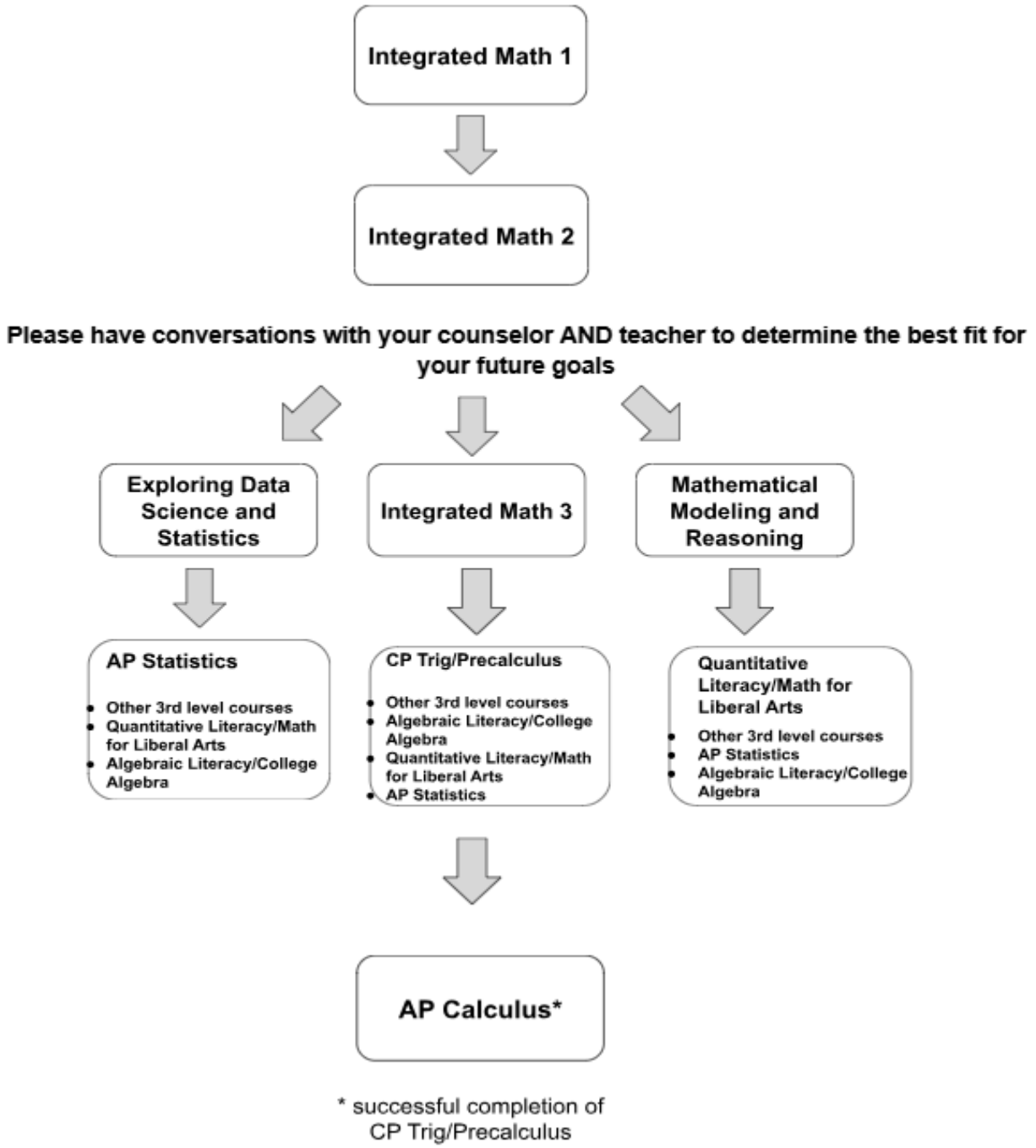
Mathematics



Mathematics Content Standards

1. **Number Sense, Properties, and Operations:** Number sense provides students with a firm foundation in mathematics. Students build a deep understanding of quantity, ways of representing numbers, relationships among numbers, and number systems. Students learn that numbers are governed by properties and understanding these properties leads to fluency with operations.
2. **Patterns, Functions, and Algebraic Structures:** Pattern sense gives students a lens with which to understand trends and commonalities. Students recognize and represent mathematical relationships and analyze change. Students learn that the structures of algebra allow complex ideas to be expressed succinctly.
3. **Data Analysis, Statistics, and Probability:** Data and probability sense provides students with tools to understand information and uncertainty. Students ask questions and gather and use data to answer them. Students use a variety of data analysis and statistics strategies to analyze, develop and evaluate inferences based on data. Probability provides the foundation for collecting, describing, and interpreting data.
4. **Shape, Dimension, and Geometric Relationships:** Geometric sense allows students to comprehend space and shape. Students analyze the characteristics and relationships of shapes and structures; engage in logical reasoning, and use tools and techniques to determine measurement. Students learn that geometry and measurement are useful in representing and solving problems in the real world as well as in mathematics.

