



Mathematics is a language that describes the world around us. It is both beautiful in and of itself and a central component of the arts and sciences. Numeracy and an early understanding of the language of mathematics are essential to long-term well-being and cognitive development.

***Treasure Valley Classical Academy's approach to mathematics is a fusion of classical teaching and a curriculum called Singapore Mathematics.***

Classical teaching uses Socratic dialogue to ask questions, foster inquiry, and draw out explanations, not only about mathematics but also about how it relates to the natural world around us. Singapore Mathematics was developed in the 1980s to give Singaporean students a competitive edge in mathematics and science. It focuses on mastering the concepts required for dynamic problem solving at higher levels of mathematics.

***Mathematics is in fact ideally suited to prepare the mind for higher forms of thought because on one hand it pertains to the world of visible things and on the other hand it deals with abstract concepts. – Dr. Morris Kline***

From 1995 to 2015, Singaporean 8th grade students ranked first in the world four times in mathematics on the Trends in International Mathematics and Science Study and finished no lower than third; U.S. 8th graders ranked between 9th and 19th. During the same period, Singaporean 4th grade students ranked first in the world five times and finished no lower than second; U.S. 4th graders ranked between 6th and 14th.

One of the hallmarks of Singapore Mathematics is a progression from the concrete through the pictorial to the abstract. Kindergarten through second grade students handle physical items and begin to transition to using drawings to represent those items. In third grade, those drawings become increasingly abstract and take the form of simple bars. As students grow in their comfort with the concrete and pictorial phases, the abstract algorithms begin to enter into the curriculum with more frequency.



Using this approach, students gain procedural fluency (how we do something) and progress toward a strong conceptual understanding (why we do something) which is frequently missing in mathematics instruction.

***Mathematics is the art of explanation. If you deny students the opportunity to engage in this activity— to pose their own problems, make their own conjectures and discoveries, to be wrong, to be creatively frustrated, to have an inspiration, and to cobble together their own explanations and proofs—you deny them mathematics itself. – Paul Lockhart***

Singapore Mathematics emphasizes exploring and discussing a variety of ways to think about numbers and mathematical problems. Students are taught to build numbers and develop a sense of how numbers are constructed, working toward automaticity in mental arithmetic. Number bonds, place value mats along with the four standard algorithms, and bar modeling are developed in order to lay the foundation for more complex problem solving. With this background, students become comfortable with explaining mathematics and gain the confidence to approach the abstract challenges of higher-level mathematics and science.