

Investigations Curriculum

This highly acclaimed curriculum, developed in partnership with classroom teachers, provides a complete mathematics program for grades K-5. Activity-based investigations encourage students to think creatively, develop their own problem-solving strategies and work cooperatively. Students write, draw and talk about math as well as use manipulatives and calculators. Mathematics content includes the number system; addition, subtraction, multiplication and division; collecting, sorting, and representing data; probability and statistics; measurement, changes over time; 2-D and 3-D geometry; fractions; computation and estimation strategies, and tables and graphs.

This curriculum contains four major goals:

- to offer students meaningful mathematical problems
- to emphasize depth in mathematical thinking rather than superficial exposure to a series of fragmented topics
- to communicate mathematics content and pedagogy to teachers
- to substantially expand the pool of mathematically literate students

Each grade level consists of a set of separate units, each offering 2-8 weeks of work. These units of study are presented through investigations that involve students in the exploration of major mathematical ideas.

Investigations are infused with teachers' practical suggestions and strategies, including actual student dialogues, lesson plans, teacher notes, and reproducible student materials. Approaching the mathematical content through investigations helps students develop flexibility and confidence in approaching problems, fluency in mathematical skill and tools to solve problems, and proficiency in evaluating their solutions. Students also build a repertoire of ways to communicate about their mathematical thinking, while their enjoyment and appreciation of mathematics grow.

The investigations are carefully designed to invite all students into mathematics—girls and boys, members of diverse cultural, ethnic, and language groups, and students with different strengths and interests. Problem contexts often call on students to share experiences from their family, culture, or community.

The curriculum eliminates barriers—such as work in isolation from peers, or emphasis on speed and memorization—that exclude some students from participating successfully in mathematics. The following aspects of the curriculum ensure that all students are included in significant mathematics learning:

- Students spend time exploring problems in depth.
- They find more ways than one solution to many of the problems they work on.
- They invent their own strategies and approaches, rather than relying on memorized procedures.
- They choose from a variety of concrete materials and appropriate technology including calculations, a natural part of their everyday mathematics work.
- They express their mathematical thinking through drawing, writing and talking.
- They work in a variety of groupings—as a whole class, in pairs and in small groups.
- They move around in the classroom as they explore the mathematics in their environment and talk with their peers.

While reading and other language activities are typically given a great deal of time and emphasis in elementary classrooms, mathematics often does not get the time it needs. If students are to experience mathematics in depth, they must have enough time to become engaged in real mathematical problems. A minimum of five hours of mathematical classroom time a week—about an hour a day—is critical at the elementary level. The plan and pacing of the *Investigations* curriculum is based on that belief.

Assessment

Assessment is embedded within the investigations. Each unit includes several kinds of assessment which provides teachers with ways to reflect on student understanding. Although assessment items are not in TAKS format, test taking skills can be practiced with additional student assessments that will be provided for each unit.