A.P. Calculus AB

10th, 11th and 12th Grade
1.0 Credit
(Level II Grade Weight)

Following the College Board's suggested curriculum designed to parallel college-level calculus courses, AP Calculus AB provides students with an intuitive understanding of the concepts of calculus and experience with its methods and applications. These courses introduce calculus and include the following topics: elementary functions; properties of functions and their graphs; limits and continuity; differential calculus (including definition of the derivative, derivative formulas, theorems about derivatives, geometric applications, optimization problems, and rate-of-change problems); and integral calculus (including anti derivatives and the definite integral). The purpose of the course is to prepare students to take the A.P. Calculus exam in the spring of the year. Student must submit an application to take this course. **Prerequisite: C.P. Trigonometry/Pre-Calculus required with "C" or higher and instructor approval.**

Counseling Notes:

- Students must purchase a Ti-84 Graphing calculator.
- Course fee of $96.00 for the A.P. Examination.
- All students taking A.P. Calculus AB will be required to take the Advanced Placement Examination in order to receive the weighted credit for this course.
- An AP open house night will be hosted in the spring for all students who are registering for AP courses. Teachers will cover class expectations for parents/guardians and students during this time. The parent/guardian and student are required to sign a digital AP contract to enroll in this course. This course requires a teacher recommendation from the current teacher of the same content (if applicable). The teacher's name who is recommending you for the course is required on the AP contract.

A.P. Statistics

10th, 11th and 12th Grade
1.0 Credit
(Level II Grade Weight)

Following the College Board's suggested curriculum designed to parallel college-level statistics courses, AP Statistics courses introduce students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. Students are exposed to four broad conceptual themes: exploring data, sampling and experimentation, anticipating patterns, and statistical inference.

Prerequisite: Must be a senior with completion of CP Integrated Math 3 or a junior with completion of CP Trigonometry/Pre-Calculus or Trigonometry/Math Analysis with a C or better.

Counseling Notes:

- Students must purchase a Ti-84 Graphing calculator.
- Course fee of $96.00 for the A.P. Examination.
- All students taking A.P. Statistics will be required to take the Advanced Placement Examination in order to receive the weighted credit for this course.
- An AP open house night will be hosted in the spring for all students who are registering for AP courses. Teachers will cover class expectations for parents/guardians and students during this time. The parent/guardian and student are required to sign a digital AP contract to enroll in this course. This course requires a teacher recommendation from the current teacher of the same content (if applicable). The teacher's name who is recommending you for the course is required on the AP contract.

Integrated I

9th and 10th Grade

1.0 Credit

In Integrated Math 1, students will study linear and exponential equations and functions. Students will use linear regression and perform data analysis. They will also learn about geometry topics such as simple proofs, and congruence.

Integrated II

9th, 10th and 11th Grade

1.0 Credit

In Integrated Math 2, students will study quadratic, absolute value, and other functions. Students will also explore polynomial equations, factoring, and probability and its applications. Coverage of geometry topics extends to polygon relationships, proofs, similarity, trigonometry, and transformations.

Mathematical Modeling and Reasoning

10th, 11th and 12th Grade

1.0 Credit

This course allows students to apply foundational mathematical skills and analytical concepts to real-world situations. These courses focus on strategies required for problem solving, critical evaluation of numerical information, decision making, and economic productivity in real-world applications. Topics included are numeracy, ratio and proportional reasoning, modeling, financial literacy, spatial and geometric modeling, and statistics.

Exploring Data Science and Statistics

10th, 11th and 12th Grade

1.0 Credit

This course focuses on descriptive statistics, with an introduction to inferential statistics. Topics include event probability, normal probability distribution, collection and description of data, frequency tables and graphs, measures of

central tendency and variability, random variables, and random sampling. Students will build a foundational knowledge of statistics and data science to prepare them for future math classes.

