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

GRADE 9 I FULL YEAR

This course 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 types of numbers 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 equations. They will learn how to solve and graph these functions. Simple exponential and radical functions will also be discussed in this course. Students will have the opportunity to learn how to collect and organize data in order to understand the concepts of statistics and probability. Students are required to take the New York State Regents exam for the Algebra 1 Common Core Regents in June.

PRERQUISITE: TACHS EXAM SCORE, 8TH GRADE SCORES, AND SCHOOL PLACEMENT EXAM

Algebra I Common Core Regents 9
Algebra I Common Core Regents 10

GRADES 9, 10 I FULL YEAR

This is a two-year course and follows the New York State Regents curriculum Algebra 1 Common Core. Topics discussed are the real number systems, how to solve and graph linear equations and inequalities, quadratic equations, simple exponential and radical functions, and collecting and organizing data within the concepts of statistics and probability. Students will also have the opportunity to learn problem-solving techniques by analyzing different situations algebraically. Students are required to take the New York State Regents exam for Algebra 1 Common Core in January of their Sophomore year. The second semester of Sophomore year will be a review of Algebra 1 Common Core, and introduction to Algebra II, PSAT/SAT review, and learning basic finance skills.

PREREQUISITE: TACHS EXAM SCORE, 8TH GRADE SCORES, AND SCHOOL PLACEMENT EXAM

Algebra II Common Core Honors

GRADE 10 | FULL YEAR

This course is a full year course for students in honors mathematics. It follows the New York State Regents curriculum for Algebra II Common Core. This course will help the students further identify the number systems using imaginary and complex numbers. The different types of functions will also be discussed. These include polynomials, absolute value, radical, exponential, logarithmic, and trigonometric functions. Students will also learn about arithmetic and geometric sequences and series. They will also learn about normal distribution and how to organize data. Students are required to take the New York State Regents exam in Algebra II Common Core.

PREREQUISITE: ALGEBRA I COMMON CORE AND REGENTS. 80% OR HIGHER ON THE ALGEBRA I COMMON CORE REGENTS

Algebra II Common Core Regents

GRADE 11 | FULL YEAR

This course is a full year course for students who took Geometry and follows the New York State Regents curriculum for Algebra II Common Core Regents. Topics include number systems extended to imaginary and complex numbers; operations of rational expressions, functions such as polynomial, absolute value, exponential, logarithmic, trigonometric, and radical; function regression; trigonometric equations; statistics; and probability. Students are required to take the New York State Regents exam for Algebra II Common Core in June.

PREREQUISITE: ALGEBRA I COMMON CORE AND REGENTS. PASS THE ALGEBRA I COMMON CORE REGENTS

Geometry Common Core Honors

GRADE 11 | FULL YEAR

This course is a full year course for students in honors mathematics and follows the New York Regents curriculum for Geometry Common Core. Within this course, students will learn how to create geometric relationships by using informal and formal proofs. They will learn how to form hypotheses and draw logical conclusions. Transformational Geometry such as rotations, reflections, dilations, and translations are also provided in the curriculum. Students will learn coordinate geometry and the properties of triangles and quadrilaterals. Using this information will help them further understand the geometric relationships given in the curriculum. Topics such as volume and density will also be discussed. The students are required to take the New York State Regents exam in Geometry Common Core in June.

PREREQUISITE: ALGEBRA II COMMON CORE HONORS AND REGENTS

Geometry Common Core Regents

GRADE 12 | FULL YEAR

A one-year course for students who took Algebra 1 Common Core and follows the New York State Regents Curriculum for Geometry Common Core. Topics will include geometric relationships, logic, informal and formal proofs, properties of triangles and quadrilaterals, transformations, and volume and density. Students are required to take the New York State Geometry Regents in June.

PREREQUISITE: ALGEBRA II COMMON CORE AND REGENTS

Advanced Placement Calculus

GRADES 11, 12 | FULL YEAR

A year course for students who have completed Algebra II 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 COMMON CORE, AND REGENTS

Advanced Placement Statistics

GRADE 12 | FULL YEAR

The Purpose of AP Statistics is to introduce students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. Themes that will be discussed in this course include: describing patterns; planning and conducting a study; exploring random phenomena using probability and simulation; and estimating population parameters and testing hypothesis. Students taking this course are required to take the AP Statistics exam in May as given by the College Board.

Examination Fee: Approximately $90.

PREREQUISITE: ALGEBRA 1 COMMON CORE, ALGEBRA II COMMON CORE, GEOMETRY COMMON CORE, AND REGENTS

Pre-Calculus

GRADES 11, 12 | FULL YEAR

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

Finance/Probability & Statistics

GRADE 12 | FULL YEAR

A full year course. Students will learn basic probability and statistics as well as more advanced topics such as standard deviation, normal distribution, and hypothesis testing. Personal financial issues are also explored. Student will learn real world topics such as financial planning and money management, budgeting, insurance, consumer credit advantages and disadvantages, home ownership, and investments.

PREREQUISITE: REQUIRED MATH CREDITS

Math 12

GRADE 12 | FULL YEAR

This course is a full year. Student will learn topics, which will include algebraic functions and graphs, exponential and logarithmic functions, and systems of equations. Other topics include determinants, sequences, series, and conic section. This course will help students with their problem solving skills.

PREREQUISITE: REQUIRED MATH CREDITS