

# VCHS Mathematics Department

The Math Department provides a comprehensive program, servicing students at all levels of ability. The courses for those who need additional time to develop their fundamental math skills include Algebra IA and Algebra IB. All math courses emphasize critical thinking, problem solving, mathematical concepts, applications, and preparation for standardized testing.

All math teachers provide a minimum of 2 hours of tutoring per week. The math department posts tutoring schedules on their Grovesite during the school year.

It is our hope that our students in mathematics will recognize the mathematical precision that is God's world and more clearly understand the attributes of God's character – immutability, wisdom and order.

**The following courses are offered:**

- ↔ Algebra I
- ↔ Two Year Algebra I A & I B
- ↔ Geometry
- ↔ Honors Geometry
- ↔ Algebra II
- ↔ Algebra II Lab
- ↔ Honors Algebra II
- ↔ Consumer Math
- ↔ Finite Math
- ↔ Trigonometry/Pre-Calculus
- ↔ Honors Trigonometry/Pre-Calculus
- ↔ Statistics
- ↔ AP Statistics
- ↔ AP Calculus AB
- ↔ AP Calculus BC

**Course Title ALGEBRA I**

Course #: 810  
 Grade Levels: 9, 10, 11, 12  
 Graduation Credit: Mathematics  
 Fees: None

*Pre-Requisite: Grade of "C" or above in Pre-Algebra or equivalent (see VCHS counselor if Pre-Algebra has not been completed for a list of entrance criteria); Entrance examination may be required.*

UC Approval: Yes, "c" course – Mathematics

Stresses problem solving by simplifying algebraic expressions and calculating algebraic sentences. Students learn to understand absolute value, apply the properties of arithmetic, work with inequalities, and comprehend exponents and polynomials. Students will be prepared in the areas of graphs and linear equations, systems of equations, rational expressions, functions, the quadratic equation, polynomials, rational expressions and exponents.

**Additional Expectations:** This course typically requires 2 hours of homework per week. Additionally, students are required to invest 75 minutes per week on ALEKS, an online tutorial and content mastery program.

**THIS CLASS IS OFFERED IN TWO FORMATS: ONLINE AND IN A TRADITIONAL CLASS SETTING.**

**Course Title TWO YEAR ALGEBRA I A & I B**

Course #: 831 & 832  
 Grade Levels: 9, 10, 11, 12  
 Graduation Credit: Mathematics  
 Fees: None

UC Approval: Yes, "c" course –  
 Mathematics.  
**Each year counts as  
 one semester credit.**

*Pre-Requisite: For Algebra IB: Grade of "C" or above in Algebra IA.*

Enables students to cover the material in Algebra I over a two-year period. The Algebra IA course includes an extended review of pre-algebra concepts. These two courses count as one year toward the mathematics requirement.

**Additional Expectations:** This course typically requires 2 hours of homework per week. Additionally, students are required to invest 75 minutes per week on ALEKS, an online tutorial and content mastery program.

**Course Title GEOMETRY**

Course #: 815  
 Grade Levels: 9, 10, 11, 12  
 Graduation Credit: Mathematics  
 Fees: None

UC Approval: Yes, "c" course –  
 Mathematics

*Pre-Requisite: Grade of "C" or above in both semesters of high school Algebra I or grade of "B" or above in 8th-grade Algebra I; Entrance examination may be required.*

Explores postulates and theorems of plane and solid geometry, parallel and perpendicular lines, polygons and congruent and similar triangles. This course covers special right-triangle relationships, trigonometric ratios, circles, conditional statements and writing two-column and indirect proofs. Curriculum emphasizes proofs of theorems and calculations based on theorems.

**Additional Expectations:** This course typically requires 2 hours of homework per week. Additionally, students are required to invest 75 minutes per week on ALEKS, an online tutorial and content mastery program.

