

**Math I Extension**

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EL

Grade Level: 9th  
Prerequisite: None

Math I Extension is an elective, intervention class for students enrolled in Integrated Math I that need extra support. In this class, teachers use collaborative learning groups and other strategies to re-teach core concepts from the Math I course. Students have time to complete homework assignments, review critical concepts and build technical literacy in the computer lab as they work through the Math I online curriculum at their own pace.

*Course is graded Pass or Fail (P/F)*

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**AGILE MIND: Intensified Integrated Math I (2 periods)**

Math, (CSU/UC "c"), EL

Grade Level Option: 9  
Prerequisite: Standard Met or Nearly met on SBAC  
*\*Enrollment based on demonstrated mathematics Tier II Intervention need\**

This course is a two-hour block course. The curriculum is a rigorous, research-based approach to teaching Integrated Math 1 published by Agile Mind. It is an interactive, student-centered curriculum which draws on growth mindset principles to help shape students' motivation, confidence, and ultimate success as learners. A core theme is developing the understanding that intelligence is malleable, or changeable, not fixed. We believe this course will ignite a love of learning math in your students and should prepare them for great success in Integrated Math 2 and beyond.

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**Integrated Math I 1/2,1/2 SDAIE**

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Math, (CSU, UC "c")

Grade Level: 9th  
Prerequisite: None

Integrated Math 1 is the first course of a three course sequence including Integrated Math 1, Integrated Math 2, and Integrated Math 3. This course satisfies the California Common Core Standards for Integrated Math 1 and is intended for all ninth graders. Integrated Math 1 builds and strengthens students' conceptual knowledge of functions, linear functions, equations, inequalities, sequences, basic exponential functions, systems of linear equations, systems of linear inequalities, one variable descriptive statistics, correlation and residuals, analyzing categorical data, mathematical modeling, and both coordinate and transformational geometries.

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**Accelerated Math I 1/2**

Math, (CSU, UC "c")

Grade Level: 9th  
Prerequisite: None

Accelerated Math 1 is the first course of a three course sequence including Accelerated Math 1, Accelerated Math 2, and Accelerated Math 3. This course satisfies the California Common Core Standards for Integrated Math 1 and is intended for accelerated, gifted and/or highly motivated ninth graders. Accelerated Math 1 builds and strengthens students' conceptual knowledge of functions, linear functions, equations, inequalities, sequences, basic exponential functions, systems of linear equations, systems of linear inequalities, one variable descriptive statistics, correlation and residuals, analyzing categorical data, mathematical modeling, and both coordinate and transformational geometries. Special emphasis will be paid to enrichment activities, projects, mathematical discourse and development of critical thinking and analysis skills.

**No extra point for GPA calculation**

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**Math II Extension**

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EL

Grade Level: 10th  
Prerequisite: None

Math II Extension is an elective, intervention class for students enrolled in Integrated Math II that need extra support. In this class, teachers use collaborative learning groups, adaptive software and other strategies to reinforce core concepts from the Math II course. Students receive support on homework/assignments, review critical concepts and build technical literacy in the computer lab as they work through the Math II online curriculum at their own pace.

***Course is graded Pass or Fail (P/F)***

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**Integrated Math II 1/2, 1/2 SDAIE**

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Math, (CSU, UC “c”)

Grade Level: 10th  
Prerequisite: Integrated Math I

Integrated Math 2 is the second course of a three-course sequence (Integrated Math 1, 2, 3). This course satisfies the California Common Core Standards for Integrated Math 2 and is intended for tenth graders. Math 2 introduces quadratic functions, comparing them to linear and exponential models from Math 1. Students use the Pythagorean Theorem from Math 1 to represent circles and parabolas. Students explore the complex number system during their exploration of quadratic equations. Students extend their statistical work from Math 1 by exploring probability models and prediction. Finally, students use similar triangles and right triangle trigonometry to solve real-world problems. Students also construct formal proofs and build up a series of crucial geometry theorems.

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**Accelerated Math II 1/2**

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Math, (CSU, UC “c”)

Grade Level: 10th  
Prerequisite: Integrated or Accelerated Math I

Accelerated Math 2 is the second course of a three-course sequence (Accelerated Math 1, 2, 3). This course satisfies the California Common Core Standards for Integrated Math 2 and is intended for accelerated, gifted and/or highly motivated tenth graders. Accelerated Math 2 introduces quadratic functions and compares them to linear and exponential models from Accelerated Math 1. Students use the Pythagorean Theorem from Integrated Math 1 to represent circles and parabolas. Students explore the complex number system during their exploration of quadratic equations. Students extend their statistical work from Integrated Math 1 by exploring probability models and prediction. Finally, students use similar triangles and right triangle trigonometry to solve real-world problems. Students also construct proofs and build an understanding of important geometry theorems. Special attention will be paid to introducing trigonometry concepts such as: Law of Sines, Law of Cosines, the Unit Circle and graphs of trigonometric functions. Special emphasis will be paid to enrichment activities, projects, mathematical discourse and development of critical thinking and analysis skills.

