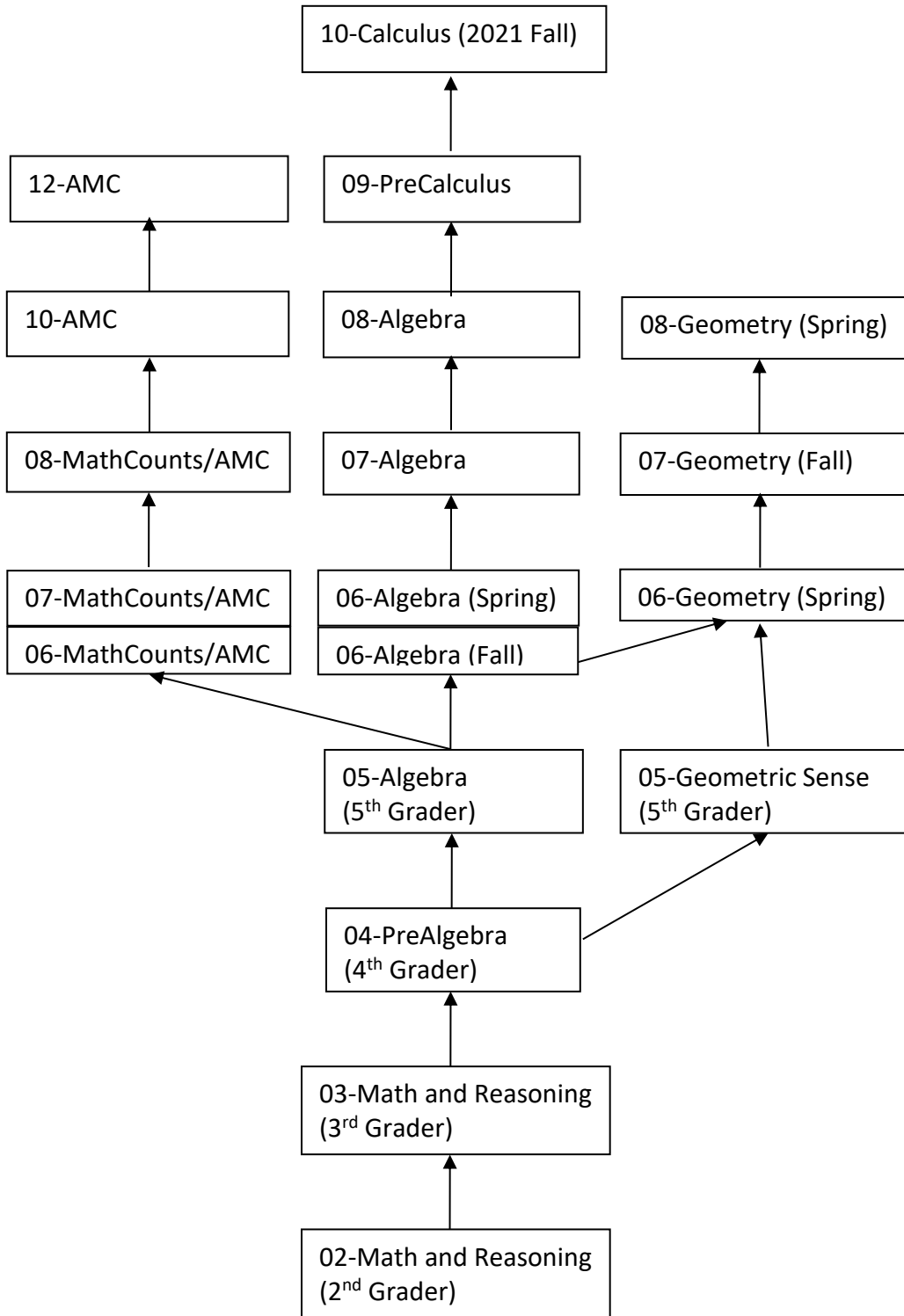


DSM (Dr. Shen Mathematics) Academy (Spring 2021)

All courses will be delivered via Zoom. Lecture recording and notes will be available to students.

DSM Course Sequence



***Early bird discount:** sign up and pay tuition by **January 2, 2021**.

Course Registration (through Austin Great Wall Chinese School): <https://agwcs.org/> -- Copy the URL link and open in a web browser.

DSM Academy: <https://www.dsmacademy.net/>

Contact: DSMAcademy.Shen@gmail.com, js48@txstate.edu

Join WeChat: jianshentx



After School Programs for 2nd and 3rd Graders

15 weeks (January 12 – May 14, 2021), 30 class meetings.

