

Recommended Mathematics Flowchart

All New Jersey public school students must successfully complete a minimum of three years of mathematics as a graduation requirement. Algebra I, Geometry and Algebra II are required. Additionally, students may be required to pass a state assessment in mathematics as a graduation requirement. The TI-84 calculator is used in all math classes. A flowchart is provided to assist students and parents in planning for a high school mathematics course sequence.

1: This course requires state testing components.

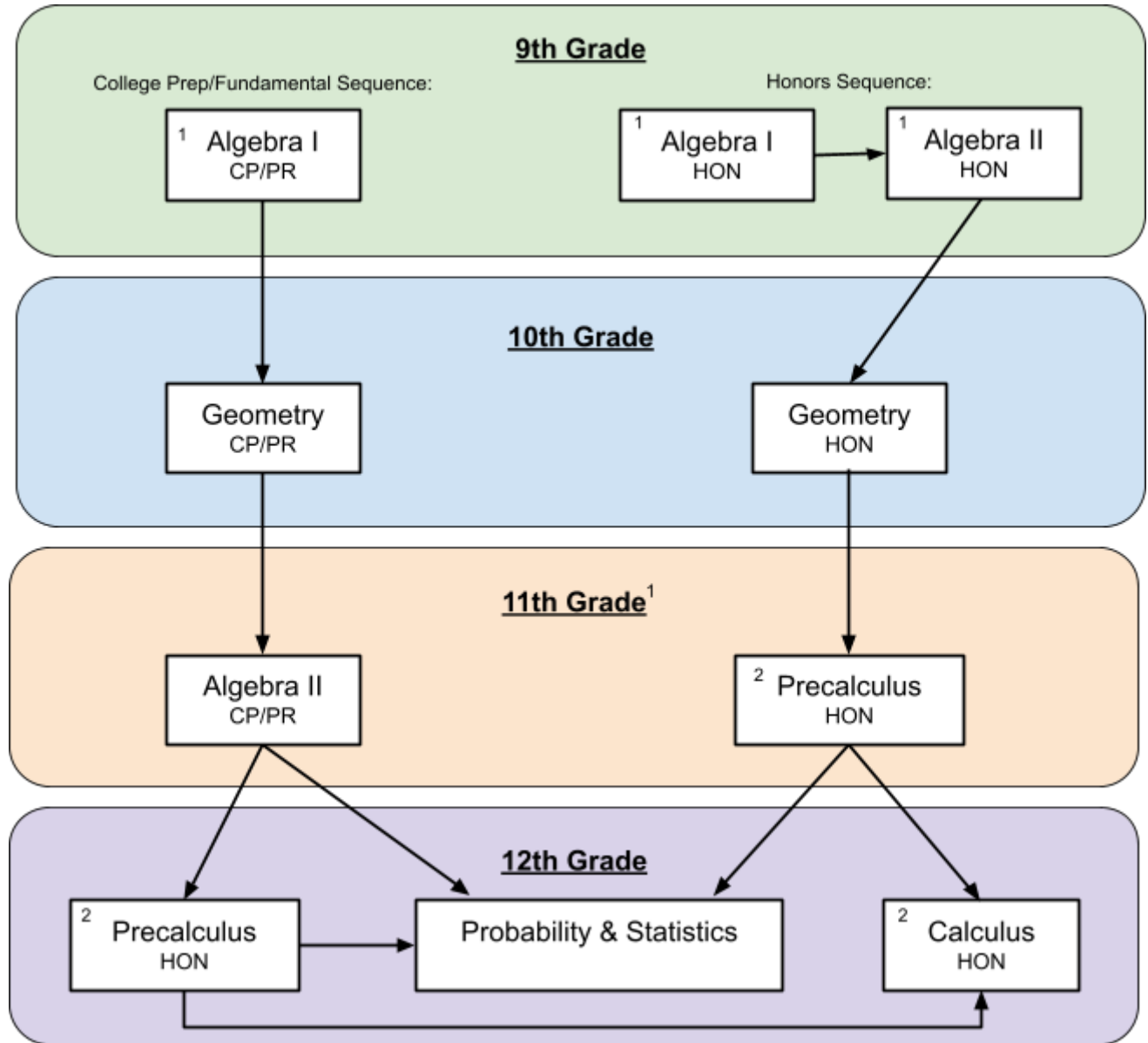
2: RCBC Cap Course credits can be earned by taking this course.

Probability and Statistics can be taken at the same time as Pre-Calculus or Calculus.

HON: Honors (+1 quality point in GPA)

CP: College Prep

PR: Pullout Replacement/Fundamentals



Mathematics Course Descriptions:

Algebra 1 (CP/PR)

10 credits/2 semesters

Algebra I is designed to involve the student in the application of mathematics both in the classroom and the real world setting. Students will become proficient in using mathematical symbolism, technological procedures and problem solving strategies to gain an understanding of algebraic concepts. A course in Algebra I should be a prerequisite for a student who plans to take Algebra II or Geometry. *This course is designed for 9th grade students over the course of two semesters.*

Geometry (CP/PR)

5 credits/1 semester

Geometry is designed to improve one's ability to reason carefully, correctly and logically. Students completing this course will be able to improve their skills in analyzing problems and making intelligent decisions. This course will give the student a basic knowledge of geometric concepts which will be of significant value to any student in real life and on the future assessments, including the NJSLA and SAT. Topics will include congruence, similarity, right triangles, trigonometry, circles, expressing geometric properties with equations, geometric measurement and dimension, and modeling with geometry. *This course is designed for 10th grade students following successful completion of Algebra I.*

