

Idea Math AMC123 2009 Curriculum

- **Math Roots**

The classes for this group is best fit for students just beginning their problem-solving careers, perhaps at the level of the MATHCOUNTS School and Chapter rounds. We help them to gain a solid grasp of the fundamental algebra and geometry skills that will guide them throughout the rest of middle school and high school. We will focus on developing students basic counting skills and abilities to recognizing number patterns.

- **Beyond MATHCOUNTS**

The classes for this group is designed to help student solidify and deepen their command of algebra and geometry while helping them prepare for MATHCOUNTS chapter, state, national rounds and AMC 8/10 tests. We will focus on AMC 8 tests and entry to medium level of AMC 10 problems.

- **AMC 10/12**

The classes for this group will help experience math students to extend their grasp of algebraic and geometric tools and apply them to combinatorial and number theoretic problems while helping them prepare for AMC 10 and AMC 12 test. We will focus on solving medium to hard level problems of AMC 10 and medium level problems of AMC 12.

- **AMC 12/AIME**

The classes for this group will help students who can routinely solve at least a few problems on the AIME to develop their problem-solving skills to the next level. The hard problems in AMC 12 and medium to hard level of AIME will be the focal point of this group.

- **AIME with proof**

The classes for this group will help students who are capable of qualifying for USAMO to develop their skills and proof writing techniques in advanced topics covered in high end math competitions. We will focus on solving hard problems in AIME and entry level of USAMO problems.

- **Mathematics Olympiads**

The classes for this group will focus on high level problems in the Mathematics Olympiad contests.

2009 AMC123 Session 1 Schedule

	Math Roots 1	Beyond MathCounts	AMC10/AMC12	AMC12/AIME	AIME with proof	Math Olympiads
Sunday Dec 20 9:30 AM - 12:45 PM	Yunhua Xu <i>Fractions</i> <i>The order of operations</i>	<i>No classes</i>	Chengde Feng <i>Counting 1</i> <i>Geometry 1</i>	Zuming Feng <i>Special angles</i>	Naoki Sato <i>Inequality</i>	Tiankai Liu <i>Number theory 1</i>
12:45 PM - 2:00 PM	<i>lunch</i>	<i>lunch</i>	<i>lunch</i>	<i>lunch</i>	<i>lunch</i>	<i>lunch</i>
Sunday Dec 20 2:00 PM - 5:15 PM	<i>No classes</i>	Yunhua Xu <i>Percentage</i> <i>Divisibility</i>	Zuming Feng <i>Probability 1</i> <i>Geometry 2</i>	Naoki Sato <i>Similarity</i>	Tiankia Liu <i>Primes and divisors</i>	Zvezda Stankova <i>Classical geometry</i>

	Math Roots	Beyond MathCounts	AMC10/AMC12	AMC12/AIME	AIME with proof	Math Olympiads
Monday Dec 21 9:30 AM - 12:45 PM	Yunhua Xu <i>Arithmetic the clear way</i> <i>Basic factoring</i>	<i>No classes</i>	Zuming Feng <i>Counting 2</i> <i>Geometry 3</i>	Naoki Sato <i>Powers, factories, and bases</i>	Tiankai Liu <i>Number theory functions</i>	Zvezda Stankova <i>Multiplicative functions</i>
12:45 PM - 2:00 PM	<i>lunch</i>	<i>lunch</i>	<i>lunch</i>	<i>lunch</i>	<i>lunch</i>	<i>lunch</i>
Monday Dec 21 2:00 PM - 5:15 PM	<i>No classes</i>	Chengde Feng <i>Proportion and mixed solution</i> <i>Operations of rational expressions</i>	Zuming Feng <i>Probability 2</i> <i>Geometry 4</i>	Naoki Sato <i>Circular geometry</i>	Tiankia Liu <i>Modular arithmetics</i>	Zvezda Stankova <i>Inverse geometry</i>

	Math Roots 1	Beyond MathCounts	AMC10/AMC12	AMC12/AIME	AIME with proof	Math Olympiads
Tuesday Dec 22 9:30 AM - 12:45 PM	Yunhua Xu <i>Work around the clock</i> <i>Computational skills</i>	<i>No classes</i>	Chengde Feng <i>Quadratic function 1</i> <i>Geometry 5</i>	Yi Sun <i>Integer polynomials</i>	Zuming Feng <i>What is a proof?</i> <i>Challenges with special angles</i>	Tiankai Liu <i>Diophantine equations 1</i>
12:45 PM - 2:00 PM	<i>lunch</i>	<i>lunch</i>	<i>lunch</i>	<i>lunch</i>	<i>lunch</i>	<i>lunch</i>
Tuesday Dec 22 2:00 PM - 5:15 PM	<i>No classes</i>	Yunhua Xu <i>Units</i> <i>Evaluating algebraic expressions</i>	Chengde Feng <i>Viète's relations 1</i> <i>Geometry 6</i>	Yi Sun <i>Polynomials</i> <i>Sequences</i>	Tiankia Liu <i>Congruent classes</i>	Zuming Feng <i>Combinatorics 1</i>

