

MATHEMATICS

NOTE: Calculators are used throughout our program and they will be available for purchase or loan. The calculator used is listed next to the course. Any scientific calculator may be substituted for the Ti-30XII. Substitutions should not be made for graphing calculators.

Honors Program

- Grade 9:** Geometry H, (Scientific calculator, Texas Instrument Ti-30XII)
- Grade 10:** Algebra 2 H, (Graphing calculator, Texas Instrument Ti-83+ or 84+)
- Grade 11:** Pre-Calculus H (Graphing calculator, Texas Instrument Ti-83+ or 84+)
- Grade 12:** AP Calculus AB and AP Calculus BC (Graphing calculator, Texas Instrument Ti-83+ or 84+)
- Elective:** Grade 11 or 12: AP Statistics, (Graphing Calculator, Texas Instrument Ti-83+, or Ti-84+)

The **Honors** program is designed for students who have demonstrated exceptional mathematical ability and motivation. Honors courses cover material at a faster pace and in greater depth. Students are required to do more complex problems and to extend and apply mathematical concepts that are taught in class to new situations. Summer assignments are required in all courses except Geometry Honors. The Honors program is designed to meet the needs of students who anticipate entering college programs requiring an extensive mathematical background. However, due to the increasing technological nature of our society, a strong mathematical background is becoming more important for all students. Thus, any student who meets the criteria for the Honors level is encouraged to enroll in it.

Prerequisite: Most students enter into the Honors program by taking Algebra 1 in eighth grade and meeting the specified score (of 70%) on the College Prep Algebra 1 A final exam.

Students enrolled in an honors class with a grade of 82 and teacher recommendation are eligible to enroll in the next year's Honor or Advanced Placement class. Enrolled students who do not meet this requirement may become eligible with a passing score on a pretest, and/or a strong teacher recommendation endorsed by the Department Supervisor. All other students must take a pretest in order to determine eligibility. In order to take the AP exam, students must be enrolled in the course. Students who do not begin the Honors program in grade nine are eligible to move into Geometry Honors and/or Algebra 2 Honors if they receive a final grade of "A" in College Prep Algebra 1 A and are recommended by the teacher. In such cases, the students will usually take two math courses simultaneously in order to be able to schedule AP Calculus in grade twelve.

AP Calculus AB Grade 12 is primarily concerned with developing the students' understanding of the concepts of calculus and providing experiences with its methods and applications. The course emphasizes a multi-representational approach to calculus, with concepts results and problems being expressed graphically, numerically, analytically and verbally. Content for this course includes the topics covered in college-level Calculus I and about one-third of college-level Calculus II. Students successfully completing this course will be prepared to take Calculus II their first year in college. This course also prepares students for the AP Calculus AB Exam designed by The College Board. Students enrolled in this course must take the AP Calculus AB Exam. Acceptable scores on this test can earn the student college credits. This course meets six periods per week. **6 Credits**

AP Calculus BC Grade 12 is an extension of Calculus AB rather than an enhancement; common topics require similar depth of understanding. Content for this course includes the topics covered in college-level Calculus I and Calculus II. Students successfully completing this course will be prepared to take Calculus III their first year in college. This course also prepares students for the AP Calculus BC Exam designed by The College Board. Students enrolled in this course must take the AP Calculus BC Exam. Acceptable scores on this test can earn the student college credits. This course meets six periods per week. **6 Credits**

AP Statistics is an elective open to students who have completed College Prep Algebra 2 A with at least a "B" average or have passed Algebra 2 Honors with at least a "C" average. It may be taken in addition to College Prep Pre-Calculus A or Pre-Calculus Honors, or in addition to or as an alternative to AP Calculus. In some cases it may be taken instead of Pre-Calculus Academic. However, any student who anticipates taking Calculus in college should take this course only *in addition* to Pre-Calculus. Statistics is the science of collecting and analyzing data and is a required course for many college majors. Graphing calculators will be used to explore real life data. This course prepares students for the Advanced Placement Test. Students enrolled in this course must take the appropriate AP exam in Statistics. Acceptable scores on this test can earn students college credits. **5 Credits**

Prerequisite: 72 in Algebra 2 H or 82 in College Prep Algebra 2 A

College Prep A Program

CP-A

- Grade 9: College Prep Algebra 1 A
(Scientific Calculator, Texas Instrument TI-30XII)
- Grade 10: College Prep Geometry A
(Scientific Calculator, Texas Instrument TI-30XII)
- Grade 11: College Prep Algebra 2 A
(Graphing Calculator, Texas Instrument TI-84+)
- Grade 12: College Prep Pre-Calculus A
(Graphing Calculator, Texas Instrument TI-84+)
- Prerequisite: 83 in College Prep Algebra 2 A, or teacher recommendation

These courses are designed to meet the needs of the college preparatory student. However, due to the increasing technological nature of our society, any student who has demonstrated the ability to do mathematics at the College Prep A level, even though he or she may not be planning to go to college at this time, would benefit from these courses and is strongly encouraged to enroll in them. Teacher recommendations and standardized test scores are used to determine whether students should enroll in the academic level. Students who complete this program are prepared to succeed in any regular mathematics program in college, up to and including the study of Calculus. It should be noted that many college programs now require the study of Calculus, as an entry-level course.

College Prep B Program CP-B

- Grade 9: College Prep Algebra 1B, (Scientific Calculator, Texas Instrument TI-30XII)
- Grade 10: College Prep Geometry B, (Scientific Calculator, Texas Instrument Ti-30XII)
- Grade 11: College Prep Algebra 2 B, Applied Mathematics (Graphing Calculator, Texas Inst. TI-83, TI-83+, or TI84+)
- Grade 12: College Prep Senior College Math B, (Graphing Calc., Texas Inst. TI-83, TI-83+, or TI-84+). Pre-Calculus B: (Graphing Calculator, Texas Instrument TI-83, TI-83+, or TI-84+).

