

Saturday Contests (in alpha order)

AlphaStar

Alpha Math Contest is a math competition for elementary and middle school students. We will be running the official first round at our January 25th MathRocks! Top scoring students will be invited to the final round in Bay Area. There are 2 levels:

Euler (grades 3-5) topics include but not limited to

- Algebra (Order of operations, fractions, word problems)
- Counting (sets etc.)
- Geometry (angles, length, area etc.)
- Number Theory (prime numbers, factors, GCD, LCM, etc.)

Fermat (grades 6-8) topics include but not limited to

- Algebra (Order of operations, fractions, word problems)
- Counting (sets, combination, permutation etc.)
- Geometry (angles, length, area etc)
- Number Theory (prime numbers, factors, GCD,LCM, etc.)

Awards: NNVMath awards for meet winners at the following MathRocks! contest. AlphaStar provides awards for top scoring students of the final round that takes place in the Bay Area.

More information about AlphaStar and their meets can be found at <https://alphastar.academy/outreach/alpha-math-contest/>

Cost: \$15 for the January MathRocks! or included in the full MathRocks! series for \$75

IMLEM

IMLEM is a contest we license from the Intermediate Math League of Eastern Massachusetts. It is great developmental contest and has been around for 50 years.

IMLEM is a series of meets for grades 6-8. Each meet has 5 individual rounds and 1 team round. Each Individual round has 3 questions to be answered in 10 minutes long and fall into the categories: Mystery, Geometry, Number Theory, Arithmetic, and Algebra. The team round has 6 problems to be answer in 15 minutes. The concepts within each category for each meet develop throughout the season.

Awards: NNVMath awards for meet winners at the following MathRocks! contest. Our scores on the IMLEM are not reported to the Intermediate Math League of Eastern Massachusetts; they provide awards only within their physical league.

This year, all IMLEM contests will be administered as part of the MathRocks! contest series.

Cost: \$15 each or all included in the full MathRocks! series for \$75

More information about the Intermediate Math League of Eastern Massachusetts and their IMLEM contest, can be found at <https://www.imlem.org>

Lehigh University High School Math Contest

We have arranged to run the 40th Annual Lehigh University High School Math Contest as part of our February 29th MathRocks! This is single round contest comprised of 40 problems to be completed in 2 hours. No calculators are allowed. This is our first year running this contest and we are excited to bring this opportunity to our high school students!

Awards: NNVMath awards for meet winners at the following MathRocks! contest. Our scores on Lehigh University High School Math Contest will be reported to Lehigh University for informational purposes but our scores will not be integrated with those of students taking the contest at Lehigh University.

Cost: \$15 for the February MathRocks! or included in the full MathRocks! series for \$75

More information about the Lehigh University High School Math Contest, can be found at <https://www.lehigh.edu/~dmd1/hs.html>

Mathematical Talent Exhibition (aka The Toller Contest)

Originally conceived in 2016 and spreading to the online Art of Problem Solving (AoPS.org) community, the Mathematical Talent Exhibition (also known as the Toller contest locally) is a challenging contest that sets out to inspire individual creativity and ingenious solutions to challenging problems. This contest (both A and B levels) is open to anyone who has not yet graduated high school (and is not yet 20 years old on the day of the contest).

We are offering the Toller contests to our high school students as part of our MathRocks! Saturday events. The Toller B contest will be offered on December 7th and the Toller A contest will be offered on January 25th.

Both the Toller A and B contest have the same format:

- Team Round: Includes 20 questions (15 short-answer, 5 proof-based) to be answered by a team of four in 60 minutes.
- Individual Round: Includes 20 questions (all short answer) from all areas of high school mathematics (including calculus) to be answered in 90 minutes.

Contest A problems generally range from mid-AMC 10 level to upper AIME level (though there have been a few instances of problems topping the upper end of the scale). Contest B problems generally range from AMC 8 to AMC 10 level.

Topics covered by both tests include (but are not limited to): solving linear, quadratic, and higher-order polynomials; substitutions; root-finding; logarithms; sums, sequences, and series; complex numbers; functions and their inverses perimeter/circumference, area, and volume in 2-, 3-, and higher-dimensional Euclidean coordinate geometry; similarity and congruence; angles; properties of polygons and polyhedra; geometric probability; set theory; expected value and probability; data analysis; bases other than base 10; recurrence relations; modular arithmetic; counting and combinatorics, particularly combinations and permutations; and graph theory.

Additionally, the Toller A contest may also include problems from the following topics (typically included in AP Calculus BC classes): differential and integral calculus; fundamental theorems of calculus; related

rates; rules of differentiation and integration; integral approximation and elementary numerical analysis; optimization (maximization and minimization of functions); differential equations.

No calculators are allowed on any of the tests in either the A or B events.

