Pre-Algebra

5 credits - Level II
Grades: 9
Prerequisites: Demonstrated the need for building a foundation in Pre-Algebra during 8th Grade Math.

 This course is designed for students who have demonstrated their need to fine-tune their mathematical ability in order to prepare for Algebra I. The course focuses on the key topics that provide a strong foundation in the preparation for Algebra I.

PROFICIENCIES

Variables, Expressions, and Integers
-Evaluate and write variable expressions
-Use powers to describe repeated multiplication
-Use the order of operations to evaluate expressions
-Compare and order integers
-Add, subtract, multiply, and divide integers
-Identify and plot points in a coordinate plane

Solving Equations
-Use properties of addition and multiplication
-Use the distributive property
-Simplify variable expressions
-Solve equations using addition, subtraction, multiplication, and division

Multi-Step Equations and Integers
-Solve two-step equations
-Solve two-step equations using the distributive property
-Solve two-step equations with variables on both sides
-Solve inequalities using addition, subtraction, multiplication, and division
-Solve multi-step inequalities

Factors, Fractions, and Exponents
-Write the prime factorization of a number
-Find the GCF and LCM of two or more whole numbers
-Write equivalent fractions
-Multiply and divide powers
-Work with negative and zero exponents
-Write numbers using scientific notation

Rational Numbers and Equations
-Write fractions as decimals and decimals as fractions
-Add and subtract like and unlike fractions
-Multiply and divide fractions and mixed numbers
-Use multiplication inverses to solve equations
-Use the LCD to solve equations and inequalities

Ratio, Proportion, and Probability
-Find ratios and unit rates
-Write and solve proportions using cross products
-Identify similar and congruent figures
-Use proportions to find side lengths of similar figures and create scale drawings
-Find probabilities and use the counting principle to find probabilities

Percents
-Use a fraction to find the percent of a number
-Use proportions, decimals, and equations to solve percent problems
-Find a percent of change in a quantity
-Calculate mark-ups, discounts, sales tax, tips, interest earned, and account balances

Linear Functions
-Use graphs to represent relations and functions
-Find solutions of equations in two variables
-Graph linear equations in slope-intercept form and using x- and y-intercepts
-Find and interpret slopes of lines
-Write linear equations and use function notation

Real Numbers and Right Triangles
-Find and approximate square roots of numbers
-Use the Pythagorean Theorem
-Compare and order real numbers

Data Analysis and Probability
-Make and interpret stem-and-leaf plots, histograms, and box-and-whisker plots Choose -
    appropriate data displays; Identify populations and sampling methods
-Make conclusions about populations using surveys
-Use permutations and combinations to count possibilities
-Find the probability that event A and/or event B will occur

Polynomials and Non-linear Functions
-Classify and write polynomials in standard form
-Add and subtract polynomials
-Multiply and divide polynomials by monomials
-Multiply binomials
-Simplify powers of products and quotients