Advanced Math 7 Course Syllabus

**Unit 1:** Operations with Integers

* Order of operations
* All operations with integers
* Writing verbal expressions as algebraic expressions
* Defining variables
* Properties
* Writing and solving 1- and 2- step equations with integers
* Plotting and locating points on a coordinate plane
* Solve real-world problems involving integers

**Unit 2:** Solving Equations

* Absolute value
* Inverses and identities
* Identifying parts of an expression
* Distributive property
* Simplifying algebraic expressions
* Combining like-terms
* Solving multi-step equations containing distributive property, combining like-terms, and variables on both sides of the equations with integers.
* Solving multi-step equations containing distributive property, combining like-terms, and variables on both sides of the inequalities with integers.
* Plotting inequalities on a number line
* Solving real-world problems involving multi-step equations with integers

**Unit 3:** Rational Numbers

* All operations with rational numbers
* Divisibility rules
* Least common multiple (LCM)
* Converting between fractions and decimals
* Putting rational numbers in order from least to greatest
* Simplifying algebraic expressions with rational numbers
* Solve multi-step equations with rational numbers
* Solve multi-step inequalities with rational numbers
* Solve real-world problems involving multi-step equations and inequalities with rational numbers.

**Unit 4:** Factors and exponents

* Prime factorization
* Greatest common factor (GCF)
* Factoring binomials
* Multiplying and dividing monomials
* Negative exponents
* Scientific notation
* Operations with scientific notation

**Unit 5:** Ratio, Rate, and Percent

* Ratio
* Rate
* Unit rate
* Proportions
* Rate of change (slope)
* Constant of proportionality
* Similar polygons
* Indirect measurement
* Dilations
* Percent
* Converting between a fraction, a decimal, and a percent
* Percent of change
* Simple interest

**Unit 6:** Geometry

* Angle definitions
* Classifying angles
* Perpendicular and parallel lines
* Properties of a pair of parallel lines with a transversal
* Properties of triangles
* Properties of quadrilaterals
* Area and perimeter of various geometric shapes
* Real-world problems involving geometry

**Unit 7:** Statistics and Probability

* Random sampling to draw inferences about a population
* Draw informal comparative inferences about two populations
* Investigate chance processes and develop, use, and evaluate probability models
* Find probabilities of events and compare probabilities
* Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation
* Real world problems involving statistics and probability