No class during these three weeks: Jan 18–22, March 15–19, April 5--9

| Course/ Instructor | Lecture Time | Weekly Homework | Tuition |
|---|--|---------------------------|---|
| 02-Math and Reasoning Dr. Hungzen Liao | Tuesday and Thursday 4:00--4:50 PM (CT) 2:00--2:50 PM (PT) 5:00--5:50 PM (ET) | 30 minutes per week | \$300 (regular) *Early Bird: \$270 |
| 03-Math and Reasoning (Section 1) Ms. Wei Bao | Tuesday and Thursday 3:30—4:20 PM (CT) 1:30—2:20 PM (PT) 4:30—5:20 PM (ET) | 30-45 minutes per week | \$300 (regular) *Early Bird: \$270 |
| 03-Math and Reasoning (Section 2) Ms. Zhen Wang | Wednesday and Friday 5:30—6:20 PM (CT) 3:30—4:20 PM (PT) 6:30—7:20 PM (ET) | 30-45 minutes per week | \$300 (regular) *Early Bird: \$270 |

Sunday Mathematics Programs for 4th – 11th Graders

15 weeks (January 10 – May 16, 2021) , 15 class meetings

No class on Jan 17, March 14, 21, April 4

| Course/ Instructor | Lecture Time (Sunday) | T.A. Lab (Saturday) | Weekly Quiz (taken anytime after lecture and before 11:59PM) | Weekly Homework | Tuition |
|-----------------------|--------------------------|--|---|--------------------|---------|
| | | T.A. will go over homework problems with students. Students are recommended (but not required) to attend T.A. labs. | | | |

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|---|--|---|---------------------------|------------------------------|--|
| 04-PreAlgebra Ms. Chen Li | 1:00--1:55 PM (CT) 11:00-11:55AM (PT) 2:00--2:55 PM (ET) | None | 10-15 Minutes per week | 1-1.5 Hours per week | \$300 (regular) *Early Bird: \$270 |
| 05-Algebra (Section 1) Dr. Jian Shen | 1:00--2:00 PM (CT) 11AM-12 Noon (PT) 2:00-- 3:00 PM (ET) | Saturday 6:00-6:30 PM (CT) 4:00-4:30 PM (PT) 7:00-7:30 PM (ET) | 15-20 Minutes per week | 1-2 Hours per week | \$300 (regular) *Early Bird: \$270 |
| 05-Algebra (Section 2) Dr. Jian Shen | 3:05--4:05 PM (CT) 1:05--2:05 PM (PT) 4:05-- 5:05 PM (ET) | Saturday 6:00-6:30 PM (CT) 4:00-4:30 PM (PT) 7:00-7:30 PM (ET) | 15-20 Minutes per week | 1-2 Hours per week | \$300 (regular) *Early Bird: \$270 |
| 06-Algebra Ms. Chen Li | 3:05--4:05 PM (CT) 1:05--2:05 PM (PT) 4:05-- 5:05 PM (ET) | Saturday 6:45-7:15 PM (CT) 4:45-5:15 PM (PT) 7:45-8:15 PM (ET) | 15-20 Minutes per week | 1-2 Hours per week | \$300 (regular) *Early Bird: \$270 |
| 07-Algebra Dr. Qiang Zhao | 3:05--4:05 PM (CT) 1:05--2:05 PM (PT) 4:05-- 5:05 PM (ET) | Saturday 6:00-6:30 PM (CT) 4:00-4:30 PM (PT) 7:00-7:30 PM (ET) | 15-20 Minutes per week | 1-2 Hours per week | \$300 (regular) *Early Bird: \$270 |
| 08-Algebra Dr. Hungzen Liao | 3:05--4:05 PM (CT) 1:05--2:05 PM (PT) 4:05-- 5:05 PM (ET) | TBA | 15-20 Minutes per week | 1-2 Hours per week | \$300 (regular) *Early Bird: \$270 |
| 09-Precalculus Dr. Qiang Zhao | 4:15--5:15 PM (CT) 2:15--3:15 PM (PT) 5:15-- 6:15 PM (ET) | None | 15-20 Minutes per week | 1-2 Hours per week | \$300 (regular) *Early Bird: \$270 |
| 06-Geometry Dr. Jian Shen | 5:20--6:30 PM (CT) 3:20--4:30 PM (PT) 6:20-- 7:30 PM (ET) | Saturday 6:45-7:15 PM (CT) 4:45-5:15 PM (PT) 7:45-8:15 PM (ET) | 15-20 Minutes per week | 1.5-2 Hours per week | \$320 (regular) *Early Bird: \$290 |
| 08-Geometry Dr. Jian Shen | 4:15--5:25 PM (CT) 2:15--3:25 PM (PT) 5:15-- 6:25 PM (ET) | None | 15-20 Minutes per week | 1.5-2 Hours per week | \$320 (regular) *Early Bird: \$290 |
| 07-Mathcounts/AMC Dr. Jianbo Peng | 4:15--5:25 PM (CT) 2:15--3:25 PM (PT) 5:15-- 6:25 PM (ET) | None | None | 1.5-2 Hours per week | \$400 (regular) *Early Bird: \$370 |
| 08-Mathcounts/AMC Dr. Jianbo Peng | 5:30--6:45 PM (CT) 3:30--4:45 PM (PT) 6:30-- 7:45 PM (ET) | None | None | 1.5-2 Hours per week | \$400 (regular) *Early Bird: \$370 |
| 10-AMC Dr. Jian Shen (10-AMC and 12-AMC are stacked together as 10/12-AMC.) | 2:00--3:00 PM (CT) 12:00--1:00 PM (PT) 3:00-- 4:00 PM (ET) | None | None | 1.5-2.5 Hours per week | \$400 (regular) *Early Bird: \$370 |