**THIS CLASS IS OFFERED IN TWO FORMATS:  
 ONLINE AND IN A TRADITIONAL CLASS SETTING.**

**Course Title HONORS GEOMETRY**

Course #: 816  
 Grade Levels: 9, 10, 11, 12  
 Graduation Credit: Mathematics  
 Fees: None  
 UC Approval: Yes, "c" course –  
 Mathematics

*Pre-Requisite: Grade of "A" or above in Algebra I is strongly recommended; Entrance examination may be required; Instructor approval.*

Expands the curriculum of the Geometry course to emphasize circles, constructions, angles of polygons and surface area. Students calculate volume of prisms, pyramids, cylinders and cones and learn about symmetry, rotations and translations.  
**Special Note:** A TI83+ or TI84+ graphing calculator is recommended.

**Additional Expectations:** This course typically requires 2 hours of homework per week. Additionally, students are required to invest 75 minutes per week on ALEKS, an online tutorial and content mastery program.

**Course Title ALGEBRA II**

Course #: 820  
 Grade Levels: 9, 10, 11, 12  
 Graduation Credit: Mathematics  
 Fees: None  
 UC Approval: Yes, "c" course –  
 Mathematics

*Pre-Requisite: Grade of "C" or above in Algebra I and Geometry.*

Presents function notation, linear equations, factoring, quadratic and polynomial equations and radical expressions. Students work with complex numbers, curve sketching, conic sections, exponential and rational functions, logarithms, matrices and simple statistics. Curriculum includes an introduction to trigonometry.

**Special Note:** A TI83+ or TI84+ graphing calculator is required.

**Additional Expectations:** This course typically requires 2 hours of homework per week. Additionally, students are required to invest 75 minutes per week on ALEKS, an online tutorial and content mastery program.

**THIS CLASS IS OFFERED IN TWO FORMATS: ONLINE AND IN A TRADITIONAL CLASS SETTING.**

**Course Title ALGEBRA II LAB**

Course #: 848  
 Grade Levels: 9, 10, 11, 12  
 Graduation Credit: General Elective  
 Fees: None  
 UC Approval: No

*Pre-Requisite: Concurrent enrollment in Algebra II.*

Supplements the Algebra II course. Students enroll in this class the opposite day of their Algebra II class, allowing students to have math five days a week. The previous day's lecture is reviewed, focusing on recognized areas of weakness. Students will work problems directly related to the homework, receiving immediate feedback on questions. Students also participate in group projects, team teaching, and develop a class portfolio. The online ALEKS tutorial is an integral part of the weekly class participation. The next day's material is also previewed, strengthening the foundation for the next day. ALEKS is included in the normal class grading scale.

**Special Note:** Students receive 5.0 units of general elective credit (2.5 units per semester) for enrolling in this class.

**Special Note:** If this class is taken as an 8<sup>th</sup> class in a student's schedule, the standard extra period tuition fee will be charged.

**Course Title HONORS ALGEBRA II**

Course #: 821  
 Grade Levels: 9, 10, 11, 12  
 Graduation Credit: Mathematics  
 Fees: None  
 UC Approval: Yes, "c" course – Mathematics

*Pre-Requisite: Grade of "B" or above in Honors Geometry or grade of "A" in Geometry is strongly recommended; Grade of "A" in Algebra I is strongly recommended; Entrance examination may be required.*

Expands and accelerates all topics in the California State Standards for Algebra II, including probability, linear, quadratic and polynomial functions, rational equations, matrices, complex numbers, factoring polynomials, radical expressions, exponential functions, logarithms, conic sections, sequence and series, and trigonometry.

**Special Note:** A TI83+ or TI84+ graphing calculator is required.

**Additional Expectations:** This course typically requires 2-3 hours of homework per week. Additionally, students are required to invest one hour per week on ALEKS, an online tutorial and content mastery program.

**Course Title CONSUMER MATH – ONLINE**

Course #: 802  
 Grade Levels: 11, 12  
 Graduation Credit: Mathematics  
 Fees: None  
 UC Approval: No

*Pre-Requisite: None.*

Reviews basic math operations, transferring concepts and skills gained in class to everyday situations. Topics include budgeting, insurance, banking, mortgages and measurement. This course includes other life skills topics outside of mathematics.