Algebra 2 (CP/PR)

5 credits/1 semester

Algebra II is designed to involve the student in the exploration and use of mathematics both in the classroom and the real world setting. Students will become proficient in using mathematical symbolism, algebraic and technological procedures and problem solving strategies to gain an understanding of the integration of all mathematics. It develops advanced algebra skills such as systems of equations, advanced polynomials, imaginary and complex numbers, quadratics, and concepts and includes the study of trigonometric functions. The content of this course is also important for students' success on the NJSLA, ACT, SAT, and college mathematics entrance exams. *This course is designed for 11th grade students following successful completion of Algebra I and Geometry.*

Probability & Statistics (CP)

5 credits/1 semester

Statistics and statistical statements are widespread throughout our society, but few people possess more than a rudimentary understanding of their content or their implications. This lack of understanding can lead to unfavorable results, both financially and socially. For example, these common questions involve statistical concepts that an individual could experience on any given day:

What is a stronger statement, that some event "probably won't occur" or that it is "unlikely to occur"?

Why do so many people spend so much money purchasing lottery tickets?
How can you get caught in a downpour on a day with a forecast of a "0% chance of rain"?
What should you really believe when you see results of surveys and polls?
Are births of male babies and births of female babies equally likely to occur?
Which is safer, traveling to Florida on a bus or on a plane?

Probability and Statistics is a course designed to introduce students to basic and intermediate concepts of statistics, with an emphasis on understanding and interpreting real-world applications. Students will learn how to calculate probabilities, analyze events, make intelligent predictions, and test hypotheses and other claims from advertisements and political campaigns. Use of a calculator is required, along with basic algebraic manipulation of formulas, and geometric interpretations of areas. This course teaches concepts of which every adult citizen and consumer in our society should be familiar and is designed for 12th grade students.

Quality points for the following honors level courses will gain one additional point for each grade in the GPA calculation with the exception of failing grades. Success in these courses requires that the student demonstrates above average participation, initiative, and achievement in prior coursework. Precalculus and Calculus are weighted as honors courses.

Honors Algebra 1

5 credits/1 semester (Fall)

Honors Algebra I is designed for the student who has already learned some of the major concepts and processes of algebra but seeks a deeper and broader understanding of the discipline. This course integrates the advanced elements of algebra with technology, problem solving, application and mathematical modeling. As well, Honors Algebra I is designed to further develop the student's reasoning skills, with an emphasis on logic that is central to student achievement in upper level mathematics courses. *This course is available for 9th grade students during their fall semester and moves at twice the pace as CP/PR Algebra I. Students who enroll in Honors Algebra I are expected to take Honors Algebra II during their 9th grade spring semester.*

Honors Algebra 2

5 credits/1 semester (Spring)

This course is designed to involve the student in the exploration and use of mathematics both in the classroom and the real world setting through the in depth study of functions. Students will explore, discover, and make connections between algebra and the world around them while developing critical thinking, problem solving and decision making skills. Students will learn to explore a problem and look for a variety of techniques to solve it. Technology and graphing calculators will be used to solve problems in a variety of methods.

Students will develop a large cache of problem solving strategies. Application problems are emphasized throughout the semester. Solving and graphing various functions, such as linear, absolute value, quadratic, rational, polynomial, exponential, logarithmic, and trigonometric functions will be studied. The course will develop advanced algebra skills in systems of equations, imaginary and complex numbers, transformations, and statistical analysis. *This course is designed for 9th grade students immediately following the successful completion of Honors Algebra I.*

Honors Geometry

5 credits/1 semester

Honors Geometry is a course intended for students who excel in math and who intend to continue their study of higher levels of mathematics in high school and college. This honors course will take an in-depth look at creating geometric constructions for many of the geometric concepts covered in this course and solving enrichment application activity assignments. The honors course will also have an increased emphasis on writing formal geometric proofs using deductive reasoning. This course will require students to be highly motivated, as the instruction will be faster paced with an expectation of a higher level of understanding of all geometric postulates and theorems. *This course is designed for 10th grade students in the honors course sequence.*

Precalculus

5 credits/1 semester (Fall)

Precalculus is the study of discrete topics in advanced algebra and trigonometry. Students will investigate theoretical, numerical, graphical, and spatial topics upon which to build their study of advanced mathematics. Precalculus provides the background for mathematical concepts, problems, issues, and techniques that appear in the study of Calculus, including but not limited to: functions, trigonometry, vectors, parametric equations, polar coordinates, complex numbers, conic sections, exponential functions, and logarithmic functions. The use of technology is infused in this course to gather, analyze, and communicate mathematical information. *This honors course is designed for 11th or 12th grade students in the honors course sequence with above average performance in Algebra II.*

Calculus

5 credits/1 semester (Spring)

The purpose of Calculus is to present to the student a foundation of the basic concepts of calculus: the limit, the derivative and the integral. Whenever appropriate, Calculus concepts will be presented in various ways, including: graphically, numerically, algebraically, verbally and physically. Teaching strategies will include computer and calculator treatment of subject matter, discovery through use of manipulatives, audio/visual presentations of concepts and applications, and teacher directed activities. These will address various learning styles to promote involvement and achievement. *This honors course is designed for 12th grade students in the honors course sequence.*