Course Descriptions: Middle and Upper Grade Math Courses

Course Type:
Course Title: Math 76
Instructors: Mrs. Griffiths, ngriffiths@ahsmail.com, Mr. Goff, dgoff@ahsmail.com, Mrs. Tolman, ctolman@ahsmail.com
Math 76 reinforces the basic mathematical concepts and skills that students practiced in Math 54 and Math 65. Concepts, procedures, and vocabulary that students will need in order to be successful in upper-level algebra and geometry courses are introduced and continually practiced. Students learn to simplify expressions containing parentheses as the first step to solving multi-step equations. They are introduced to exponents; square roots; geometric formulas; and adding, subtracting, multiplying, and dividing signed numbers. Math 76 students work extensively with ratios, percentages, fractions, mixed numbers, and decimals. In addition to being able to discuss their learning, students will demonstrate their understanding of these topics through regular, nearly weekly tests. The most reliable way to receive specific information about course work, including topics and timing, is through Edline. For many students, the most challenging part of class is to apply concepts through story problems and signed (negative) number operations. To support your student, please consider providing time and support to complete DAILY assignments. Check Edline weekly; if test scores are below 80%, contact the teacher immediately. If math facts are not yet mastered, daily drills are encouraged at home to attain mastery.

Course Type:
Course Title: Math 87
Instructors: Mr. Goff, dgoff@ahsmail.com, Mrs. Tolman, ctolman@ahsmail.com
This course provides the content the student needs to meet the demands of today's mathematics curriculum by reinforcing and extending all number sense, computation, pre-algebra, statistics, geometry, and measurement concepts and skills. Students develop proficiency working with whole numbers, decimals, fractions, integers, percents, as well as recognize, use, and express proportional relationships. New concepts are introduced then reinforced with continual practice and as the concept is learned it may then be applied to any situation. The computational work at this level requires the continued building of arithmetic proficiency and to help students maintain strong computational skills, a calculator is rarely utilized. In addition to being able to discuss their learning, students will demonstrate their understanding of these topics through regular, nearly weekly tests. The most reliable way to receive specific information about course work, including topics and timing, is through Edline. For many students, the most challenging part of class is to apply concepts through story problems and signed (negative) number operations. To support your student, please consider providing time and support to complete DAILY assignments. Check Edline weekly; if test scores are below 80%, contact the teacher immediately. If math facts are not yet mastered, daily drills are encouraged at home to attain mastery.

Course Type:
Course Title: Pre-Algebra
Instructors: Mrs. Griffiths, ngriffiths@ahsmail.com, Mr. Goff, dgoff@ahsmail.com, Mrs.

Tolman, ctolman@ahsmail.com
Pre-Algebra (also known as Algebra 1-2) covers all topics normally taught in Pre-Algebra, as well as additional topics from geometry and discrete mathematics. In Pre-Algebra, students will learn: fractions and their arithmetic operations, decimals and their arithmetic operations, mixed numbers and their arithmetic operations, signed numbers and their arithmetic operations, order of operations, percents, ratios, proportions, divisibility, rounding, place value, unit conversions: scientific notation, evaluation and simplification of algebraic, expressions, the solution of linear equations in one unknown, word problems involving algebraic concepts, graphing, perimeter, area, surface area, volume, classification of geometric figures and solids, geometric construction, and symmetry. In addition to being able to discuss their learning, students will demonstrate their understanding of these topics through regular, nearly weekly tests. The most reliable way to receive specific information about course work, including topics and timing, is through Edline. For many students, the most challenging part of class is to apply concepts through story problems and signed (negative) number operations. To support your student, please consider providing time and support to complete DAILY assignments. Check Edline weekly; if test scores are below 80%, contact the teacher immediately. If math facts are not yet mastered, daily drills are encouraged at home to attain mastery.

Course Type:
Course Title: Algebra 1
Instructors: Mrs. Griffiths, ngriffiths@ahsmail.com, Mr. Goff, dgoff@ahsmail.com, Mrs. Tolman, ctolman@ahsmail.com
Specific topics covered include the following: arithmetic of and evaluation of expressions involving signed numbers, exponents and roots, properties of the real numbers, absolute value and equations and inequalities involving absolute value, scientific notation, unit conversions, solution of equations in one unknown and solution of simultaneous equations, the algebra of polynomials and rational expressions, word problems requiring algebra for their solution (such as uniform motion and coin problems), graphical solution of simultaneous equations, Pythagorean theorem, algebraic proofs, functions and functional notation, solution of quadratic equations via factoring and completing the square, direct and inverse variation, and exponential growth, computation of the perimeter and areas of two-dimensional regions, computation of the surface area and volume of a wide variety of geometric solids, and statistics and probability. In addition to being able to discuss their learning, students will demonstrate their understanding of these topics through regular, nearly weekly tests. The most reliable way to receive specific information about course work, including topics and timing, is through Edline. For many students, the most challenging part of class is to apply concepts through story problems and signed (negative) number operations. To support your student, please consider providing time and support to complete DAILY assignments. Check Edline weekly; if test scores are below 80%, contact the teacher immediately. If math facts are not yet mastered, daily drills are encouraged at home to attain mastery.

