# _Math_

## Pre-Algebra\Foundations

In this course we will build the foundations for Common Core Algebra. This course covers the first semester of Common Core Algebra. Foundations of Mathematics is assessed at the end of the year by a local final examination conducted in June.

## Common Core Algebra I

This course extends what students have learned in introductory level mathematics courses and introduces more advanced topics, including linear systems, exponents, quadratics, polynomials, factoring, understanding our number system, and solving, graphing, and writing linear equations and inequalities.

## Common Core Geometry

There is no other school mathematics course that offers students the opportunity to act as mathematicians. Within this course, students will have the opportunity to make conjectures about geometric situations and prove in a variety of ways, both formal and informal, that their conclusions follow logically from their hypothesis. This course is meant to employ an integrated approach to the study of geometric relationships. Integrating synthetic, transformational, and coordinate approaches to geometry, students will justify geometric relationships and properties of geometric figures. Congruence and similarity of triangles will be established using appropriate theorems. Transformations including rotations, reflections, translations, and glide reflections and coordinate geometry will be used to establish and verify geometric relationships. A major emphasis of this course is to allow students to investigate geometric situations. Properties of triangles, quadrilaterals, and circles should receive particular attention. It is intended that students will use the traditional tools of compass and straightedge as well as dynamic geometry software that models these tools more efficiently and accurately, to assist in these investigations. Geometry is meant to lead students to an understanding that reasoning and proof are fundamental aspects of mathematics and something that sets it apart from other sciences. Completion of this course prepares a student for further work in Advanced Algebra/ Trigonometry. The student will take a New York State Regents exam and the end of this course.

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## Practical Geometry

This course is designed for the student who excels in both ability and performance in college preparatory mathematics. This is a rigorous study of the concepts of Euclidean geometry and illustrates basic logic and its use in problem solving. Extensive out-of-class preparation is required. This course emphasizes the relationship between algebra and geometry. This course serves the following purposes: (1) to review and reapply algebra from the previous or current school year; (2) to deepen the understanding of basic and advanced algebraic curriculum; (3) to create sound independent test taking, and studying skills; (4) to learn all basic and advanced geometric standards.

## Common Core Algebra II / Trigonometry

Algebra II is a continuation and extension of the two courses that preceded it. While developing the algebraic techniques that will be required of those students that continue their study of mathematics, this course is also intended to continue developing alternative solution strategies and algorithms. For example, technology can provide to many students the means to address a problem situation to which they might not otherwise have access. Within this course, the number system will be extended to include imaginary and complex numbers. The families of functions to be studied will include polynomial, absolute value, radical, trigonometric, exponential, and logarithmic functions. Problem situations involving direct and indirect variation will be solved. Problems resulting in the systems of equations will be solved graphically and algebraically. Algebraic techniques will be developed to facilitate rewriting mathematical expressions into multiple equivalent forms. Data analysis will be extended to include measures of dispersion and the analysis of regression that model functions studied throughout this course. Associated correlation coefficients will be determined, using technology tools and interpreted as a measure of strength of the relationship. Arithmetic and geometric sequences will be expressed in multiple forms, and arithmetic and geometric series will be evaluated. Binomial experiments will provide the basis for the study of probability theory and the normal probability distribution will be analyzed and used as an approximation for these binomial experiments. Right triangle trigonometry will be expanded to include the investigation of circular functions. Problem situations requiring the use of trigonometric equations and identities will also be investigated. The student will take a New York State Regents exam at the end of this course.

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### Pre-Calculus

Pre-calculus is a non-regents course and is the equivalent of a college level algebra class.  In this course, students have the opportunity to extend their mathematical knowledge, to integrate and synthesize what was learned in Integrated Algebra, Integrated Geometry, and Advanced Algebra 2 & Trigonometry in a way that will prepare them for the study of calculus. The course integrates statistical and algebraic concepts such as rational functions, logarithms, trigonometry, and matrices.  The course also previews calculus while working with functions, limits, and derivatives.  Students will also be provided the opportunity to develop their analytical and problem solving skills as well as solve problems in mathematical and real-world settings. Graphing calculators are required for students' use in plotting functions and analyzing data.

At the completion of the year students will be required to take a local exam. Fulfillment of this course prepares a student for further work in calculus and also prepares them any college math course.

### Money Skills

Money Skills a personal finance course, is highly interactive, reality-based Internet curriculum. Its purpose is to educate students to make informed financial decisions. The course consists of "How to" modules covering income, expenses, savings, credit and insurance. Money Skills includes two real-life simulations which allow creation of a personal, financial plan from the time a student is financially independent of parents to the intended age of retirement.

### Applied Statistics

This course is designed to show the student how statistics are compiled and what they tell us. Students will explore models of linear regression and determine the line of best fit. Students will see the comparison between fantasy sports and math. Probabilities, including combinations and permutations will be explored. Standard Deviations, The Normal Distribution, and Z Scores will be examined.

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## Financial Literacy

This course is designed to unite the student with the idea of finance and to create a solid understanding of how one person can intertwine with an economy. Topics explored include Exploration of the study of the government and the people in it and the choices they make, An analysis of taxes (State, local, federal) and why we pay them and where the money goes, analysis of creating a budget, sticking to it, and the debt to income ratio, Students will explore the types of interest and know how to calculate interest gained or charged, Exploring Credit Cards and the use of credit cards. This includes types, fees, and terms, Students will learn about types of life insurance and what everyone should have (will and living revocable trust), students will explore retirement accounts and what choice might best suit their financial needs.

## Practical Math

In conjunction with the Boat Building aspect of this course, students will be working towards completion of their apprenticeship with a local Carpenters Union.  The hours logged working on the boat as well as a Practical Math exam administered in the late Spring will be used to complete their entry-level program.

In the spring time, we will focus on a practical math course that will culminate with an exam administered by a local Carpenters Union and may (if passed) result in apprenticeship opportunities.