
- Use models and tools that support student understandings and proficiencies with number
- Recognize and support students' development of common strategies for addition, subtraction, and multiplication

OVERVIEW

Number sense is a broad concept that covers a range of numerical thinking. This course helps teachers gain an understanding of what number sense is, why it is important, and what strategies they can use to help promote their students' number sense. Through firsthand experiences, teachers explore their own number sense and are introduced to instructional approaches that promote thinking and communicating about numbers. Samples of student work help connect course investigations to teachers' classroom needs.

WELCOME, INTRODUCTION, AND OVERVIEW

This introduction includes the course goals, an overview of the Standards for Mathematical Practice, and pertinent logistical information.

EXAMINING NUMBER SENSE

Samples of student work illustrate flexible computation strategies. A brief article introduces participants to six strategies for building number sense. Experiences during the rest of the day clarify the importance of these strategies.

FOSTERING NUMBER RELATIONSHIPS AND LANDMARK NUMBERS

Facility with landmark numbers empowers students to confidently navigate the number system and explore different computation strategies. Participants experience several different activities that highlight number relationships and encourage the use of landmark numbers.

DEVELOPING COMPUTATIONAL STRATEGIES

Computationally fluent procedures are accurate, efficient, and flexible. Students develop these characteristics over time as they explore different kinds of procedures and analyze each other's strategies. In this session, participants use number lines as a tool for modeling addition and subtraction and examining the relationship between numbers.

LUNCH

USING ESTIMATION AND MENTAL MATH
In this session, participants make estimates and calculate mentally. It's imperative that teachers are comfortable in their own abilities to compute flexibly before they are able to foster such thinking in students.

MAXIMIZING THE IMPACT OF GAMES
Participants experience a game modeled with intentional, explicit discussions focused on the teacher's role in maximizing the learning opportunities when using games.

REVIEW, CLOSING, AND REFLECTIONS
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 help students make sense of and solve problems.

