

Department: Mathematics
Course Name: Pre-Algebra

Course Description:

The Pre-Algebra course begins the transition from an arithmetic to an algebraic approach to mathematics, facilitating the changes needed in order to study higher math. Students fine tune their skills in the basic operations with whole numbers, decimals, fractions, and percentages while being taught the algebraic processes behind these skills. Emphasis is placed on critical thinking, complex communication, collaboration, creativity, and risk-taking. Students change the way they approach problem solving and work with integers. Upon successful completion of Pre-Algebra, students move to Algebraic Theory and Geometry.

Content:

Whole Numbers and Patterns
Integers
Rational Numbers
Expressions and Equations
Inequalities
Ratios and Proportions
Percents
Constructions and Scale Drawings
Circles and Areas
Probability and Statistics

Skills:

Estimate for reasonableness
Express numbers in scientific notation
Multiply and divide by powers of ten
Represent numbers with exponents
Find square numbers and square roots
Estimate the square root of non-perfect squares
Use the order of operations to simplify numerical expressions
Identify properties of numbers and use them to simplify expressions
Compare and order integers
Find the absolute value of integers
Add, subtract, multiply, and divide integers
Convert between fractions and decimals
Compare and order rational numbers
Estimate decimal sums, differences, products, and quotients
Add, subtract, multiply, and divide decimals and integers by decimals
Estimate sums, products, differences, and quotients of fractions and mixed numbers
Add, subtract, multiply, and divide fractions and mixed numbers
Convert between equivalent fractions and mixed numbers
Evaluate algebraic expressions
Translate words into numbers, variables, and operations
Simplify algebraic expressions

Determine whether a number is a solution of an equation
Write, solve, and check one-step equations with rational numbers and integers
Solve two-step equations
Read and write inequalities and graph them on a number line
Solve one-step inequalities by adding, subtracting, multiplying, and dividing
Solve and graph two-step inequalities
Identify, write, and compare ratios
Find and compare unit rates, such as average speed and unit price
Find equivalent ratios
Write and solve proportions using mental math and cross products
Use ratios to determine if two figures are similar
Use similar figures to find unknown lengths
Understand ratios and proportions in scale drawings, and use ratios and proportions with scale
Determine whether two ratios are proportional using cross products
Model percents and write percents as equivalent fractions and decimals
Write decimals and fractions as percents
Compare and order fractions, decimals, and percents
Solve problems involving percent using proportions and equations
Solve problems involving percent of change
Solve problems involving simple interest
Identify and name basic geometric figures
Measure and draw angles using a protractor
Identify adjacent and vertical angles and use them to find missing angle measures
Classify angles and pairs of angles
Find angle measures using relationships
Classify and construct triangles
Classify, construct, and find missing angle measures of quadrilaterals
Evaluate expressions involving exponents
Describe a circle in terms of radius and diameter
Find the circumference and area of circles and semi-circles
Find perimeters and areas of composite figures
Identify and find possible outcomes
Find probabilities of events and use them to make predictions
Compare theoretical and experimental probabilities
Find probabilities of independent, dependent, and compound events

Text and Materials:

Larson, Ron and Boswell, Laurie., Big Ideas Math Course 2: A Bridge to Success (Houghton Mifflin Harcourt, 2014)

Methods of Instruction:

Lecture
Pair share
Hands on activities
Problem solving
Cooperative learning
Centers
Manipulatives

Desmos
Videos
DeltaMath

Methods of Evaluation:

Homework
Whiteboards
Quizzes
Tests
Questioning
Classwork