The **College Prep B Program** is designed for students who are planning to continue their education beyond high school at either a college or a technical school, but have demonstrated some difficulty in performing mathematics at the academic level. Teacher recommendations and standardized test results will be used to determine whether students should schedule College Prep B level courses. Students who meet the requirements should be encouraged to enroll in these courses even if they are not planning to go to college at the present time. Due to the increasing technological nature of our society, more and more occupations require knowledge of the mathematical skills taught in these courses.

During the first two years of the program, in both **Algebra 1** and **Geometry**, the topics covered are the same as those presented in the College Prep A program. The primary difference is in the complexity of the problems to which the students must apply the skills and concepts. The third year of the program, **College Prep Algebra 2 B**, includes most of the topics covered in College Prep Algebra 2 A. However, time is also allocated to review for the High School Proficiency Assessment and expand upon topics from Algebra 1. **Applied Mathematics CP-B** will prepare students to complete Algebra 2B during their senior year. All of these courses meet the core curriculum content standards and the common core standards as specified by the state.

Year four: **Senior College Math** is designed for the specific purpose of preparing students to enter the typical college algebra or statistics course after graduation. Topics included are rational expressions and functions, logarithmic functions, trigonometric functions, applications of trigonometric laws, statistics, probability and discrete mathematics. The course will also include a review of basic topics for college placement tests. It is recommended that students have at least a "C" average in College Prep Algebra 2 B to enroll in this course.

Pre-Calculus Grade 12 CP-B

This course will examine trigonometry and its many practical applications. The course will move at a slower pace than Pre-Calculus A and focus on topics such as measurement in designing and fabrication, architecture, charting courses using bearings in nautical and aviation applications, and surveying. **5 Credits**

Prerequisites: Algebra I, Geometry, and Algebra 2 at the CP B level or above. Students must have obtained an 80 average or above in Algebra 2 B.

Basic Skills/ College Prep C Program CP-C

- Grade 9: Pre-Algebra 1 CPC/Innovative Learning Strategies
- Grade 10: Algebra 1 CP C
- Grade 11: Integrated Math 3 G/ Geometry CP C
- Grade 12: Consumer Math

**All classes use the Scientific Calculator,
Texas Instrument Ti-30XII**

Pre-Algebra College Prep C

This course will be mandatory for all incoming ninth grade students who have not had Algebra I in eighth grade and are not scheduled for Algebra IA or B. **5 Credits**

The **BSI / College Prep C** program is designed to meet the needs of students who have been identified by NJ ASK 8 scores, or by local assessment, as to need specific support to prepare for the HSPA. The topics in these courses are coordinated with the clusters on the Grade 11 New Jersey High School Proficiency Assessment (HSPA). Credits for these courses fulfill graduation requirements. Students who score below the state standard on the NJ ASK 8 in eighth grade must take Pre-Algebra 1 College Prep C. Ninth grade students who score below an established local standard on a locally prepared test given in the spring must take Algebra College Prep C. They may also continue in their regular math program if it fits into their schedule. Students in the tenth grade who score below an established local standard on a locally prepared test given in the spring must take Integrated Math 3 the following year. They may continue in their regular program if it fits into their schedule. Any junior who does achieve a score of proficient on the HSPA must enroll in **Consumer Math** in Grade 12.

It is important that all students in the Basic Skills/CPC program are in Integrated Math 3 the year they are taking the HSPA. Students who are placed in Basic Skills/CPC because they did not meet standards on state or locally prepared tests, may test out of the program the following year by meeting established standards on a locally prepared test. It is recommended that students have at least a "B" average and teacher recommendation to move from the Basic Skills/CPC program to College Prep B program. All students who plan to continue their education beyond high school should complete College Prep Algebra 1.

Innovative Learning Strategies

Students who are partially proficient on the NJ ASK 8 will be given the opportunity to improve their skills through this full-year course. The course will be divided between the study of math skills, and study skills, such as note-taking, listening skills, time management, and organizational skills. A total of 5 Credits will be given for this course in conjunction with the Innovative Learning Strategies course listed in Language Arts.

Grade 9

5 Credits

Senior Consumer Math

CP-C

This course will focus on the practical mathematical skills students will need to possess in their adult lives. Topics will include: budgeting, leasing vs. buying a car, bank loans, insurance, and other topics. Those students who have not passed the spring administration of the HSPA in the 11th grade must take this course and complete the AHSA process. Upon successful completion of this course, students will earn 5 credits towards graduation.

Grade 12

5 Credits

Senior College Math

CP-B

This course is designed for the specific purpose of preparing students to enter the typical college algebra or statistics course after graduation. Topics included are rational expressions and functions, logarithmic functions, trigonometric functions, applications of trigonometric laws, statistics, probability and discrete mathematics. The course will also include a review of basic topics for college placement tests. It is recommended that students have at least a "C" average in College Prep Algebra 2 B to enroll in this course.

5 Credits

Preparing for the SAT

CP-A

This course is designed for those students who are planning to take the SAT. It gives students the skills they need to tackle the SAT with confidence. This one-semester elective targets math topics, such as arithmetic, algebra, and geometry, and verbal areas, such as English grammar and usage and the fundamentals of writing the essay. In addition, students will be exposed to test construction and scoring, test-taking strategies, and higher order problem solving and thinking skills. Students will leave this course with skills that will enhance their future studies. The credits will not replace the math and English requirements.

Grades 11, 12

2.5 Credits