***No extra point for GPA calculation***

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**Integrated Math III 1/2**

Math, (CSU, UC “c”)

Grade Level: 11th

Prerequisite: Integrated Math II

Integrated Math 3 is the third course of a three course integrated math sequence. For the Mathematics III course, instructional time will focus on the following critical areas: extend the laws of exponents to rational exponents; apply methods from probability and statistics to draw inferences and conclusions from data; expand understanding of functions to include polynomial, logarithmic, rational, and radical functions; expand trigonometry to include general triangles, radian measure, trigonometric functions whose domain is all real numbers; and consolidate functions and geometry to create models and solve contextual problems.

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**Accelerated Math III Honors 1/2**

Math, (CSU, UC “c”)

Grade Level: 11th

Prerequisite: Integrated or Accelerated Math II

Accelerated Math III Honors is the third course in a sequence that includes Accelerated Math I and II. For the Accelerated Mathematics III Honors, instructional time will focus on the following critical areas: extend the laws of exponents to rational exponents; apply methods from probability and statistics to draw inferences and conclusions from data; expand understanding of functions to include polynomial, logarithmic, rational, and radical functions; expand trigonometry to include general triangles, radian measure, trigonometric functions whose domain is all real numbers; and consolidate functions and geometry to create models and solve contextual problems. In addition, extensive study of fundamental trigonometric identities and applications will help prepare students for the study of Calculus. Students will also gain crucial precalculus skills including advanced function theory, end behavior, proficiency with graphing technology and an introduction to limits.

***+1 extra point for GPA calculation***

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**Math in Engineering (Elective)**

EL

Grade Level: 9, 10, 11, 12

Prerequisite: None

This elective math course allows students to think critically and work collaboratively in student teams. The course includes students participate in developing solutions to real world problems using engineering design process, emphasising mathematics contents.

*\*Currently this course is only offered at SGHS*

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### **Introduction to Data Science 1/2**

Math, EL, (CSU, UC-“c/g”)

Grade Level Option: 11-12  
Prerequisite: Integrated Math II

This course is an introduction to both statistical analysis and computer science principles (coding). The course consists of a series of inquiry-driven lessons that encourage students to ask critical questions about their world, create surveys and collect data using technology and mobile devices. Students will analyze and visualize data using the “R” programming language used in academic research. Students will gain crucial critical thinking skills, become informed and conscientious consumers of data and leave the class with a broad set of 21st century skills that will prepare them for postgraduate study in STEM, social science or computer science fields.

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### **Probability and Statistics 1/2**

Math, EL, (CSU, UC-“c/g”)

Grade Level Option: 11-12  
Prerequisite: Integrated Math II

This course is an introduction to the study of probability and statistics, interpretation of data and fundamental statistical problem solving. It will provide students with the facility to interpret statistical information. Students will learn statistics and probability by *doing* statistics and probability; therefore activities and projects will be assigned regularly. The course content includes measures of central tendency, variability, normal curves, data collection through sampling and experimental design techniques, regression. Probability of events, expected value, conditional probability through two-way tables, Venn and tree diagrams, simulation techniques. Use of technology will be emphasized.

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### **Statistics 1/2 AP**

Math, EL, (CSU, UC-“c/g”)

Grade Level Option: 11-12  
Prerequisite: Integrated Math II

The purpose of the AP course in Statistics is to help students develop analytical and critical thinking skills as they are introduced to the major concepts and tools for collecting, analyzing and drawing conclusions from data. Students are exposed to four broad conceptual themes: exploring data (that includes describing patterns and departures from patterns), sampling and experimentation (that includes planning and conducting studies and experiments), anticipating patterns (that includes exploring random phenomena using probability and simulation), and statistical inference (that includes estimating population parameters and testing hypotheses). The use of technology will be emphasized, and in particular a graphing calculator will be required and its use will be necessary to the understanding and mastering statistical concepts, in brief to “see” statistics.

For more information about the AP Statistics course, see

- [AP Statistics Course Description](#) (PDF)
- [AP Statistics Course Overview](#) (PDF)
- [Graphing Calculator Policy](#) (PDF)

**+1 extra point for GPA calculation**

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### **Applied Statistics 1/2**

EL

Grade Level Option: 11-12  
Prerequisite: Integrated Math II

This course is a basic introduction to the study of probability and statistics. The course content includes measures of central tendency, data visualization (dot plots, histograms, scatterplots), basic notions of the normal distribution, data collection through sampling and conducting surveys. Probability topics will include basic notions of probability, expected value, conditional probability, two-way tables, Venn and tree diagrams.

