



2019-2020 Grace Christian Academy High School Mathematics Course Offerings

Pre-Algebra

Typically 8th Grade

Pre-Algebra focuses on developing fluency with rational numbers and proportional relationships. Students will: extend their elementary skills and begin to learn algebra concepts that serve as a transition into formal Algebra and Geometry; learn to think flexibly about relationships among fractions, decimals, and percents; learn to recognize and generate equivalent expressions and solve single-variable equations and inequalities; investigate and explore mathematical ideas and develop multiple strategies for analyzing complex situations; analyze situations verbally, numerically, graphically, and symbolically; apply mathematical skills and make meaningful connections to their life experiences.

Coordinate Algebra	Analytical Geometry	Algebra II	Pre-Calculus
Typically 9th Grade	Typically 10th Grade	Typically 11th Grade	Typically 12th Grade
<p>Algebra I (Coordinate Algebra) provides a formal development of the algebraic skills and concepts necessary for students to succeed in advanced courses. In particular, the instructional program in this course provides for the use of algebraic skills in a wide range of problem-solving situations. The concept of the function is emphasized throughout the course. Topics include: (1) operations with real numbers, (2) linear equations and inequalities, (3) relations and functions, (4) polynomials, (5) algebraic fractions, and (6) nonlinear equations.</p>	<p>Analytical Geometry (also known as Euclidean) introduces the study of points, segments, triangles, polygons, circles, solid figures, and their associated relationships as a mathematical system. Emphasis is placed on the description and use of inductive, deductive, and intuitive reasoning skills. Powers of abstract reasoning, spatial visualization and logical reasoning patterns are improved through this course. Points, segments, triangles, polygons, circles, and solid figures are the structures studied. The focus is on comparisons between these figures concerning surface areas, volumes, congruency, similarity, transformations, and coordinate Geometry using a Cartesian Coordinate Plane.</p>	<p>Algebra II is a course that extends the content of Algebra I with elements of Geometry and provides further development of the concept of a function. Topics include: (1) relations, functions, equations and inequalities; (2) conic sections; (3) polynomials; (4) algebraic fractions; (5) logarithmic and exponential functions; (6) sequences and series; (7) counting principles and probability; and (8) operations with matrices. <i>A graphing calculator is required.</i></p>	<p>Pre-Calculus course topics include college algebra, advanced trigonometry, and analytic geometry of two and three dimensions. Students experience a thorough analysis of all elementary functions and curve-sketching. Selected discrete mathematics topics including normal probability distributions, non-linear regression, and hypothesis testing are explored. Practice with proofs such as mathematical induction are included. <i>A graphing calculator is required.</i> The goal of this course is to provide a sound foundation for Calculus-based courses.</p>

*Additional courses may be available on-line through the Ignitia™ program.
Please see a guidance counselor for more information.*