

BERKS CATHOLIC HIGH SCHOOL

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MATHEMATICS DEPARTMENT

The Mathematics Dept. assists the students to:

- ❖ Understand and perform the fundamental operations of mathematics;
- ❖ Recognize the general properties of geometric figures and their relationships;
- ❖ Develop habits of logical thinking and precise expression;
- ❖ Follow a chain of arguments;
- ❖ Recognize a problem when faced by one, formulate it definitively; and project a reasonable solution;
- ❖ Increase understanding of mathematics through the proper molding of concepts, principles and relationships that are basic to building a sound mathematical structure.
- ❖ Use graphing calculator technology to compute, graph, model, and solve problems**

** It is recommended that students who enroll in the Honors classes purchase a graphing calculator that will be used throughout the four years of study. The Dept. recommends the TI-84. A TI-83 or TI-83+ may be used if a calculator has already been purchased,

*** Students who are enrolled in college prep classes are required to have their own scientific calculator for class. The TI30XIIS is recommended and can be purchased in the school bookstore.

Algebra 1 **Grade 9** **College Prep** **Experienced** **CP-Modified**

Placement is based on standardized test scores, 8th grade first semester grades in Math, teacher recommendation, and placement test. The objective of Algebra 1 is to introduce the student to basic concepts of algebra and thus build a foundation for skills in higher mathematics. The concepts include the number line; algebraic expressions; solving equations and inequalities in one variable; operations with polynomials, rational expressions, and radical expressions; linear equations in two variables; and solving quadratic equations. Students develop problem-solving techniques and learn about mathematical relations, function and variations.

Geometry CP, H, CP-Modified **Grade 9, 10, 11** **CP** **Honors** **CP-Modified**

Grade 9 Honors: Placement in this class is based on standardized test scores, final grade Algebra 1, teacher recommendation, and a placement test.

Grades 10 Honors: Teacher recommendation.

Prerequisite: Algebra 1. Students use deductive and inductive reasoning to formalize a knowledge of angles, parallel and perpendicular lines, properties of polygons, circles, similarity, congruence, area of plane figures, and areas and volumes of solids by means of both expository and discovery methods. In the Honors level, deduction and direct proof are paramount.

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Algebra 2

Grade 10, 11

College Prep

CP-Modified

Prerequisite: Algebra I and Geometry. Level depends on grades in previous courses and teacher recommendation.

Algebra 2 reinforces Algebra 1 skills. Topics include properties and operations with real numbers, solving equations and inequalities in one and two variables, functions and their graphs, operations on polynomials and rational expressions, operations with irrational and complex numbers, and quadratic and polynomial functions.

Algebra 2

Grade 10, 11

Honors

Prerequisite: Algebra 1, Geometry. Level depends on grade in previous courses and teacher recommendation.

Algebra 2 Honors covers such topics as the real and complex number systems, function concepts including linear and quadratic functions, equations and inequalities of the first and second degree in one and two variables, laws of exponents, polynomials and polynomial equations, and rational expressions.

Trigonometry/Analytic Geometry

Grade 11, 12

College Prep

Prerequisite: Algebra 2 and Dept. recommendation Trigonometry/Analytic Geometry is suited for the college bound student. Topics covered include coordinate geometry, functions and relations, conic sections, trigonometric functions and their properties, laws, graphs, and inverses.

Survey of Topics in Mathematics Grade 12

College Prep

This course is available for seniors only. Topics include: set theory, logic, number systems, matrices, sequences, and probability and statistics. Finance, linear programming, data interpretation, and MATH SAT Prep are also presented.

Precalculus

Grade 11, 12

Honors

Prerequisite: Algebra 2 Honors and Dept.

recommendation. This class may be offered for Dual Credit. Precalculus provides the student with the background necessary for advanced mathematics courses in college. Topics include relations and functions; linear and quadratic functions; composite and inverse functions; polynomial and rational functions; exponential, logarithmic, and trigonometric functions; and complex numbers.

Calculus

Grade 12

Honors

AP Calculus

Grade 12

Advanced Placement

Prerequisite

for Calculus: Precalculus and Dept. recommendation. This class may be offered for Dual Credit Prerequisite for AP Calculus: Precalculus and Dept. Head approval. This class may be offered for Dual Credit. AP/Honors Calculus consists of a full academic year of work in Calculus comparable to a full semester course in college. Instruction emphasizes theory and application. The topics covered include development of limits, differentiation and integration of polynomials, exponential, logarithmic and trigonometric functions. Students are required to have their own graphing calculator. The Dept. recommends the TI-83 or TI-84 calculator. The course of study

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recommended by the College Board AP Program is followed. All students enrolled in AP Calculus are **required** to take the AP examination.

Statistics Grade 12 AP Prerequisite: Algebra II and Depart. Approval **Honors:** Classes may be offered for Dual Credit. Honors Statistics consists of a full academic year of work comparable to a full semester course in college. This class emphasizes quantitative methods for decision-making. It is an introduction to statistical concepts including: probability, understanding of and uses of graphs, frequency distributions, measures of central tendency, dispersion and position, various distributions and their properties, testing hypotheses, Chi-square tests, regression and correlation. A graphing calculator is required. The Dept. recommends a TI-83 or TI-84 graphing calculator. The course of study recommended by the College Board AP Program is followed. All students enrolled in AP Statistics are required to take the AP examination.

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