Course Type:
Course Title: Algebra 2
Instructors: Mrs. Griffiths, ngriffiths@ahsmail.com, Mr. Goff, dgoff@ahsmail.com, Mrs. Tolman, ctolman@ahsmail.com
Algebra 2 covers a considerable amount of geometry. Specific algebra topics covered include the

following: graphical solution to simultaneous equations, scientific notation, radicals, roots of quadratic equations including complex roots, properties of the real numbers, inequalities and systems of inequalities, logarithms and antilogarithms, exponential equations, basic trigonometric functions, algebra of polynomials, vectors, polar and rectangular coordinate systems, and a wide spectrum of word problems requiring algebra to solve. Considerable time is spent developing geometric concepts and writing proof outlines. Students completing Algebra 2 will have studied the equivalent of one semester of informal geometry. Applications to other subjects such as physics and chemistry as well as "real-world" problems are covered including gas law, force vector, chemical mixture, percent markups, etc. Set theory, probability and statistics, and other topics are also treated. In addition to being able to discuss their learning, students will demonstrate their understanding of these topics through regular, nearly weekly tests. The most reliable way to receive specific information about course work, including topics and timing, is through Edline. For many students, the most challenging part of class is to apply concepts through story problems and signed (negative) number operations. To support your student, please consider providing time and support to complete DAILY assignments. Check Edline weekly; if test scores are below 80%, contact the teacher immediately. If math facts are not yet mastered, daily drills are encouraged at home to attain mastery.

Course Type:
Course Title: Advanced Mathematics
Instructors: Mrs. Griffiths, ngriffiths@ahsmail.com, Mr. Goff, dgoff@ahsmail.com, Mrs. Tolman, ctolman@ahsmail.com
In Advanced Mathematics, topics from algebra, geometry, trigonometry, discrete mathematics, and mathematical analysis are interwoven to form a fully integrated text. Specific topics covered in this text include permutations and combinations, trigonometric identities, inverse trigonometric functions, conic sections, graphs of sinusoids, rectangular and polar representations of complex numbers, De Moivre's theorem, matrices and determinants, the binomial theorem, and the rational roots theorem. Additionally, a rigorous treatment of Euclidean geometry is presented. Word problems are developed through the problem sets and become progressively more elaborate and difficult. By the end of the text, students will be able to solve competition-level problems with ease. The graphing calculator is studied and used to graph functions and perform data analysis. Also, conceptually-oriented problems that prepare students for college entrance exams (such as the ACT and SAT) are included in the problem sets. In addition to being able to discuss their learning, students will demonstrate their understanding of these topics through regular, nearly weekly tests. The most reliable way to receive specific information about course work, including topics and timing, is through Edline. For many students, the most challenging part of class is to apply concepts through story problems and signed (negative) number operations. To support your student, please consider providing time and support to complete DAILY assignments. Check Edline weekly; if test scores are below 80%, contact the teacher immediately. If math facts are not yet mastered, daily drills are encouraged at home to attain mastery.

Course Type:
Course Title: Calculus
Instructors: Mrs. Griffiths, ngriffiths@ahsmail.com, Mr. Goff, dgoff@ahsmail.com, Mrs. Tolman, ctolman@ahsmail.com

Calculus treats all the topics normally covered in an Advanced Placement AB-level calculus program, as well as many of the topics required for a BC-level program. The text begins with a thorough review of those mathematical concepts and skills required for calculus. In the early problem sets, students practice “setting up” word problems they will later encounter as calculus problems. The problem sets contain multiple-choice and conceptually-oriented problems similar to those found on the Advanced Placement examination. Whenever possible, students are provided an intuitive introduction to concepts prior to a rigorous examination of them. Proofs are provided for all important theorems. For example, three proofs, one intuitive and two rigorous, are given for the Fundamental Theorem of Calculus. Also, numerous applications to physics, chemistry, engineering, and business are treated in both the lessons and the problem sets. Use of this text has allowed students to take the Advanced Placement examination and score well. In addition to being able to discuss their learning, students will demonstrate their understanding of these topics through regular, nearly weekly tests. The most reliable way to receive specific information about course work, including topics and timing, is through Edline. For many students, the most challenging part of class is to apply concepts through story problems and signed (negative) number operations. To support your student, please consider providing time and support to complete DAILY assignments. Check Edline weekly; if test scores are below 80%, contact the teacher immediately. If math facts are not yet mastered, daily drills are encouraged at home to attain mastery.

American Heritage School

Saxon Math Tracks

For Middle and High School Students

Calculus Track		**Pre-Calculus Track**		**Geometry Track**		**Algebra 2 Track**	
Grade	*Course title*	*Grade*	*Course title*	*Grade*	*Course title*	*Grade*	*Course title*
7	Pre-Algebra	7	Pre-Algebra	7	Math 87	7	Math 87
8	Algebra 1	8	Algebra 1	8	Pre-Algebra	8	Pre-Algebra
9	Algebra 2	9	Algebra 2A	9	Algebra 1	9	Algebra 1A
10	Geometry (Advanced Math I)	10	Algebra 2B	10	Algebra 2A	10	Algebra 1B
11	Pre-Calculus (Advanced Math II)	11	Geometry (Advanced Math I)	11	Algebra 2B	11	Algebra 2A
12	Calculus	12	Pre-Calculus (Advanced Math II)	12	Geometry (Advanced Math I)	12	Algebra 2B

Please note the following:

- Students completing Saxon Algebra 2 in the twelfth grade will have completed the equivalent of an elementary geometry course, thus meeting the minimum math competency level required to graduate from American Heritage School.
- Students who select the Calculus, Pre-Calculus, or Geometry track must take a minimum of six semesters of math in high school in order to meet the graduation requirements for American Heritage School.
- Students who complete Saxon Advanced Math I will have completed the equivalent of a geometry course.
- Students who complete Saxon Advanced Math II will have completed the equivalent of a pre-calculus course.
- Classes with an A/B following the course title indicate that the course will be covered over a two-year period.
- In general, students who earn a “B” or higher in a math course are well-prepared for the next book. Students scoring below 70% (C-) in any term will not receive course credit for that term.

Updated 7/28/09