MATHEMATICS

> Graduation Requirement: three credits of high school math, including (or qualifying out of) two years of algebra, plus geometry

Core classes: offered at honors, college prep, foundations levels

> Algebra I → Algebra II → Geometry (or Lab Geometry)

- Students not ready for Algebra must take Pre-Algebra first.
- Some students take Algebra II Honors and Geometry Honors concurrently, in order to be able to take Calculus in 12th grade.

Beyond the core classes:

Advanced Algebra Advanced Algebra Honors	semester	Students planning to take math in college
Trigonometry Trigonometry Honors	semester	Students planning to take math in college
Personal Finance	semester	Useful for all students
Capstone Algebra	semester	College-bound seniors not taking Advanced Algebra
Elementary Statistics	semester	Useful for all students
AP Statistics	year	Strong math students interested in business or economics, sciences, nursing, or social sciences
AP Calculus AB	year	Students interested in science, engineering, economics or business
AP Calculus BC	semester	Take in addition to AP Calculus AB

310 ALGEBRA I, 9-10 (1 credit)
Prerequisites: None.
This course is the first installment of a traditional sequence in college-prep math. Topics include properties of the real number system, solution of linear and quadratic equations, functions, graphing, laws of exponents, polynomials, probability and proportions. There is no formal prerequisite for this course, but a strong pre-algebra background is necessary.

313 PRE-ALGEBRA, 9 (1 credit)
Prerequisites: None.
Students who do not have a solid arithmetic background are strongly encouraged to take this course before taking algebra. The course starts with the basics: understanding numbers, place value and operations, and working with increasingly complicated arithmetic expressions. From there, students make the transition to fundamental algebra topics, including signed numbers, solving equations, graphing, ratios, proportions and percents.

314 ALGEBRA I FOUNDATIONS, 9-10 (1 credit)
Prerequisites: Pre-Algebra and permission of Math Department.
Note: The Algebra I Foundations-Algebra II Foundations sequence is designed to give students a working knowledge of algebra. The sequence does not contain enough content to satisfy the mathematics admissions

requirement of many colleges.This is the first year of a sequence of courses that continues with Algebra II Foundations and Lab Geometry. It is designed for students who have completed a pre-algebra course at GSA or another high school, but who may not be ready for the fast pace of Algebra I. There is no formal prerequisite for this course, but a strong background in arithmetic is necessary. This course emphasizes algrebra skills necessary for community colleges and technical schools.

315 ALGEBRA I HONORS, 9-10 (1 credit)

Prerequisites: None.
Algebra I Honors covers much of the same material as Algebra I, but at a faster pace and in considerably more depth. The course is suitable for students of high mathematical ability who are planning to go into a technical field or who wish to study mathematics for its own sake. There is no formal prerequisite for this course, but a strong pre-algebra background and solid study habits are necessary.

320 GEOMETRY, 10-12 (1 credit)

Prerequisites: Algebra I or Algebra I Honors.
Strongly recommended: Students should have completed or be currently enrolled in Algebra II or Algebra II Honors
Geometry is concerned with the measurement of and relations between lines, angles, surfaces and solids. Students explore basic spatial relationships and study the notion of proof. This course includes a significant amount of analytic geometry and intensive use of algebra.

323 LAB GEOMETRY, 10-12 (1 credit)

Prerequisites: Students should be taking or have taken a second year algebra course. Permission of Math Department required.
This is geometry with power tools. The course is taught by a mathematics teacher in the first semester, and a technology teacher in the second semester. Students actively engage in applying, testing and discovering geometric principles and will become proficient in three levels of geometric thinking; visualization, analysis and informal deduction. Students work cooperatively on real-world projects in workshop settings and are exposed to community resources to see geometric principles applied. Topics covered include angles, parallel lines, triangles, trigonometry, circles, area, volume, and coordinate geometry.

325 GEOMETRY HONORS, 9-12 (1 credit)

Prerequisites: Algebra I or Algebra I Honors.
Strongly recommended: Students should have completed or be currently enrolled in Algebra II or Algebra II Honors.
Students explore basic spatial relationships and study the notion of proof. This course covers much the same material as Geometry but in greater depth and with greater emphasis on proof. Geometry Honors includes a significant amount of analytic geometry and intensive use of algebra. Students in this course should have already taken or should be taking a second-year algebra course.

329 ALGEBRA II FOUNDATIONS, 10-12 (1 credit)

Prerequisites: Should be taken in the year immediately following Algebra I or Algebra I Foundations. Permission of Math Department required.
Note: (1) The Algebra I Foundations-Algebra II Foundations sequence is designed to give students a working knowledge of algebra. The sequence does not contain enough content to satisfy the mathematics admissions requirement of many colleges. (2) Students should take Algebra II Foundations in the year immediately following their Algebra I class. This course is a continuation of Algebra I Foundations. Topics include solution of quadratic equations, solution of systems of linear equations, and basic statistics and data analysis. This course emphasizes algrebra skills necessary for community colleges and technical schools.

330 ALGEBRA II, 10-12 (1 credit)
Prerequisites: Algebra I or Algebra I Honors.
Note: (1) Students should take Algebra II in the year immediately following their Algebra I class. (2) The Math Department recommends that sophomores not take geometry and algebra II in the same year unless they intend to take math in both their junior and senior years.
After a review of Algebra I, students will explore transformations, systems of equations, complex numbers, fractional exponents, rational expressions, basic probability and statistics, and logarithmic and exponential functions.

