DSM Course Description:

05-Algebra

This is a one-year enhancement course recommended for students in 5th grade. The course will cover many topics taught in Texas middle schools. Topics (two semesters) include number sense, fraction, operations of fractions, equation with fractions, rounding decimals, equation with decimals, number relations, linear equation, linear inequality, mean median and mode, radical, exponent, divisibility properties, greatest common divisor, least common multiple, factorization of integers, change, percent, ratio, direct proportion, inverse proportion, markup, discount, simple interest, US customary system of measurement, metric system of measurement, scale drawing, speed-distance problems, rectangular coordinate system, point, line segment, square root of whole numbers, Pythagorean theorem, area of triangle, parallelogram, distance formula, mid-point formula, box-method. The course will also teach mental mathematics and will enhance student mental calculation skills in arithmetic. Students will spend 5 minutes in each class in practicing mental mathematics skills.

06-Algebra

This is a one-year enhancement course recommended for students in 6th grade. Topics (two semesters) include distance formula, mid-point formula, graph of a linear equation, equation of a line, intercepts, slope, slope-intercept formula, point-slope formula, graphing, parallel lines, perpendicular lines, system of linear equations, simple and compound interest, financial applications, population growth, linear inequality, system of linear inequalities, triangle inequality theorem, absolute value equation, absolute value inequality, polynomial, operations of polynomials, FOIL expansion, factoring a polynomial, factoring trinomials of the type ax^2+bx+c. Prerequisite: 05-Algebra or approved by Dr. Shen.

07-Algebra

This is a one-year enhancement course recommended for Students in 7th grade. Topics (two semesters) include solving complicate equations in one variable, quadratic equation, completing square, quadratic formula, discriminant, quadratic type equation, systems of linear and quadratic equations, linear inequality, quadratic inequality, polynomial inequality, integer exponent, quadratic and exponential functions, long division, synthetic division, operations of rational expressions (+,-,X,/), data analysis, least common denominator, rational function, rational equation, equation with compound rational expression, radical expressions, radical equations, rational exponent, relation between rational exponents and radicals, radical equation. Prerequisite: 06-Algebra or approved by Dr. Shen.

08-Algebra

This is a one-year enhancement course recommended for Students in 8th grade. Topics (two semesters) include complex number, operations of complex numbers (+,-,X,/), complex

conjugate, review of linear and quadratic functions and their properties, graph transformation, polynomial function and graph, division algorithm, remainder theorem, factor theorem, rational zeros of a polynomial function, conjugate pairs theorem, complex zeros of a polynomial function, irrational zero theorem, radical function, piecewise-defined function, vertical, horizontal, and slant asymptotes of a rational function, polynomial inequalities, rational inequalities, inverse function, exponential function, logarithmic function, equation on exponential functions, equation on logarithmic functions, Sequences, sum of an arithmetic sequence, sum of a geometric sequence. Prerequisite: 07-Algebra or approved by Dr. Shen.

06/07-Geometry

This is a one-year enhancement course for high school Geometry. Geometry is the study of points, lines, surfaces, shapes, 3-dimensional solids, and the relationships that exist between them. Topics (two semesters) include elements of plane geometry, reasoning and proofs, transforming figures, triangles and geometric constructions, congruent triangles, similar triangles, polygons, circles, three-dimensional figures, and circle theorems. Prerequisite: 06-Algebra (Fall) or approved by Dr. Shen. This course is recommended for students in 6^{th}, 7^{th}, 8^{th} grades.

06-MathCounts/AMC

This is a one-year course preparing middle school students for success on MathCounts and the AMC 8 tests. Prerequisite: 05-Algebra or approved by Dr. Shen. This course is recommended for students in 6^{th}, 7^{th} grades. Students are recommended to take 06-MathCounts/AMC and 06-Algebra at the same time.

08-MathCounts/AMC

This is a one-year advanced course preparing middle school students for success on MathCounts and the AMC 8 tests. Prerequisite: 06-MathCounts/AMC or approved by Dr. Shen. This course is recommended for students in 7^{th}, 8^{th} grades. Students are recommended to take 08-MathCounts/AMC and 07-Algebra at the same time.

10/12-AMC

This is a topic-based problem solving course preparing high school students for success on the AMC 10/12 tests. Topics covered will be different for any two consecutive years, and thus students can take the course for up to two years. Prerequisite: 08-MathCounts/AMC or approved by Dr. Shen. This course is recommended for students in 9^{th}, 10^{th} grades.

09-PreCalculus

This is a one-year enhancement course for high school Pre-Calculus. Topics include (two semesters) overview of functions and graphs, trigonometry, trigonometric equations, identities, inverse trigonometric functions, complex numbers, exponential forms of complex numbers, De Moivre's Theorem, vectors, polar equations, parametric equations, dot and cross product, conic sections, probability, statistics and matrices.