Integrated III

10th, 11th and 12th Grade
1.0 Credit

In Integrated Math 3, students will expand their understanding of area and volume with geometric modeling, which students will apply throughout the course as they learn new types of functions. Students will study polynomial, radical, logarithmic, rational, and trigonometric functions. They will also learn how visual displays and statistics relate to different types of data and probability distributions.

C.P. (Honors) Trigonometry/Pre-Calculus

9th, 10th, 11th and 12th Grade
1.0 Credit

Pre-Calculus courses combine the study of Trigonometry, Elementary Functions, Analytic Geometry, and Math Analysis topics as preparation for calculus. Topics typically include the study of complex numbers; polynomial, logarithmic, exponential, rational, right trigonometric, and circular functions, and their relations, inverses and graphs; trigonometric identities and equations; solutions of right and oblique triangles; vectors; the polar coordinate system; conic sections; mathematical induction; matrix algebra; sequences and series; and limits and continuity.

Prerequisite: Successful completion of Integrated Math 3
** Students **cannot** receive credit for both Trigonometry/Math Analysis and C.P. Trigonometry/Pre-Calculus

Algebraic Literacy and MAT 1340 College Algebra

11th and 12th Grade
1.0 HS credit
4 college credits (Front Range Community College)

Focuses on a variety of functions and the exploration of their graphs. Topics include: equations and inequalities, operations on functions, exponential and logarithmic functions, linear and non-linear systems, and an introduction to conic sections. The last five units of study will span the Spring semester. These units correspond with the Front Range Community College MAT 1340 College Algebra. All students must register for the Front Range concurrent enrollment credit in the Spring semester. Successful students will be awarded 4 CE math credits for MAT 1340. MAT 1340is a statewide Guaranteed Transfer (GT) class. This class will transfer to other public colleges and universities in Colorado. It is not guaranteed to transfer to out-of-state schools.

Prerequisite: Integrated Math 3 or equivalent.

Students cannot receive credit for both C.P. Trigonometry/Pre-Calculus and Algebraic Literacy/MAT 1340.

Teacher recommendation is required for enrollment.

Must enroll in both Algebraic Literacy (110030) and MAT 121 College Algebra (114000)

There is a fee for this course. See the fee schedule in the general registration guide.

Quantitative Literacy and MAT 1240 Math for Liberal Arts

12th Grade
1.0 HS credit
4 college credits (Front Range Community College)

Focuses on connections between mathematics and the society in which we live and is intended for liberal arts majors. Topics include: set theory and logic, mathematical modeling, probability and statistical methods, and consumer mathematics. The last four units of study will span the Spring semester. These units correspond with the Front Range Community College MAT 1240 Math for Liberal Arts. All students must register for the Front Range concurrent enrollment credit in the Spring semester. Successful students will be awarded 4 CE math credits for MAT 1240.

Prerequisite: Integrated Math 3 or equivalent.

Teacher recommendation is required for enrollment.

Must enroll in both Quantitative Literacy (110010) and MAT 1240 Mathematics for Liberal Arts (110020)

There is a fee for this course. See the fee schedule in the general registration guide.

Voyager Math I

Does NOT meet CDHE- Math requirement

9th, 10th, 11th, and 12th Grade
1.0 Credit

Voyager Math 1 is a year-long mathematics course for students who require specialized instruction at a modified grade level aligned with mathematics standards. Lessons incorporate conceptual understanding, procedural skills, fluency, and application. Must be approved by the SSS Department and the student must have an active IEP.

Foundations of Math I

9th, 10th, 11th, and 12th Grade
1.0 Credit

Foundations 1 is a year-long mathematics course for students who require specialized instruction at a modified grade level aligned with mathematics standards. Topics include properties of rational numbers (i.e., number theory), ratio, proportion, estimation, exponents and radicals, the rectangular coordinate system, sets and logic, formulas, and solving first-degree equations and inequalities. Must be approved by the SSS Department and the student must have an active IEP.

Foundations of Math II

9th, 10th, 11th, and 12th Grade

1.0 Credit

Foundations II is a year-long Pre-Math I course that increases students' foundational math skills and prepare them for Math I by covering a variety of topics, such as properties of rational numbers (i.e., number theory), ratio, proportion, estimation, exponents and radicals, the rectangular coordinate system, sets and logic, formulas, and solving first-degree equations and inequalities. Must be approved by the SSS department and the student must have an active IEP.