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**Trigonometry/Precalculus**

Math, EL, (CSU, UC-“c/g”)

Grade Level Option: 11, 12  
Prerequisite: Integrated Math III

This course is designed to meet the needs of the student who has completed Integrated Math III and desires to broaden their mathematical background. The course covers trigonometric functions and identities, the unit circle, trigonometric equations, inverse equations, triangle solutions, limits, sequences and series, and polar coordinates.

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**Elementary Calculus**

Math, EL, (CSU, UC-“c/g”)

Grade Level Option: 11, 12  
Prerequisites: Integrated Math III AND Trig/Precalc Bridge (summer course) OR Trig/Precalc (year-long course)

Students study functions, limits, continuity, differentiation and integration of rational polynomials, circular, exponential-logarithmic functions, inflection points, curve analysis, area between two curves, volume of revolution, and applications to problems in science.

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**Calculus AB 1/2 AP**

Math, EL, (CSU, UC-“c/g”)

Grade Level Option: 11, 12  
Prerequisite:  
Accelerated Math III or Integrated Math III (plus Trig/Precalc Bridge) or Trig/Precalc

AP Calculus AB is roughly equivalent to a first semester college calculus course devoted to topics in differential and integral calculus. The AP course covers topics in these areas, including concepts and skills of limits, derivatives and the application of derivatives, definite integrals, and the Fundamental Theorem of Calculus, particle in motions and applications of integral. Students are encouraged to approach problems from graphically, numerically, analytically and verbally to make connections between different concepts that are being taught in the class. Students will learn how to use technology to help solve problems, experiment, interpret results, and support conclusions.

- [AB and BC Course and Exam Description](#) (PDF)
- [AB Course Overview](#) (PDF)

**+1 extra point for GPA calculation**

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**Calculus BC 1/2 AP**

Math, EL, (CSU, UC-“c/g”)

Grade Level Option: 11, 12  
Prerequisite: Accelerated Math III or Calculus AB 1/2 AP

AP Calculus BC is roughly equivalent to both first and second semester college calculus courses. In this class, not only will the students learn all the topics from AP Calculus AB such as concepts and skills of limits, derivatives and the application of derivatives, definite integrals, and the Fundamental Theorem of Calculus, particle in motions and applications of integral. They will also learn sequences and series to determine convergence and divergence, Maclaurin series, Taylor series, radius and interval of convergence and operations of power series, polar to find arc length and area, parametric and vectors. Students are encouraged to approach problems from graphically, numerically, analytically and verbally to make connections between different concepts that are being taught in the class.

- [AB and BC Course and Exam Description](#) (PDF)
- [BC Course Overview](#) (PDF)

**+1 extra point for GPA calculation**

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**Math Computer Programming**

Math, EL, (CSU, UC-“g”)

Grade Level Option: 11, 12

Prerequisite: Integrated or Accelerated Math II

Computer programming is a yearlong course. We will be learning fundamental concepts in computer science as well as how to program in JavaScript (which will require learning HTML). No prior programming knowledge is expected. By the end of the year, students should be comfortable designing interactive web pages, use code to model simple situations, and design simple games.

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**Computer Science A AP**

Math, EL, (CSU, UC-“c/g”)

Grade Level Option: 11, 12

Prerequisite: Integrated or Accelerated Math II

This course is equivalent to a first-semester, college-level course in computer science. The course introduces students to computer science with fundamental topics that include problem solving, design strategies and methodologies, organization of data (data structures), approaches to processing data (algorithms), analysis of potential solutions, and the ethical and social implications of computing. The course emphasis both object-oriented and imperative problem solving and design using Java language. These techniques represent proven approaches for developing solutions that can scale up from small, simple problems to large, complex problems. This course is compatible with many CS1 courses at the university level.

- [Course Description](#) (PDF)
- [Course Overview](#) (PDF)

**+1 extra point for GPA calculation**

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**Computer Science Principles AP**

Math, EL, (CSU, UC-“d/g”)

Grade Level Option: 11, 12

Prerequisite: Integrated or Accelerated Math II

This course is designed to be the equivalent of a first-semester introductory college computing course. In this course, students will develop computational thinking vital for success across all disciplines, such as computation tools to analyze and study data and working with large data sets to analyze, visualize and draw conclusions from trends. The course is unique in its focus on fostering student creativity. Students are encouraged to apply creative processes when developing computation artifacts and to think creatively while using computer software and other technology to explore questions that interest them. They will also develop effective communication and collaboration skills, working individually and collaboratively to solve problems, and discussing and writing about the importance of these problems and the impacts to their community, society and the world.

- [Course and Exam Description](#) (PDF)
- [Course Overview](#) (PDF)

**+1 extra point for GPA calculation**

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