

Irving Independent School District

Philosophy of Mathematics

Central to the philosophy of mathematics for the Irving Independent School District is the development of mathematical power for all students K-12. Mathematical power includes the ability to explore, conjecture, and reason logically; to solve routine and non-routine problems; to communicate about and through mathematics; and to connect ideas within mathematics and between mathematics and the real world. Mathematical power also involves the development of person self-confidence, inventiveness and a disposition to solve problems and make wise decisions. Students develop mathematical concepts through concrete experiences with manipulative materials. The development of concepts and skills from the concrete level to the connecting level and then to the abstract level is accomplished through activities deliberately designed to help students make the transition and construct their own meaning. Likewise, basic computation continues to have an important place in which students develop proficiency with rules and facts tied to their extensive experience in real-world setting and hands-on investigations. Intertwined among all of this is the use of technology to enhance mathematical opportunities and prepare student for the workplace of the 21st century.

The following strands of basic understandings as defined by the Texas Essential Knowledge and Skills flow throughout the curriculum in Grades K-8 and are an essential foundation for all work in mathematics K-12:

Number, Operation, and Quantitative Reasoning
Patterns, Relationships and Algebraic Thinking
Geometry and Spatial Reasoning
Measurement
Probability and Statistics
Underlying Mathematical Processes

Students will continue to build on this foundation as they expand their understanding through their high school mathematical experiences. This experience is designed to provide appropriate course offerings for students at various levels of achievement and ability. Advanced courses are available for students who desire more specialized coursework. Problem solving is an emphasis in all courses, and students successfully completing the high school program should have problem-solving skills, which will be useful to them throughout life. The use of manipulative in high school mathematics plays an important role in introducing new concepts and remediating deficiencies. Each course places an emphasis on analysis relationships using a variety of representations (concrete, numerical, algorithmic and graphical) and the use of mathematical modeling to solve meaningful problems.

The K-12 mathematics curriculum is a well-balanced program that reflects the importance of mathematical literacy through the vision of the NCTM (National Council of Teachers of Mathematics) goals. Students learn to value mathematics, become confident in their ability to do mathematics, become problem solvers, and learn to communicate mathematically and learn to reason mathematically.