**THIS CLASS IS OFFERED IN AN ONLINE FORMAT ONLY.**

**Course Title FINITE MATH**

Course #: 849  
 Grade Levels: 10, 11, 12  
 Graduation Credit: Mathematics or Technology  
 Fees: None  
 UC Approval: Yes, “c” course – Mathematics

*Pre-Requisite: Grade of “C” or above in Algebra II.*

Designed for students who are seeking to bolster their Algebra II background. Topics include linear functions, systems of linear equations, matrices, linear programming with both geometric and algebraic approaches, sets and counting, probability distributions, statistics and finance. The finance portion uses time-value-of-money functions to analyze financial instruments such as annuities, loans, mortgages, leases, and savings. Microsoft Excel is used as a teaching tool in the classroom. This is an excellent course for students wishing to prepare themselves for the CSU entry-level mathematics exam or for students who desire to move on to Trigonometry/Pre-Calculus but who do not yet have sufficient mastery of Algebra II concepts. Students may apply this class to either their math graduation requirement or their technology graduation requirement.

**Special Note:** A TI83+ or TI84+ graphing calculator is required.

**Additional Expectations:** This course typically requires 2 hours of homework per week.

**Course Title TRIGONOMETRY/PRE-CALCULUS**

Course #: 825  
 Grade Levels: 10, 11, 12  
 Graduation Credit: Mathematics  
 Fees: None

*Pre-Requisite: Grade of "B" or above in Algebra II is strongly recommended; Grade of "C" or above on Algebra II final examination; OR Grade of "C" or above in Finite Mathematics.*

UC Approval: Yes, "c" course – Mathematics

Prepares students to take AP Calculus AB and covers all major topics in trigonometry, including standard properties of trigonometric functions, inverse trigonometric functions, radians, law of sines and cosines, double- and half-angle formulas, identities, polar coordinates and polar equations. The Pre-Calculus portion reviews Algebra II with graphing calculators and then advances to vectors, parametric equations, sequences, series and a formal introduction to calculus.

**Special Note:** A TI83+ or TI84+ graphing calculator is required.

**Additional Expectations:** This course typically requires 2 – 3 hours of homework per week. Additionally, students are required to invest 75 minutes per week on ALEKS, an online tutorial and content mastery program.

**THIS CLASS IS OFFERED IN TWO FORMATS: ONLINE AND IN A TRADITIONAL CLASS SETTING.**

**Course Title HONORS TRIGONOMETRY/PRE-CALCULUS**

Course #: 828  
 Grade Levels: 10, 11, 12  
 Graduation Credit: Mathematics  
 Fees: None

*Pre-Requisite: Grade of "B" or above in Honors Algebra II or grade of "A" or above on Algebra II is strongly recommended.*

UC Approval: Yes, "c" course – Mathematics

Prepares students to take AP Calculus BC. The fundamental concepts of polynomial, exponential, logarithmic and trigonometric functions, inverse functions, analytic geometry, polar coordinates, complex numbers, vectors, determinants, sequences, series, matrices, limits and continuity are covered. The last quarter covers derivatives, integrals and other topics in Calculus to prepare students for taking AP Calculus BC the following year.

**Special Note:** A TI83+ or TI84+ graphing calculator is required.

**Additional Expectations:** This course typically requires 2 – 3 hours of homework per week. Additionally, students are required to invest 75 minutes per week on ALEKS, an online tutorial and content mastery program.

**Course Title STATISTICS**

Course #: 850  
 Grade Levels: 10, 11, 12  
 Graduation Credit: Mathematics or Technology  
 Fees: None  
 UC Approval: Yes, "c" course – Mathematics

*Pre-Requisite: Grade of "C" or above in Algebra II.*

Focuses on the use of real data and the importance of relevance, context and the interpretation of results. Topics include the role of statistics, the data analysis process, graphical methods for displaying data, numerical methods for describing data, linear regression and correlation, nonlinear relations and transformations, random variables and probability distributions, sampling variability and sampling distributions, and confidence intervals. Microsoft Excel is used as a teaching tool in the classroom. This course is designed for students who desire to take an advanced math class but do not wish to take an AP course.