	Math Roots	Beyond MathCounts	AMC10/AMC12	AMC12/AIME	AIME with proof	Math Olympiads
Wednesday Dec 23 9:30 AM - 12:45 PM	Yunhua Xu <i>Primes and divisors</i> <i>System of equations</i>	<i>No classes</i>	Chengde Feng <i>Quadratic functions 2</i> <i>Geometry 7</i>	Yi Sun <i>Basic Diophantine equations</i>	Zuming Feng <i>Similar triangles</i> <i>Basic counting strategies 1</i>	Tiankai Liu <i>Number theory 2</i>
12:45 PM - 2:00 PM	<i>lunch</i>	<i>lunch</i>	<i>lunch</i>	<i>lunch</i>	<i>lunch</i>	<i>lunch</i>
Wednesday Dec 23 2:00 PM - 5:15 PM	<i>No classes</i>	Yunhua Xu <i>Setting up equations</i> <i>Perfect powers</i>	Chengde Feng <i>Viète's relations 2</i> <i>Geometry 8</i>	Yi Sun <i>Factors and divisors</i>	Zuming Feng <i>Basic counting strategies 2</i> <i>Challenges in analytic geometry</i>	Tiankai Liu <i>Diophantine equations 2</i>

2009 AMC123 Session 2 Schedule

	Math Roots 1	Beyond MathCounts	AMC10/AMC12	AMC12/AIME	AIME with proof	Math Olympiads
Sunday Dec 27 9:30 AM - 12:45 PM	Yunhua Xu <i>Statistics</i> <i>Operators</i>	<i>No classes</i>	Chengde Feng <i>Time, rate, distance</i> <i>Functions and polynomials</i>	Chris Jeuell <i>Counting and probability</i>	Zuming Feng <i>Motion</i> <i>Cyclic quadrilaterals</i>	Yi Sun <i>Trigonometry</i>
12:45 PM - 2:00 PM	<i>lunch</i>	<i>lunch</i>	<i>lunch</i>	<i>lunch</i>	<i>lunch</i>	<i>lunch</i>
Monday Dec 27 2:00 PM - 5:15 PM	<i>No classes</i>	Yunhua Xu <i>Work rate</i> <i>Triangles</i>	Chris Jeuell <i>Number Theory</i>	Chengde Feng <i>Logarithm and exponential functions</i>	Yi Sun <i>Counting and double-counting</i>	Zuming Feng <i>Incircles</i>

	Math Roots	Beyond MathCounts	AMC10/AMC12	AMC12/AIME	AIME with proof	Math Olympiads
Monday Dec 28 9:30 AM - 12:45 PM	Yunhua Xu <i>Coin master</i> <i>Challenges on Statistics</i>	<i>No classes</i>	Chengde Feng <i>Arcs, chords, tangents, and secants</i> <i>Functions and polynomials</i>	Chris Jeuell <i>Complex numbers</i>	Zuming Feng <i>Law of sines and cosines</i> <i>Counting with arrays and grids</i>	Yi Sun <i>Inequalities 1</i>
12:45 PM - 2:00 PM	<i>lunch</i>	<i>lunch</i>	<i>lunch</i>	<i>lunch</i>	<i>lunch</i>	<i>lunch</i>
Monday Dec 28 2:00 PM - 5:15 PM	<i>No classes</i>	Yunhua Xu <i>Time, rate, and distance</i> <i>Pythagorean theorem 1</i>	Yi Sun <i>Coordinate geometry</i>	Chris Jeuell <i>Counting and recursions</i>	Evan O'Dorney <i>Invariants</i> <i>Monovariants</i>	Zuming Feng <i>Generating functions</i>

	Math Roots 1	Beyond MathCounts	AMC10/AMC12	AMC12/AIME	AIME with proof	Math Olympiads
Tuesday Dec 29 9:30 AM - 12:45 PM	Yunhua Xu <i>Divisibilities</i> <i>Number puzzles</i>	<i>No classes</i>	Chris Jeuell <i>Word problems</i>	Chengde Feng <i>Trigonometry</i>	Zuming Feng <i>Concurrency and Collinearity Counting with sym- metry</i>	Yi Sun <i>Complex numbers</i>
12:45 PM - 2:00 PM	<i>lunch</i>	<i>lunch</i>	<i>lunch</i>	<i>lunch</i>	<i>lunch</i>	<i>lunch</i>
Tuesday Dec 29 2:00 PM - 5:15 PM	<i>No classes</i> <i>Introductions to log- arithms</i>	Yunhua Xu <i>Pythagorean theo- rem 2</i> <i>Polygons 1</i>	Chengde Feng <i>More on circles</i>	Chris Jeuell <i>Roots of equations</i>	Yi Sun <i>Algebra and polyno- mials</i>	Zuming Feng <i>Tangent circles</i>

	Math Roots	Beyond MathCounts	AMC10/AMC12	AMC12/AIME	AIME with proof	Math Olympiads
Wednesday Dec 30 9:30 AM - 12:45 PM	Yunhua Xu <i>Measurements</i> <i>Number sense</i>	<i>No classes</i>	Chengde Feng <i>Inscribed and cir- cumscribed polygons</i>	Zuming Feng <i>Centers of a trian- gle</i> <i>Binomial coeffi- cients</i>	Chris Jeuell <i>Algebra</i>	Yi Sun <i>Inequalities 2</i>
12:45 PM - 2:00 PM	<i>lunch</i>	<i>lunch</i>	<i>lunch</i>	<i>lunch</i>	<i>lunch</i>	<i>lunch</i>
Wednesday Dec 30 2:00 PM - 5:15 PM	<i>No classes</i>	Yunhua Xu <i>Area and dissec- tions</i> <i>Polygons 2</i>	Chris Jeuell <i>Sequences and se- ries</i>	Yi Sun <i>Combinatorics</i>	Evan O'Dorney <i>Combinatorics</i>	Zuming Feng <i>Properties of special angles</i>