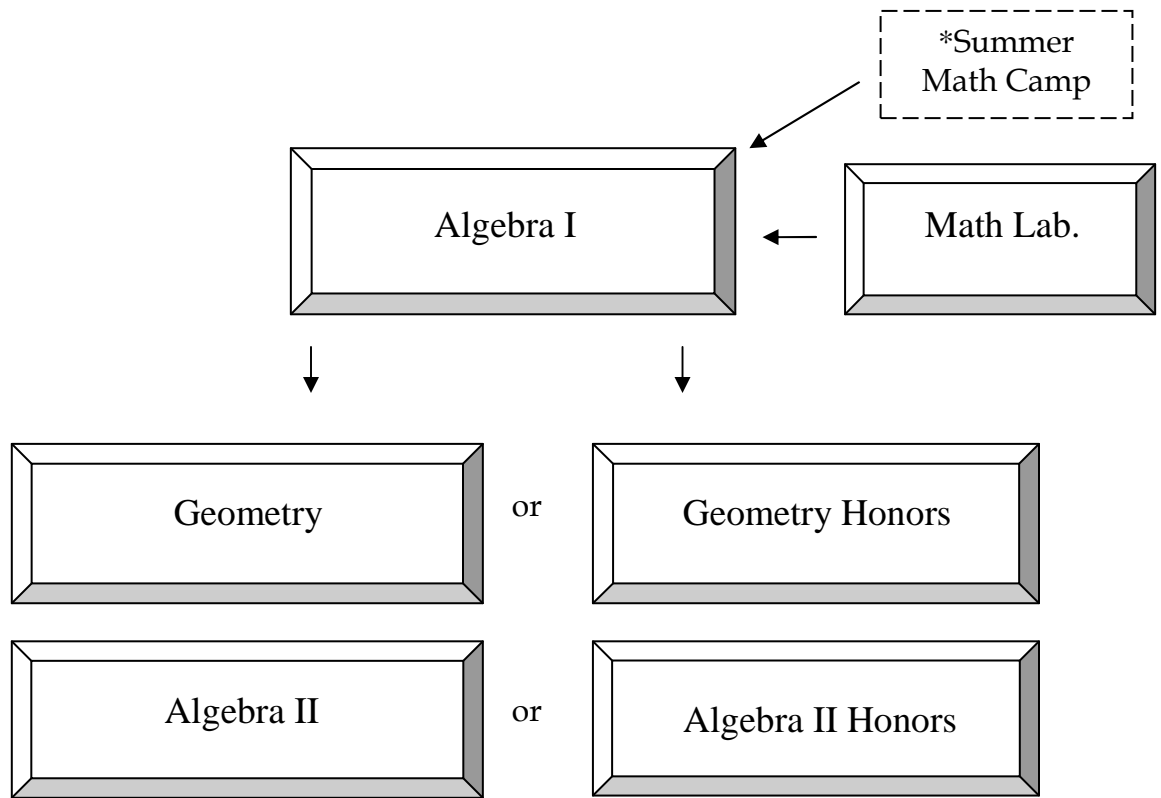
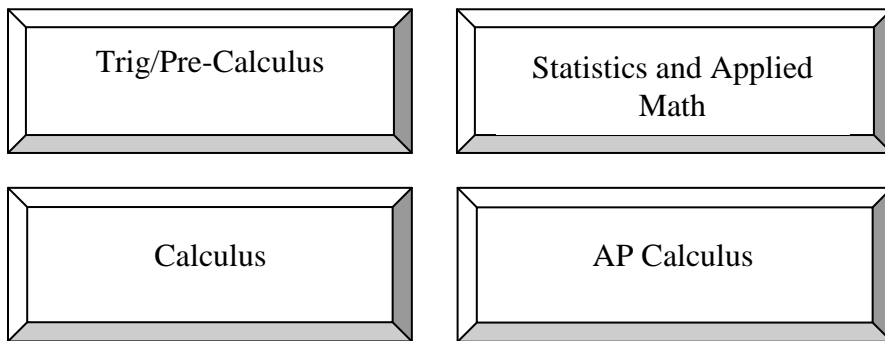