**Special Note:** A TI83+ or TI84+ graphing calculator is required.

**Additional Expectations:** This course typically requires 2 hours of homework per week. Additionally, students are required to invest 75 minutes per week on ALEKS, an online tutorial and content mastery program.

**Course Title AP STATISTICS**

Course #: 844  
 Grade Levels: 11, 12  
 Graduation Credit: Mathematics  
 Fees: \$86 (AP exam fee – subject to change)  
 UC Approval: Yes, "c" course – Mathematics

*Pre-Requisite: Grade of "B" or above in Algebra II or grade of "C" or above in Trigonometry/Pre-Calculus strongly recommended. Students who do not meet these criteria but achieved at least a C- may still take the class, but they must meet with their counselor and their current teacher to discuss the expectations of the course. Students earning below a C- in the previous course can only enroll with counselor approval.*

Covers major introductory topics in both descriptive and inferential statistics such as mean, median, mode, variance, standard deviation, linear and nonlinear regression, correlation and hypothesis testing. Students learn sampling procedures, estimate population characteristics, find confidence intervals, test hypotheses, compare two populations and develop chi-squared tests. Students also learn to apply techniques for normal, binomial, geometric and other probability distributions. This course includes a rigorous review for the AP examination.

**Special Note:** A TI83+ or TI84+ graphing calculator is required.

**Additional Expectations:** This course typically requires 5 hours of homework per week.

## Course Title AP CALCULUS AB

Course #:	835
Grade Levels:	11, 12
Graduation Credit:	Mathematics
Fees:	\$86 (AP exam fee – subject to change)
UC Approval:	Yes, “c” course – Mathematics

*Pre-Requisite: Grade of “B” or above in Trigonometry/Pre-Calculus is strongly recommended. Students who do not meet these criteria but achieved at least a C- may still take the class, but they must meet with their counselor and their current teacher to discuss the expectations of the course. Students earning below a C- in the previous course can only enroll with counselor approval.*

Familiarizes students with the topics tested on the AP Calculus AB exam including limits and continuity, derivatives, max-min problems, related rates, slope fields, integrals, Reimann sums, volumes of rotation and the calculus of transcendental functions. This course includes a rigorous review for the AP examination.

**Special Note:** A TI83+ or TI84+ graphing calculator is required.

**Additional Expectations:** This course typically requires 5 hours of homework per week. Additionally, students are required to invest 75 minutes per week on ALEKS, an online tutorial and content mastery program.

## Course Title AP CALCULUS BC

Course #:	840
Grade Levels:	11, 12
Graduation Credit:	Mathematics
Fees:	\$86 (AP exam fee – subject to change)
UC Approval:	Yes, “c” course – Mathematics

*Pre-Requisite: Grade of “B” or above in Honors Trigonometry/Pre-Calculus or grade of “C” or above in AP Calculus AB is strongly recommended. Students who do not meet these criteria but achieved at least a C- may still take the class, but they must meet with their counselor and their current teacher to discuss the expectations of the course. Students earning below a C- in the previous course can only enroll with counselor approval.*

This course prepares students for the AP Calculus BC exam. Course includes all topics covered in AP Calculus AB, with additional (calc C) topics including Euler’s approximation, integration by parts, integration by partial fractions, MacLaurin and Taylor series, calculus applied to parametric and polar equations. This course begins by reviewing pre-calculus (calc A) topics at a quick pace, assuming coverage in Honors Trig/Pre-calculus. This course includes a rigorous review for the AP examination.

**Special Note:** A TI83+ or TI84+ graphing calculator is required.

**Additional Expectations:** This course typically requires 5 hours of homework per week.