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|---|--|------|------|------------------------------|---|
| 12-AMC Dr. Jian Shen (10-AMC and 12-AMC are stacked together as 10/12-AMC.) | 2:00--3:00 PM (CT) 12:00--1:00 PM (PT) 3:00-- 4:00 PM (ET) | None | None | 1.5-2.5 Hours per week | \$400 (regular) *Early Bird: \$370, |
|---|--|------|------|------------------------------|---|

Course Instructors:

Dr. Jian Shen (05-Algebra, 06-Geometry, 08-Geometry, 10-AMC, 12-AMC)

- Professor and Associate Chair, Texas State U Mathematics Department
- Member of the Texas State Mathworks Summer Camp Team since 2003
- Member of the 1986 Chinese IMO (International Mathematical Olympiad) Team

Dr. Jianbo Peng (07-Mathcounts/AMC, 08-Mathcounts/AMC) -- Member of the 1994 Chinese IMO Team

Dr. Qiang Zhao (07-Algebra, 09-PreCalculus) – Mathematics Professor at Texas State University

Ms. Chen Li (04-PreAlgebra, 06-Algebra) -- 15 years of teaching experience at a public middle school in Austin

Dr. Hungzen Liao (02-Math and Reasoning, 08-Algebra) – 8 years of teaching experience at a private middle school in Austin

Ms. Zhen Wang (03-Math and Reasoning) – 10 years of teaching experience at Austin Great Wall Chinese School

Ms. Wei Bao (03-Math and Reasoning) – 5 years of teaching experience at Austin Great Wall Chinese School

DSM Course Description:

04-PreAlgebra

This is a one-year enhancement course recommended for students in 4th grade. The course will cover the following topics: comparing integers, operations of integers (+, -, X, /), fractions, operations of fractions (+, -, X, /), solving one-step and two-step equations, divisibility rules, measurement, geometry (angle measure, perimeter and area), patterns and sequences.

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-Geometry, 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, three-dimensional figures. Prerequisite: 06-Algebra (Fall) or approved by Dr. Shen. This course is recommended for students in 6th, 7th, 8th grades.

08-Geometry

This is a one-semester advanced geometry course for high school students. Advanced topics include circle, analytic geometry, parabola, ellipse, hyperbola, and proof methods. Prerequisite: 07-Geometry or approved by Dr. Shen. This course is recommended for students in 7th, 8th, 9th grades.

06-MathCounts/AMC, 07-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 6th, 7th grades. Students are recommended to take 06-MathCounts/AMC and 06-Algebra at the same time. Topics include mental mathematics, digit root, operation puzzles, number puzzles, continued fractions, properties involving fractions, operations with decimals, repeating decimals, converting repeating decimals to fractions, operations with repeating decimals, operations with percent and interest, problems on fractions, rates, ratios, and continued ratios, mean-median problems, distance-speed problems, substance-concentration-dilution problems, pattern and odd/even parity problems, floor/ceiling functions, modular arithmetic, finding last

digits, floor/ceiling equations, exponential equations, Venn diagram, inclusion-and-exclusion problems, counting rules, the Pythagorean theorem, perimeter and area problems.

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 7th, 8th grades. Students are recommended to take 08-MathCounts/AMC and 07-Algebra at the same time. Topics include fractions and repeating decimals, repeating patterns, infinite geometric series, applications of Vieta's theorem, converse problems, inclusion-and-exclusion, permutations and combinations, mixed problems on permutation and combination, generalized permutations and combinations, counting geometric figures, discrete probability, probability distribution, independence of events, complicated radical equations, complicated absolute equations, system of equations, Cramer's rule, non-linear equations, non-linear algebraic techniques, binary, octal, and hexadecimal number systems, converting repeating decimal between different number systems, inequalities in geometry, problem solving techniques using area, problem solving techniques using similar triangles, triangle midsegment, hard problems involving area.

10/12-AMC (2-year course stacked for 10-AMC and 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 8th, 9th, 10th grades. Topics for the 2020-2021 year (Fall and Spring semesters) include 4-step research procedure (pattern → guess → conjecture → proof) in mathematical problem solving, divisibility, divisors, the Euclidean algorithm, Diophantine's equations, Fermat numbers, Euler's function, Fermat little theorem, Wilson's theorem, proof strategies, induction, strong induction, proof by contradiction, research problems and talks, linear congruence equations, system of linear congruence equations, Chinese remainder theorem, applications of Chinese remainder theorem, non-linear congruence equations, factorial function and prime factors, tangent lines of a circle, geometric constructions, power of a point theorem, inequalities in mathematics competition. Topics for the 2021-2022 year will be completely different.

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.