COMMUNICATION IN MATH

Adaptive reasoning refers to the capacity to think logically about the relationships among concepts and situations (NRC, 2001, p. 129). In order for students to develop adaptive reasoning, they need many opportunities to practice communication in math. Many research studies support this idea.

Through communication, ideas become objects of reflection, refinement, discussion, and amendment. . . .When students are challenged to think and reason about mathematics and to communicate the results of their thinking to others orally or in writing, they learn to be clear and convincing. Listening to others’ explanations gives students opportunities to develop their own understandings (NCTM, 2000, p. 59).

Students who are involved in discussions in which they justify solutions—especially in the face of disagreement—will gain better mathematical understanding as they work to convince their peers about differing points of view (Hatano and Inagaki, 1991).

Because mathematics is so often conveyed in symbols, oral and written communication about mathematical ideas is not always recognized as an important part of mathematics education. Students do not necessarily talk about mathematics naturally; teachers need to help them learn how to do so (Cobb, Wood, and Yackel, 1994).

Writing in mathematics can also help students consolidate their thinking because it requires them to reflect on their work and clarify their thoughts about the ideas developed in the lesson (NCTM, 2000, p. 60).

Students need opportunities to test their ideas on the basis of shared knowledge in the mathematical community of the classroom to see whether they can be understood and if they are sufficiently convincing. When such ideas are worked out in public, students can profit from being part of the discussion, and the teacher can monitor their learning (Lampert, 1990).
Houghton Mifflin Math provides numerous opportunities for students to write about math and then discuss their ideas. Thought-provoking questions are included throughout the program.

- **Explain Your Thinking** questions are included at the end of Guided Practice sets.
- **Talk About It • Write About It** questions occur at the end of hands-on activities.
- **Explain and Analyze** questions appear in practice sections.
- **Math Conversations** provide opportunities for students to use new vocabulary.
- **Write About It** questions occur on pretests and chapter tests.