

## Math Enrichment Class Series

Class	Level	Student Age Group	Class Purpose	Class Coverage
EM1	Entry	Elementary school grade 1-2	Start to prepare young kids with basic problem-solving steps, creative thinking and analytical skill of math word problems	Introduce the basic concepts with focus on word problem: <ul style="list-style-type: none"> <li>- Additional and subtraction of whole number</li> <li>- Money, length and weight</li> <li>- Reading clock</li> <li>- Capacity, Graph, Time, and Perimeter</li> <li>- Simple multiplication and division</li> </ul>
EM 2	Elementary	Elementary school grade 3, or who has completed EM1	Guide young kids to study breadth of basic math knowledge and learn the skills to apply the knowledge to problem-solving	Introduce the basic concept of number operation, fraction and basic concept in Geometry such as <ul style="list-style-type: none"> <li>- Counting, rounding, factor and multiple of whole numbers</li> <li>- Addition, subtraction, multiplication, and division of whole numbers</li> <li>- Addition and subtraction of fractions</li> <li>- Tables, graphs and angles</li> <li>- Parallel and perpendicular lines</li> <li>- Area and perimeter of rectangles and squares</li> </ul>
EM 3	Elementary	Elementary school grade 4, or who has completed EM2	Help students focus on problem solving using Model Approach which has been proven to be the most versatile and effective method of solving many difficult and challenging problems	Review and introduce the topics such as: <ul style="list-style-type: none"> <li>-whole numbers, fractions, decimal and ratios</li> <li>-Percentage and average</li> <li>-Area of triangle, Quadrilateral and circle</li> <li>- Volume of rectangles, cone and cylinder</li> <li>-Angles, Polygons</li> </ul>
EM 4	Elementary	Elementary school grade 5, or who has completed EM3	Continue to help students focus on problem solving using Model Approach, and improve students' skills in solving many difficult and challenging problems	Review and enhance the topics such as: <ul style="list-style-type: none"> <li>-whole numbers, fractions, decimal and ratios</li> <li>-Percentage and average</li> <li>-Area of triangle, Quadrilateral and circle</li> <li>- Volume of rectangles, cone and cylinder</li> <li>-Angles, Polygons</li> </ul>

EM - Algebra	Developing	Middle school grade 5-7	Introduce the concept of Algebra to help students review, improve and build stronger math foundations for junior high school	<p>Introduce the algebra concepts involving variables</p> <ul style="list-style-type: none"> <li>- Indices or exponents with numbers and variables</li> <li>- Expanding and factorization</li> <li>- Quadratic equations, system of linear equations</li> <li>- Word problem involving rate, ration and percentage</li> <li>- Coordinate Plane, quadratic graphs</li> <li>- Inequality with variables</li> </ul>
EM - Geometry	Developing	Middle school grade 6-8	Focus on Geometry and Statistics to help students review, improve and build stronger math foundations for junior high school	<p>Introduce the basic concepts for Geometry and Statistics</p> <ul style="list-style-type: none"> <li>- Congruent and similar triangles</li> <li>- Measurement for sector, cone, arc and pyramid</li> <li>- Pythagorean theorem and trigonometry</li> <li>- Motion Geometry</li> <li>- Statistics: graphic presentation of data and measurement of the distribution</li> </ul>
EM - Algebra 2		Middle school grade 7-9	Build on concepts and problem-solving skills learned from Algebra and Geometry	<p>Introduce concepts from Geometry and Statistics</p> <ul style="list-style-type: none"> <li>- Functions</li> <li>- Complex numbers</li> <li>- Sequences and series</li> <li>- Probability</li> <li>- Statistics</li> <li>- Trigonometry and graphs</li> </ul>
EM- Pre-calculus		High school	Introduce fundamental knowledge and related problem-solving skill. Help students prepare for further study of AP Calculus	<p>Throughout the course, students will learn:</p> <ul style="list-style-type: none"> <li>- Operations of Algebraic expressions, and functions</li> <li>- Evaluate, graph, transform functions / inverse functions</li> <li>- Polynomials and rational/complex zeros</li> <li>- Solve equations, system of equations, inequalities</li> <li>- Analyze, graph trigonometric functions or their inverse ones</li> </ul>
EM - SAT Math		starting from middle school age, who has completed EM4	Review the fundamental math concepts to SAT test standards, and practice basic problem-solving using SAT exam references	<p>Review the SAT material:</p> <ul style="list-style-type: none"> <li>- Number and Operations</li> <li>- Algebra and Functions</li> <li>- Geometry and Measurement</li> <li>- Data Analysis, Statistics, and Probability</li> <li>- SAT mock exam</li> </ul>

