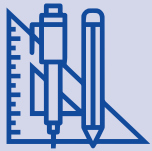




STRUCTURED MATH PLAN

This structured math plan for Mariemont City Schools, based on three key components of math, will help ensure that students develop strong mathematical, problem-solving skills from kindergarten through high school, setting them up for academic success and lifelong learning. Regular assessment and adjustments will be made to meet the specific needs of students and to stay aligned with best practices in mathematics instruction. Evidence-based resources and interventions are utilized.

THREE KEY COMPONENTS OF MATH



Conceptual Understanding:

The ability to comprehend mathematical concepts, operations and relationships.



Procedural Fluency:

The ability to carry out mathematical procedures accurately, efficiently, appropriately and flexibly.



Application:

The ability to apply math in meaningful contexts and real-world scenarios.

CONCEPTUAL UNDERSTANDING

Conceptual understanding is crucial when learning mathematics as it is the foundation for problem-solving and critical thinking skills. While rote memorization of formulas and procedures might lead to short-term success, true mastery and application of mathematical principles stem from a deep comprehension of underlying concepts. A solid conceptual foundation of counting, comparing, number relationships, place value, and the four operations enables learners to later apply and connect various higher level mathematical ideas. This mathematical understanding empowers students to approach new and unfamiliar mathematical challenges with confidence and flexibility in their thinking. Ultimately, a strong conceptual grasp of mathematics not only enhances academic performance but also cultivates analytical skills essential for success outside the classroom setting.

In Mariemont City Schools, we meet the “conceptual understanding” component of math through:

- Systematic and explicit instruction using an evidence-based math curriculum.
- Lesson progressions designed to scaffold learning.
- Manipulatives and visual/digital models incorporated into daily instruction.
- Gradual release model used to ensure proficiency of new skills.
- Skill-based small group instruction.

PROCEDURAL FLUENCY

Procedural fluency is defined as carrying out procedures accurately (the ability to produce mathematically precise answers), efficiently (the ability to produce answers relatively quickly and easily), appropriately (the ability to select and apply a strategy that is appropriate for solving the given problem efficiently), and flexibly (the ability to think about a problem in more than one way and to adapt or adjust thinking if necessary). It's essential to differentiate between mathematical fluency and mathematical automaticity. While these terms are sometimes used interchangeably, they have distinct meanings. Mathematical fluency involves the flexible application of strategies in an efficient and accurate manner, while mathematical automaticity refers to the ability to provide an automatic response. When a student is fluent, they are automatic. When a student is automatic, they are not necessarily always fluent. Both mathematical fluency and mathematical automaticity are critical for a student's future success in their mathematical education. Understanding and cultivating these skills contribute to a well-rounded mathematical foundation for students.

In Mariemont City Schools, we meet the “procedural fluency” component of math through:

- Daily fluency warm-ups integrated into each lesson.
- Weekly, online strategy-based math fact fluency practice.

APPLICATION

Applying mathematics is essential as it links theoretical concepts to real-life scenarios, making the subject more tangible and meaningful. By using math in practical situations, students gain a deeper understanding of its relevance and utility in everyday life. This approach cultivates critical thinking, problem-solving, and analytical skills. Being able to apply learning to new situations prepares students to tackle complex challenges both inside and outside the classroom and equips students with the tools needed for success in various academic and professional endeavors.

In Mariemont City Schools, we meet the “application” component of math through:

- Standards taught within the context of real world scenarios.
- Student application of learning to new contexts.
- Regular assessment of mathematical skills with targeted, evidence-based interventions for struggling students.
- Ongoing professional development for teachers in math instruction.

OHIO'S MATHEMATICAL LEARNING PROGRESSIONS

We follow Ohio's K-8 mathematical learning progressions. These progressions can be seen in the diagram below. These progressions are important for the understanding and coherence of mathematical topics within and across grade levels.

Kindergarten	1	2	3	4	5	6	7	8	HS
Counting and Cardinality									Number and Quantity
Number and Operations in Base Ten						Ratios and Proportional Relationships			
			Number and Operations—Fractions			The Number System			
Operations and Algebraic Thinking						Expressions and Equations			Algebra
								Functions	Functions
Geometry						Geometry			Geometry
Measurement and Data						Statistics and Probability			Statistics and Probability