



Cincinnati Hills Christian Academy

Upper School 7-8 – Mathematics

Scope and Sequence

Vision: Mathematics is one tool by which we better understand God’s precise, orderly, and sometimes mysterious creation. As a result of a CHCA mathematics education, students will value mathematics and develop proficiency in the use of mathematics. Proficiency in mathematics learning refers to conceptual understanding, procedural fluency, strategic competence, and adaptive reasoning. [*Adding it Up*, NRC, 2001] Students experience instruction based on Standards for Mathematical Practice. [<http://www.corestandards.org/Math/Practice>] Students express an understanding of concepts using a variety of methods and media. Developmentally appropriate instruction challenges and supports students.

Standards: What a CHCA student will know and be able to do in **Mathematics:** *What a CHCA student will know and be able to do in Mathematics K-4:* Demonstrate understanding by applying concepts to problems in the following: ●Operations and Algebraic Thinking. ●Number and Operations in Base Ten. ●Number and Operations—Fractions. ●Measurement and Data. ●Geometry. *By the close of Pre-Algebra:* Demonstrate understanding by applying concepts to problems in the following: ●Ratios and Proportional Relationship. ●The Number System. ●Expressions and Equation. ●Functions. ●Geometry. ●Statistics and Probability. *In courses Algebra I and beyond:* Demonstrate understanding by applying concepts to problems in the following: ●Number and Quantity. ●Algebra. ●Functions. ●Geometry. ●Statistics and Probability. ●Modeling. *In Standards of Mathematical Practice K-12:* ●Be mathematical problem solvers. ●Reason and construct mathematical arguments. ●Communicate mathematically. ●See connections both within mathematics and to other subject areas. ●Look for and make use of structure and patterns. *Theological Integration:* ●See God’s orderliness and mystery reflected in mathematics.

Math 7 Topics: Analyze and use proportional relationships to solve real-world and mathematical problems; apply and extend previous understandings of fraction operations to rational numbers; use properties of operations to generate equivalent expressions; solve real-life and mathematical problems using numerical and algebraic expressions and equations; draw, construct, and describe geometrical figures and relationships between them; solve real-life and mathematical problems involving angle measure, area, surface area, and volume; use random sampling to draw inferences about a population and comparative inferences about two populations; investigate chance processes and develop, use, and evaluate probability models.

Math 7 Honors/Pre-Algebra Topics: Understand the real number system and the role of rational and irrational numbers; understand connections between proportional relationships and linear functions; analyze linear graphs, and solve equations involving linear functions, including solving systems of equations; investigate patterns of association in bivariate data and understand connections to linear functions; understand congruence as compared to similarity; understand and apply the Pythagorean Theorem; solve real-world mathematical problems involving volume of cylinders, cones, and spheres; study simple and compound probability.

Math 7 Advanced/Algebra I Topics: Add, subtract, multiply, divide, and simplify rational numbers/expressions, inequalities, polynomials, and radical expressions; solve, write, and graph linear equations, inequalities, systems, quadratic equations, absolute value functions, and square root functions; graph and write piecewise functions; solve real world application problems; exponential functions and applications; apply properties of exponents; graphing calculator technology used throughout units.



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Math 8 Advanced/Geometry Topics: Language of geometry; transformational geometry; logical reasoning; parallels and perpendiculars; congruent triangles; quadrilaterals; similar figures; right triangles and trigonometry; circles; polygons; study of 3D figures; coordinate geometry; proof; applications of probability; geometric definition of a parabola. graphing calculator technology used throughout units.

Students' math performance is evaluated ongoing to provide challenge and support.