# Math Olympic Class Series

Class	Level	Student Age Group	Class Purpose	Class Coverage
MO 1	entry	Above 3rd grade, who has just started to learn MO	Introduce basic math concepts that are required in math competition	Explain types of numbers, number operation order, "3M", LCM, GCF, exponent, radical, and factorial, fraction, percent, decimal, ratio, proportion; basic Algebra expression and operations, using Algebra to solve simple word problems; Geometry shapes, perimeter, area, circumference, surface area, and volume; basic counting methods and basic Probability.
MO 2	elementary	Around 4th grade, who has learned MO for about a year	Use practical problem-solving examples to systematically walk through math concepts and basic problem-solving strategies that are being used in the competition.	Review basics with in-depth explanations and examples, practice problems using basic concepts such as, - prime & composite - distributive property, etc. - "Chickens & Rabbits" pattern of world problem - "Money" word problem - basic logic problem - ratio and proportion - "incircle knowledge" of triangle, polygon, and circle - Counting and Probability related word problem
MO 3	developing	Around 5th grade, who has learned MO for about 1-2 years	Enrich basic math concepts with challenging problem-solving practice. It requires students to have creative thinking and be comfortable in a competitive setting.	Introduce topics such as: - unit digits, number base, and special numbers - clock hands and angle - polygon and geometric calculation - linear equation and word problem - etc.

MO 4	developing	At around middle school age, who is preparing for Math Counts, and/or, AMC 8 competitions	Help students who take Math Counts challenges, and/or AMC 8 tests.	With assumption of students at a certain level of well-developed problem-solving skill in middle school math competition area, this class uses Math Counts and AMC 8 target levels of training material. Math Counts event is only for middle school students to participate nationwide ( <a href="http://mathcounts.org/programs/competition-series">http://mathcounts.org/programs/competition-series</a> . Please be noted, students need to register with their weekday schools to participate Math Counts event.)
HS MO 1		Who has completed MO4	Improve students' proficiency in competitive level (AMC 10/12) of problem-solving.	Runs through intensive math topics. Reference books: Art of Problem Solving Volume 2: and Beyond Art of Problem Solving Volume 1: Basic Challenging Problems in Geometry Art of Problem Solving: Intermediate Algebra
HS MO 2		Who has learned HS MO for about 1 year or above	Enhance students' proficiency in competitive level (AMC 10/12, AIME) of problem-solving.	Class topics cover major areas in: Number Theory Algebra - polynomial, functions, equations, and inequality Geometry - mass point, analytic, inequality, and solid Combinatorics Probability
HS MO 3		Who has learned HS MO for about 2 years or above	Enhance students' proficiency in competitive level (AIME, and beyond) of problem-solving.	Class topics cover major areas in: Number Theory Algebra Geometry Combinatorics Probability

## Gifted Program Class Series

Class	Level	Student Age Group	Class Purpose	Class Coverage
1 <sup>st</sup> Grade		K, 1 <sup>st</sup> grade students	Get kids ready for the gifted program qualification test (1 <sup>st</sup> grade level), while having fun of learning advanced knowledge	<p>The class teaching plan contains following categories,</p> <ul style="list-style-type: none"> <li>• Math and Science, i.e. money, time, atoms and molecule lab;</li> <li>• English and Vocabulary</li> <li>• CogAT, ITBS, and Logic</li> </ul>
2 <sup>nd</sup> Grade		1 <sup>st</sup> , or 2 <sup>nd</sup> grade students	Exploration of fun through learning math, science, and other common sense area that may help students prepare for the gifted qualification test (2 <sup>nd</sup> grade level)	<p>Three main parts: critical thinking, creative construction, and common sense.</p> <p>Cover diverse concepts, such as arithmetic, geometric shape, abstract and critical thinking, basic physics and chemistry science, drawing, English reading and writing, and etc.</p>

# Computer Programming Class Series

Class	Level	Student Age Group	Class Purpose	Class Coverage
Basic	entry	Above 4th grade	Introduce basic programming concepts that will pave the road to practical programming	Learn the basics of programming, starting from the beginning. Topics will include variables, loops, and branching logic. The class will be hands-on throughout, and students will be creating real, working programs.
Intermediate	elementary	Who has learned "Basic" level, or its equivalent	Expand students' knowledge, and most importantly, interest in programming.	Use Java language in projects to learn, Java basics, fundamental data structures like lists and arrays, object oriented design concepts, algorithms, and etc.
Advanced	developing	Who has taken "Intermediate" level, or its equivalent	Continue to develop student's interest in learning and mastering basic concepts and knowledge at intermediate level or above.	Use Java language in projects to review data structures like lists and arrays, object oriented design practice, algorithms such as binary search, different approaches of sorting, big-O analysis, and etc.