



# MATHEMATICS

The Math department at Cathedral High School follows the New York State required Regents Common Core curriculum in Math and the NYS Common Core learning standards for mathematics. We offer classes at all levels of proficiency. As the times change, technology and learning change as well. We invite learning with technology in the classroom. Students can learn through the interactive whiteboards and graphing calculators. We, as a department, challenge our students and prepare them for college.

## STANDARD 1

Make sense of problems and persevere in solving them.

## STANDARD 2

Reason abstractly and quantitatively.

## STANDARD 3

Construct viable arguments and critique the reasoning of others.

## STANDARD 4

Model with mathematics.

## STANDARD 5

Use appropriate tools strategically.

## STANDARD 6

Attend to precision.

## STANDARD 7

Look for and make use of structure.

## STANDARD 8

Look for and express regularly in repeated reasoning.

## Algebra I Common Core Honors

**HONORS ACADEMY**

**GRADE 9 | FULL-YEAR COURSE**

This is a full-year course for the more advanced Math students. It follows the New York State Regents for Algebra 1 Common Core. Students will learn about the different topics of number represented in the real number systems. Problem solving techniques and situations will also be taught at a more challenging level for the students. Students will be introduced to different types of functions such as linear equations and inequalities, and quadratic functions. Simple exponential and radical functions will also be discussed in this course. Students will be required to complete a project in each unit that will incorporate the skills and academic standards based on the unit. The project will help students deepen their conceptual knowledge of these key concepts. The process will combine the application of mathematics content with skills such as problem-solving, communication, collaboration, and critical thinking. The projects will be based on real world scenarios that are relevant to the students. Students will have to create, evaluate, apply and analyze information. These higher-level orders of thinking will provide the challenge and rigor necessary to fully engage our honors students. Students are required to take the New York State Regents exam for the Algebra 1 Common Core Regents in June.

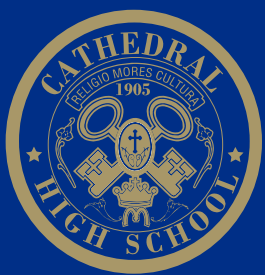
## Algebra II Common Core Honors

## Algebra II Common Core Regents

**GRADES 10, 11 | FULL-YEAR COURSE**

This is a full-year course for students who took Algebra 1 and follows the New York State Regents curriculum for Algebra II Common Core. Topics include number systems extended to imaginary and complex numbers; operations of rational expressions, trigonometric, and radical; function regression; trigonometric equations; statistics; and probability. Students will be required to complete a project in each unit that will incorporate the skills and academic standards based on the unit. The project will help students deepen their conceptual knowledge of these key concepts. The process will combine the application of mathematics content with skills such as problem-solving, communication, collaboration, and critical thinking. The projects will be based on real world scenarios that are relevant to the students. Students will have to create, evaluate, apply and analyze information. These higher-level orders of thinking will provide the challenge and rigor necessary to fully engage our honors students. Students are required to take the New York State Regents exam for Algebra II Common Core in June.

**PREREQUISITE: DETERMINED BY ALGEBRA 1 GRADE AND TEACHER RECOMMENDATION**



**2020/  
2021**

## Algebra II

GRADES 10, 11 | FULL-YEAR COURSE

This course is a full year course for students who took Algebra 1. Topics include number systems, operations of rational expressions, functions such as polynomial, absolute value, exponential, logarithmic, and radical; and linear systems with two and three variables.

**PREREQUISITE: DETERMINED BY ALGEBRA 1 GRADE AND TEACHER RECOMMENDATION**

## Geometry Common Core Honors Geometry Common Core Regents

GRADES 11, 12 | FULL-YEAR COURSE

A full-year course for students who took Algebra II Common Core and follows the New York State Regents curriculum for Geometry Common Core. Students will focus on geometric relationships, logic, informal and formal proofs, properties of triangles and quadrilaterals, transformations, and volume/density. Students will be required to complete a project in each unit that will incorporate the skills and academic standards based on the unit. The project will help students deepen their conceptual knowledge of these key concepts. The process will combine the application of mathematics content with skills such as problem-solving, communication, collaboration, and critical thinking. The projects will be based on real world scenarios that are relevant to the students. Students will have to create, evaluate, apply and analyze information. These higher-level orders of thinking will provide the challenge and rigor necessary to fully engage our honors students. Students are required to take the New York State Geometry Regents in June.

**PREREQUISITE: DETERMINED BY ALGEBRA II AND TEACHER RECOMMENDATION**

## Geometry

GRADES 11, 12 | FULL-YEAR COURSE

A one-year course for students who took Algebra II and follows topics from Geometry Common Core. Topics will include geometric relationships, logic, informal and formal proofs, properties of triangles and quadrilaterals, transformations, and volume and density.

**PREREQUISITE: DETERMINED BY ALGEBRA II GRADE AND TEACHER RECOMMENDATION**



2020/  
2021

## Pre-Calculus

**GRADES 11, 12 | FULL-YEAR COURSE**

A full-year course for students currently taking Algebra II Common Core. This course is designed to provide students the mathematical tools they need for Calculus. The course delves into the more advanced problems that were not discussed in Algebra II Common Core. The topics discussed in the course range from discussing and analyzing the different types of functions to conic sections and analytic geometry.

**PREREQUISITE: ALGEBRA II COMMON CORE AND REGENTS**

## Advanced Placement Calculus

**GRADES 11, 12 | FULL-YEAR COURSE**

A year course for students who have completed all Common Core Regents and who have the recommendation of their present math teacher. This course enables students to pursue college-level studies while still in high school. It is devoted to the discussion of differential and integral calculus. This course teaches students to solve differential and integral word problems manually while at the same time, enabling them to learn how to use technology to help experiment, interpret, and support their conclusions. Students taking this course are required to take the A.P. Calculus AB exam in May as given by the College Board.

Examination Fee: Approximately \$90.

**PREREQUISITE: ALGEBRA I COMMON CORE, ALGEBRA II COMMON CORE, GEOMETRY**

## Advanced Math

**GRADE 12 | FULL-YEAR COURSE**

This is a full year course for students who have completed all required math credits. Students will learn topics such as discussing and analyzing the different types of functions, limits, and derivatives. Basic probability and statistics as well as more advanced topics such as standard deviation, normal distribution, and hypothesis testing are also explored. Students will also learn about topics in finance such as financial planning and money management.

**PREREQUISITE: 3 MATH CREDITS COMPLETED**



**2020/  
2021**