

AGENDA

Making Sense of Math—Reasoning & Discourse

OVERVIEW

This full-day course is designed to deepen participants' understanding of the essential habits of mathematical thinkers, with particular emphasis on the role of reasoning and discourse. During this course, participants engage in and examine the kinds of tasks that help students communicate about and make sense of important mathematical ideas, and discuss the implications for planning and teaching with *GO Math!*.

OUTCOMES

- Use strategies to help all students deepen and communicate their mathematical reasoning during *GO Math!* lessons
- Identify the difference between social conventions of mathematics and mathematical knowledge that students need to make sense of for themselves
- Select tasks and use classroom discussions in *GO Math!* lessons to develop students' mathematical habits of mind and to assess understanding

OPENING—WELCOME, LOGISTICS, AND EXPERIENCES

This introduction includes the course goals, an overview of the course, and pertinent logistical information. In addition, time is provided for the group to build a community for learning.

LOGICAL REASONING AND CLASSROOM DISCOURSE

During this session, participants focus on strategies to engage students in discussions to communicate their reasoning during Math Talk. Participants learn about and practice using Talk Moves and then consider their influence in developing students reasoning skills and deepening their understanding during *GO Math!* lessons.

HOW STUDENTS LEARN

When mathematical knowledge is based in logic, it requires students to interact with the knowledge in ways that help them uncover its meaning for themselves. In this session, participants develop an understanding of the standard formula for determining the circumference of a circle. Through this experience, they reflect on the conditions needed for students to develop understanding of mathematical ideas.

LUNCH**COMPARING MATHEMATICAL TASKS**

The tasks teachers provide are the foundation for mathematics instruction that supports thinking, reasoning, and problem solving. Learning occurs when teachers choose mathematical tasks that challenge students just enough to help them develop new skills by building on those that have already been established. In this session, participants engage in; reflect on; and compare and contrast two tasks. They identify characteristics of tasks that build upon students' understanding and support their abilities to represent and communicate that understanding to others. Knowing these characteristics impacts instructional planning with *GO Math!*.

TRANSFORMING TASKS

During this session, participants engage in a process to support the enhancement of student learning when planning *GO Math!* lessons.

REFLECTION AND CLOSING

Teachers need a vision of the type of work students need to be engaged in to be mathematically successful. During this session, participants reflect on the experiences of the day and plan what they will do differently in their *GO Math!* classrooms as a result of their new or deepened understanding.

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.