

## Math Talk Learning Community

### What Is Math Talk?

The **NCTM Standards** emphasize the importance of developing mathematical language and communication in order to understand concepts rather than merely following a sequence of procedures. *Math Expressions* seeks to build a community of learners who have frequent opportunities to explain their mathematical thinking through Math Talk and thereby develop their understanding. Children are asked to solve problems, explain their solutions, answer questions, and justify their answers. They use proof drawings as a reference for their explanations.

The dialogue that takes place helps everyone understand math concepts more deeply, and it helps children to increase their competence in using mathematical and everyday language. While children engage in dialogue, the teacher acts as a guide to maintain the focus of the discussion and to clarify when necessary.

### Multiple Benefits

Children gain greater understanding and ownership of mathematical concepts as they develop and express their own ideas. Describing one's methods to others can clarify one's own thinking. Similarly, hearing and analyzing others' approaches can supply one with new perspectives; and frequent exposure to different approaches engenders flexible thinking. Math Talk provides opportunities for children to understand errors they have made and permits teachers to assess children's understanding on an ongoing basis. By building understanding, Math Talk also prepares children for taking tests. When children encounter complex problems in testing, they can rely on their knowledge of the underlying mathematical concepts, developed through Math Talk activities, to successfully unravel and solve the problems. Math Talk also helps with test items that require explaining an answer.

#### Math Talk

Math Talk is not just taking turns telling your method or meandering undirected talk. It is an instructional conversation directed by the teacher but with as much direct child-to-child talk as possible. Math Talk is focused on developing understanding for all children in the class.



### Extending Math Talk

- Solve and Discuss
- Step-by-Step
- Student Pairs
- Student Leaders
- Scenarios
- Small Groups

Within such a community, being able to use appropriate math vocabulary, language, and proof drawings helps math become personally meaningful to children and provides a context through which children can share their ideas.

**Structures for Developing Math Talk Skills.** The key supports for Math Talk are the various “participant structures,” or ways of organizing class members as they interact. You can easily familiarize yourself with the most common Math Talk structures described in *Math Expressions*:

- **Solve and Discuss (Solve, Explain, Question, Justify):** Have four to five children go to the board, and each child solves the problem, using any method he or she chooses. Their classmates work on the same problem at their desks with paper or MathBoards. Then ask two or three children at the board to explain their methods. Children at their desks are encouraged to ask questions and to assist each other in understanding the problem and solution.
- **Step-by-Step:** In this variation of the “Solve and Discuss” method, several children go to the board. This time, however, different children perform each step of the solution, describing the step before everyone else does it. Children at the board and at their desks carry out that step.
- **Student Pairs:** Two children work together to solve a problem, explain a solution method to each other, role-play within a mathematical situation, play a math game, or help a partner having difficulties.
- **Whole-Class Practice and Student Leaders:** In *Math Expressions* children develop into leaders with Quick Practice activities. You can blend this strategy into your daily instruction. Initially children who understand a concept and are beginning to achieve speed and fluency lead the class; eventually everyone is a Student Leader.
- **Scenarios:** The main purpose of scenarios is to demonstrate a mathematical relationship in a visual and memorable way. In a scenario, a group of children is called to the front of the classroom to act out a particular situation.

