

**Curriculum at a Glance**  
**Mathematics**  
**Grade 8 - Accelerated Geometry (above grade level math)**

Mathematics is a vigorous and growing discipline – a universal language useful for communication and research in other disciplines. We want our students to reason and communicate mathematically, to be mathematical problem-solvers, to value mathematics and to feel confident in their ability to use mathematics. Throughout the school year, math teachers at MMS foster and emphasize the following mathematical practices:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

This Geometry course is aligned with current Connecticut Core Standards. This course can be taken in the Middle School in 8th grade, or at Darien High School.

<b>Unit Name</b>	<b>Content</b>
Logic	Conditional Statements Converse, Inverse, Contrapositive Symbolic Logic (AND, OR, IF-THEN, NOT, IFF) Truth Tables Rules of Deductive Reasoning Two-column proofs Proof by contradiction
Basic Definitions and Proofs	Points, lines, planes, rays, segments, angles, midpoints, bisectors (1 Day) Writing basic proofs about angles, segments, parallel and perpendicular lines, vertical, complementary, and supplementary angles Properties of equality: reflexing, substitution, addition and subtraction Segment and angle addition Postulates

Triangle Congruency Proofs	Using SSS, ASA, and SAS to prove triangles congruent Using AAS and HL to prove triangles congruent CPCTC Overlapping Triangles The Isosceles Triangle Theorem
Proofs and Properties of Quadrilaterals	Properties of parallelograms Special parallelograms Trapezoids and kites Proof involving parallelograms Proving quadrilaterals are parallelograms Coordinate geometry
Constructions	Constructing Congruent segments Constructing Congruent angles Constructing Angle bisectors Constructing Perpendicular bisectors Constructing a perpendicular line through a point on a line Constructing a perpendicular line through a point off a line Constructing a parallel line through a point off a line Orthocenter, centroid, and circumcenter Euler's line Applying Constructions
Polygons	Angles in an n-gon Regular polygons Ratios and proportions Similar polygons Proving triangles similar Angle Bisector Theorem Side-Splitter Theorem
Right Triangles	The Pythagorean Theorem The distance formula Special right triangles (30-60-90/45-45-90) Similar right triangles

Trigonometry	Identifying trig ratios Using trigonometry to find missing parts of right triangles Angles of elevation and depression Law of Sines Law of Cosines
Circles	Basic definitions Relationships between chords, arcs, and central angles Secants and tangents Inscribed angles Inscribed and circumscribed polygons Chord-secant-tangent theorems Circumference and arc length Equations of circles
Area, Surface Area, and Volume	Areas of triangles and quadrilaterals Areas of Regular Polygons Areas of Circles, Segments, and Sectors Ratios of Areas Surface Area and volume of prisms Surface Area and volume of Pyramids Surface Area of and volume Circular Solids Surface Area of and volume Composite Shapes (3 Days)
Non-Euclidean Geometry	Euclidean Parallel Postulate Neutral Geometry Hilbert's Axioms Hyperbolic Geometry