Mathematics



ELECTIVES



Department of Mathematics

The National Council of Teachers of Mathematics (NCTM) initially produced a trio of Standards Documents – *Curriculum and Evaluation Standards for School Mathematics* (1989), *Professional Standards for Teaching Mathematics* (1991), and *Assessment Standards for School Mathematics* (1995). The classroom portions of all three of these documents have been incorporated into the updated version of the Standards document titled *Principles and Standards for School Mathematics* (2000) (PSSM). The PSSM are divided into five content standards, five process standards and six fundamental principles that constitute a high-quality mathematics education. The PSSM is the foundation upon which the Middletown High School mathematics curricula are based. An Executive Summary of the PSSM is available on-line at the following site: http://www.nctm.org/standards/12752_exec_pssm.pdf

The Rhode Island Department of Education, in conjunction with New Hampshire and Vermont education officials, has published a list of Grade Span Expectations (GSE) for Mathematics that is based upon the PSSM and is the criteria for statewide student assessment in their 11th year of high school. The four GSE content area strands are:

- Number and Operations
- Geometry and Measurement
- Functions and Algebra
- Data, Statistics, and Probability

Because of their importance, the curricula are aligned with these GSE. A link to the GSE can be found on-line at the following site: <http://www.ridoe.org/Instruction/gle.aspx>.

Algebra I - full year - credits: 1

Algebraic concepts will be provided to establish an understanding of the basic structure of algebra, its techniques and its role in reasoning processes. An essential component of the course is the chapter project that provides a real word connection to the math content strands in the course. Opportunities are given to students to discuss how to apply mathematics in their lives and how to relate math concepts to material previously learned. Students are encouraged to work together to solve problems, just as they will in the workplace. Students learn how to communicate what they know in mathematics by reading, writing, speaking, and listening. A component of the course is a real world connection to the math content standards in this course.

THIS COURSE TARGETS THE FOLLOWING STUDENT LEARNING EXPECTATION

Primary: A1: Literacy Skills, A2: Acquire information – research and problem solving
Secondary: C2: Personal ethics, S1: Demonstrate responsibility

Algebra II – full year - credits: 1

Note: We believe that successful completion of Algebra I and/or Geometry with a minimum grade of C is an essential foundation for those electing this course.

This course places a heavy emphasis on data interpretation as it relates to real-world problems. To enhance a student's understanding of these situations, an in-depth study of linear, quadratic polynomial, rational, exponential, and logarithmic functions is undertaken. The course expands the number system studied in Algebra I to include the complex numbers. An introduction is made in the study of matrices and determinants. Because of its relevance to real-world situations, probability and statistics are included as well. Opportunities are given to students to discuss how to apply mathematics in their lives and how to relate math concepts to material previously learned. Students are encouraged to work together to solve problems, just as they will in the workplace. Students learn how to communicate what they know in mathematics by reading, writing, speaking, and listening.

THIS COURSE TARGETS THE FOLLOWING STUDENT LEARNING EXPECTATION

Primary: A1: Literacy Skills, A2: Acquire information – research and problem solving

Secondary: C2: Personal ethics, S1: Demonstrate responsibility

Algebra II Honors - full year - credits: 1

Note: We believe that successful completion of Algebra I with a minimum grade of C is an essential foundation for those selecting this course.

Honors Algebra II is a course designed to help the student master the terminology and basic concepts of Algebra and Trigonometry. Students will develop and be able to apply the skills and strategies necessary to select a successful approach to problem solving. Additionally, students will investigate mathematical models and use technology to investigate, reason, interpret and predict in order to solve real world problems with confidence. Graphing calculators are valuable tools for this course by assisting the student to graph functions on the display screen and to view formulas and solutions in their entirety. In addition, this course places heavy emphasis on quadratic equations and relations, polynomials, exponential and logarithmic functions, rational functions and matrices.

THIS COURSE TARGETS THE FOLLOWING STUDENT LEARNING EXPECTATION

Primary: A1: Literacy Skills, A2: Acquire information – research and problem solving

Secondary: C2: Personal ethics, S1: Demonstrate responsibility

Geometry - full year - credits: 1

Note: We believe that successful completion of Algebra I or Algebra II with a minimum grade of C is an essential foundation for those electing this course.

Geometry students learn to work with real world patterns in two and three dimensions. They investigate the properties of congruence and similarities for many geometric features. They apply their algebra skills as they study parallel and perpendicular figures followed by reflections, rotations, and dilations. Students will study area, surface area and volume problems concerning

circles, polygons, cones, prisms and the Pythagorean Theorem. The student will learn to reason deductively by doing geometric proofs.