335 ALGEBRA II HONORS, 10-12 (1 credit)
Prerequisites: Algebra I or Algebra I Honors.
Note: (1) Students should take Algebra II in the year immediately following their Algebra I class. (2) The Math Department recommends that sophomores not take geometry and second-year algebra in the same year unless they intend to take math in both their junior and senior years.
After a review of Algebra I, students explore transformations, systems of equations, complex numbers, fractional exponents, rational expressions, basic probability and statistics, logarithmic and exponential functions, and sequences and series. The pace of the course and the depth of coverage are more intense than in Algebra II.

341 CAPSTONE ALGEBRA, 12 (½ credit)
Prerequisites: Algebra II or Algebra II Honors.
This course concentrates on math skills that students will need to pass college math placement tests and to succeed in freshman college courses. Topics covered include graphing, linear equations, inequalities, basic word problems, exponential and logarithmic relationships, and polynomial functions, all with an emphasis on problems that students are likely to encounter in their first year of college. The course is strongly recommended for college-bound seniors who are not taking Advanced Algebra or an AP math course.

344 ELEMENTARY STATISTICS, 10-12 (½ credit)
Prerequisites: Algebra I or Algebra I Honors.
It is hard to understand the world around us without some knowledge of basic statistics. What is a "margin of error" in a political poll? What principles of sampling tell us that certain samples estimate the population well? Students explore data sets, understand the basis of sampling and experimental design, study probability, review correlation and linear regression, and learn the basics of inferential statistics and hypothesis testing. The course is especially suited for students who will need to use or interpret elementary statistical analysis in business, natural sciences, medical professions, and social science.

346 ADVANCED ALGEBRA, 11-12 (½ credit)
Prerequisites: Algebra II or Algebra II Honors.
This is the first half of a course called Pre-calculus in many schools. Topics include graphs of conic sections, solving systems of linear equations 3x3, sequences and series, partial fraction decomposition, and a review of exponential functions, logarithms, and imaginary numbers. The course will be useful to most students planning to take mathematics courses in college. Students who plan college study of sciences, business, or other fields that require advanced mathematics should also plan to take Trigonometry or Honors Trigonometry before high school graduation.

347 TRIGONOMETRY, 11-12 (½ credit)
Prerequisites: Algebra II or Algebra II Honors. Students must also have completed or be currently enrolled in Geometry or Geometry Honors.
This is the second half of a course called Pre-calculus in many schools. High school trigonometry is essential for admission to many college programs, including math, sciences, engineering, and programs at top-tier business colleges (for example, MMA requires trigonometry). Topics covered include radian measure,

definitions and graphs of circular functions, applying trigonometry to geometry and physics problems, derivation and use of fundamental trig identities, and verifying identities.

355 AP STATISTICS, 10-12 (1 credit)

Prerequisites: Algebra II or Algebra II Honors.
Note: This course requires college-level reading ability. ESOL students must have successfully completed or be exempt from RWV III and be concurrently enrolled in or exempt from RWV IV.
This honors class is a rigorous, college-level introduction to statistics. The four major areas covered are exploring data, planning a study, anticipating patterns, and statistical inference. The course syllabus is aligned with the nationally recognized standards of the College Board Advanced Placement program. Students are expected to take the College Board AP Statistics exam in May.

356 ADVANCED ALGEBRA HONORS, 11-12 (½ credit)

Prerequisites: Algebra II or Algebra II Honors.
This is the first half of a course called Pre-calculus in many schools. Topics include properties and graphs for diverse functions, solving systems of linear equations 3x3 and larger, sequences and series, proof by induction, and a review of exponential functions, logarithms, and imaginary numbers. Students who plan college study of sciences, business, or other fields that require advanced mathematics should also plan to take Trigonometry or Honors Trigonometry before high school graduation.

357 TRIGONOMETRY HONORS, 11-12 (½ credit)

Prerequisites: Algebra II or Algebra II Honors. Students must also have completed or be currently enrolled in Geometry or Geometry Honors.
This is the second half of a course called Pre-calculus in many schools. High school trigonometry is essential for admission to many college programs, including math, sciences, engineering, and programs at top-tier business colleges (for example, MMA requires trigonometry). Topics covered include radian measure, definitions and graphs of circular functions, applying trigonometry to geometry and physics problems, derivation and use of fundamental trig identities, and verifying identities.

365 AP CALCULUS (AB level), 11-12 (1 credit)

Prerequisites: Advanced Algebra or Advanced Algebra Honors or Trigonometry or Trigonometry Honors.
This is a rigorous, college-level course equivalent to about a semester of calculus at most colleges. The syllabus is aligned with the nationally recognized standards of the College Board Advanced Placement program. All students are expected to take the College Board AP Calculus AB exam in May. Fluency in algebra and trigonometry is essential, and students will be required to do preparatory homework during the summer preceding the course.

374 BC CALCULUS, 11-12 (½ credit)

Prerequisites: Advanced Algebra or Advanced Algebra Honors or Trigonometry or Trigonometry Honors. Either permission of the Math Department or completion of AP Calculus AB 365 is also required.
This is a rigorous, college-level introduction to calculus equivalent to a full year of calculus at most colleges. The course moves very rapidly. The syllabus is aligned with the nationally recognized standards of the College Board Advanced Placement program. All students are expected to take the College Board AP Calculus BC exam in May. Fluency in algebra and trigonometry is essential, and students are required to do preparatory homework during the summer preceding the course.

377 PERSONAL FINANCE 10-12 (½ credit)

Personal Finance covers interest, banking, credit card debt, mortgages, budgeting and other topics involving the handling of money. This highly practical course teaches finance skills that every student will need to deal with in life after high school.