

Solving Word Problems: Modeling Addition, Subtraction, and Two-Step Word Problems with Math Drawings, Grades K–2

This full-day, six-hour session improves participants' ability to effectively model and teach addition and subtraction word problems by using math drawings and the tape diagram. Throughout the day, the facilitator models different modes of instructional delivery that engage participants in problem-solving experiences with a variety of word problem types. These activities encourage reflective discussion about the intersection of content and pedagogy.

Participants begin by exploring the understanding and skill that Kindergarten students develop with recognizing and modeling part–whole relationships and the models that encourage them to organize quantities in linear configurations. Next, participants study how Grade 1 students advance from the count all strategy to the count on strategy and then learn more sophisticated problem-solving strategies such as the make ten addition strategy. Participants then investigate the introduction of the tape diagram in Grade 1 and how that model can be used to solve more complex Grade 2 problems.

Over the course of the day, participants will work with increasingly complex strategies, models, and word problems. Participants begin by solving the one-step addition word problems used in Kindergarten. By the end of the session, participants will experiment with the additive comparison and two-step word problems emphasized in Grade 2.

Participants can expect to deepen their understanding of

- the 12 addition and subtraction word problem types required by the Common Core State Standards for Mathematics.
- modeling the required addition and subtraction problem types by using math drawings and tape diagrams.
- part–whole relationships and the skills needed to decode those relationships.
- the Read-Draw-Write process and its relationship to the Standards for Mathematical Practice.
- teaching students to assess their work for reasonableness.
- problem-solving strategies that support students' ability to analyze numerical relationships in stories.

Required materials: Participants should bring a pencil and an eraser.