THIS COURSE TARGETS THE FOLLOWING STUDENT LEARNING EXPECTATION

Primary: A1: Literacy Skills, A2: Acquire information – research and problem solving

Secondary: C2: Personal ethics, S1: Demonstrate responsibility

Geometry Honors - full year - credits: 1

Note: We believe that successful completion of Algebra II Honors or Algebra I with a minimum grade of B is an essential foundation for those electing this course.

This course utilizes the traditional Euclidean model of theorems and postulates using deductive proofs for the development of Geometric knowledge. The laws of logic are used to develop the structure of Geometry. Algebraic topics are integrated into the curriculum and applied in a Geometric setting. Students use the many tools of Geometry to prove geometric figures congruent and similar, and to interpret properties of these figures in an analytical situation. Some of the important topics covered include the Pythagorean Theorem, properties of circles, and the area and volume of two and three dimensional figures, respectively.

THIS COURSE TARGETS THE FOLLOWING STUDENT LEARNING EXPECTATION

Primary: A1: Literacy Skills, A2: Acquire information – research and problem solving

Secondary: C2: Personal ethics, S1: Demonstrate responsibility

Trigonometry/Pre-Calculus - full year - credits: 1

This course synthesizes previous math concepts in such a manner as to make understanding of high mathematics more meaningful to students. The analyses of mathematical principles of this course provide a sound basis for a study of calculus. Areas of study employ set notation and mathematical language to logically progress from elementary functions to the coordinate system to more complex and pre-calculus functions.

THIS COURSE TARGETS THE FOLLOWING STUDENT LEARNING EXPECTATION

Primary: A1: Literacy Skills, A2: Acquire information – research and problem solving

Secondary: C2: Personal ethics, S1: Demonstrate responsibility

Calculus - full year - credits: 1

Note: We believe that successful completion of Trig/Math Analysis with a credit grade of “B” or better is an essential foundation for those electing this course.

The course presents Calculus in an intuitive yet intellectually satisfying way and illustrates the many applications of Calculus to the biological, social, and management sciences. Graphing calculators are an integral part of the program.

THIS COURSE TARGETS THE FOLLOWING STUDENT LEARNING EXPECTATION

Primary: A1: Literacy Skills, A2: Acquire information – research and problem solving

Secondary: C2: Personal ethics, S1: Demonstrate responsibility

Advanced Placement Calculus - full year - credits: 1

Note: We believe that successful completion of Trig/Math Analysis with a credit grade of "A" or a grade of "B" with recommendation of the teacher. This challenging course is designed primarily as a "college level experience." Students are encouraged to take the Advanced Placement Calculus examination. This class utilizes texts, documents and a rigorous pace that correlate to the standards and expectations established by the College Board for Advanced Placement study in this discipline. A direct goal of this course is to help ensure success on the Advanced Placement Exam given in May. This exam may lead to college credit.

This program develops quite rigorously, the importance of limit, continuity, derivatives, and integrals of single valued functions, both algebraic and transcendental. Emphasis is placed on an understanding of the processes involved so as to enable students to intelligently apply theory to practice. Graphing calculators are an integral part of the program.

To receive an AP designation on their transcript, student must take the AP exam in May. A fee is required to take the AP exam. Students must commit to this by October 1.

THIS COURSE TARGETS THE FOLLOWING STUDENT LEARNING EXPECTATION

Primary: A1: Literacy Skills, A2: Acquire information – research and problem solving

Secondary: C2: Personal ethics, S1: Demonstrate responsibility

Statistics and Applied Math – full year – credits: 1

Today, more than ever, statistics plays a very important role in our lives. This course has been designed to provide the student with a comprehensive introduction to statistics and probability in such areas as sociology, business, ecology, economics, education, medicine and mathematics.

Although the mathematical content is rigorous, a special effort has been made in this course to make the concepts of statistics understandable and applicable for all students.

A component of the course is real world connection to math content standards. Opportunities are given to students to discuss how to apply mathematics to their lives and how to relate math concepts to material previously learned. Students are encouraged to work together to solve problems, just as they will in the work place. Students learn how to communicate what they know in mathematics by reading, writing, speaking and listening.

THIS COURSE TARGETS THE FOLLOWING STUDENT LEARNING EXPECTATION

Primary: A1: Literacy Skills, A2: Acquire information – research and problem solving

Secondary: C2: Personal ethics, S1: Demonstrate responsibility