

AGENDA**Teaching Math Through Problem Solving
Grades K–8****GOALS**

This course will help you:

- Strengthen your math-content knowledge for the purpose of making math accessible for students
- Understand how students learn mathematics
- Implement instructional strategies that promote thinking, reasoning, and making sense of mathematics as called for in current state standards

LEARNING OUTCOMES

After the session, participants will be able to:

- Characterize problem-solving experiences that require math reasoning and communication of that reasoning
- Understand how current state standards impact teaching, curriculum, and learning in mathematics
- Implement instructional strategies that align to habits of mathematical thinkers as defined by current state standards
- Use strategies to help all students deepen and communicate their mathematical reasoning

Opening

Introduction to the day includes session goals and logistical information pertinent to the day.

Engaging in Logical-Thinking Tasks

During this session, participants reflect on their own reasoning processes as they engage in logical-reasoning tasks. They consider how their students use similar processes while working on developmentally appropriate problems.

Break**Developing Spatial Reasoning**

This activity gives participants the opportunity to reflect on how children’s spatial-reasoning abilities develop with explicit attention to rotational and mirror symmetry. Participants are also given the chance to examine the structure of lessons that support students’ thinking, reasoning, and problem solving.

Understanding How Students Learn

Current state content standards present a balanced combination of procedure and understanding. This session focuses on a view of learning in which people construct their own understanding of abstract mathematical concepts and relationships through interactions with concrete materials. After estimating how many scoops of rice a jar can hold, participants consider how access to new knowledge and the ability to discuss their ideas with others influence their mathematical reasoning.

Lunch**Putting Arithmetic in Perspective**

This session looks at arithmetic in a different way and puts it into a perspective that may be new for participants. Participants read an article about the three legs of arithmetic instruction, and then engage in several activities that illustrate the importance of each.

Computing Flexibly and Accurately

Current state standards call for students to flexibly and accurately compute with whole numbers. In this session, participants engage in The Game of Pig that supports these expectations.

Connecting Operations and Algebraic Thinking

The final segment of the day provides a final opportunity to connect the important ideas of communication, the role of the teacher, the use of collaborative groups, and the structure of problem-solving lessons that have been the focus of the day's experiences.

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.