Awards: NNVMath awards for meet winners at the following MathRocks! contest. NNVMath also awards cumulative year end awards at our Annual End of Year Awards Dinner (taking place on Saturday, May 16th). Students receive points at each month's MathRocks! contest based upon their individual placement.

Cost: \$15 each / both are included in the \$75 full MathRocks! series registration

Middlementary Math Bonanza (MMB)

This is the 5th year of this contest by National Assessment & Testing and our 1st year running it. There are 2 levels, grades 3-5 and grades 6-8. We will be running this at our December 7th MathRocks!

Competitors will take four tests:

- Individual Test: Thirty problems to be solved in thirty minutes by an individual.
- Mental Math Test: Twenty problems to be solved in fifteen minutes by an individual *without doing any scratch work*.
- Team Tests: There are two team tests in the topics of Algebra & Probability and Geometry & Potpourri. Each test consists of twenty problems to be solved by a team of four students in fifteen minutes.

All tests are free-response and designed to be taken without a calculator. On each test, there are easy problems that all competitors will find accessible. On each test, there will also be hard problems that very few students will get correct and many may not understand right away. Because of this, students should be prepared to get scores lower than those they are used to getting on tests in class.

More information about National Assessment & Testing and their contests can be found at <http://www.natassessment.com/>

Cost: \$15 for the December MathRocks! or included in the full MathRocks! series for \$75.

NNVMath

We have been writing contests for several years now with a significant increase last year. We write full contests and specific rounds to ensure all grades have a contest opportunity, including a team round, at each MathRocks!

For grades 1 & 2, Noetic Learning is the only contest we have found that we are able to offer on a Saturday. We will run Noetic's contest on November 23rd and on April 18th (April is a bonus contest for those who register for the series). NNVMath will write and offer team rounds for grades 1 and 2 both of these months. For all other months, NNVMath will write full contests with the following formats:

- Speed Round: This is an 8-minute round consisting of 40 problems designed to be solved mentally. Correct answers are worth 5 pts and wrong answers are worth -2 points. N deductions for skipped or problems left blank. To encourage students to answer problems

mentally, no scratch paper is allowed but students will not be penalized for doing work on problem sheet.

- Individual Round: The individual round will consist of one of the 2 following options:
 - Sprint 1 & 2 Rounds – Two separate rounds that each have 15 minutes for 15 problems to be completed. This round provides students with the standard full Sprint round experience but broken into 2 parts of similar difficulty to accommodate for their need for shorter sitting times.
 - Mini-Individual rounds – Five sets of problems that each have 6 minutes for 3 problems to be completed.
- Team Round – Ten questions to be solved as a team in 20 minutes.

For grades 3-5, NNVMath will write team rounds for the November 23rd and January 25th MathRocks. NNVMath will write full contests for grades 3-5 for the October 19th, February 29th, and April 4th contests using the following format:

- Speed Round: This is a 10-minute round consisting of 60 problems designed to be solved mentally. Correct answers are worth 5 pts and wrong answers are worth -3 points. N deductions for skipped or problems left blank. To encourage students to answer problems mentally, no scratch paper is allowed but students will not be penalized for doing work on problem sheet.
- Individual Round: The individual round will consist of one of the 2 following options:
 - Sprint 1 & 2 Rounds – Two separate rounds that each have 20 minutes for 15 problems to be completed. This round provides students with the standard full Sprint round experience but broken into 2 parts of similar difficulty to accommodate for their need for shorter sitting times.
 - Mini-Individual rounds – Five sets of problems that each have 8 minutes for 3 problems to be completed.
- Team Round – Ten questions to be solved as a team in 20 minutes.

For grades 6-8, NNVMath will be writing either a short individual round or a standard 20 minutes team round for the October 19th and February 29th contests. This round will supplement the IMLEM rounds that are being ran those months.

Full High School contests will be written inhouse by Dr. Hieu Do, PhD, TMCC instructor with assistance and support from other math instructors for the October 19th, November 23rd, and April 4th MathRocks! contests. Format is being determined.

ARML Local – ARML is discussing changes to this contest. We do not know at this time if these discussions include date it is offered, format of the contest, etc. We will include it with the series registration for grades 7-12 if at all possible.

Awards: NNVMath awards for meet winners at the following MathRocks! contest. NNVMath also awards cumulative year end awards at our Annual End of Year Awards Dinner (taking place on Saturday, May 16th). Students receive points at each month's MathRocks! contest based upon their individual placement.

No Calculators allowed on NNVMath written contests.

Cost: \$15 each MathRocks! or \$75 for the full MathRocks! series plus State!

As a bonus, we will be including the Math League's contest for grades 4 & 5 and Noetic Learning's Spring contest for grades 1-8 on April 18th for those who register for the full MathRocks! series. Note: Start time change for the April 18th contests - Math League for grades 4 & 5 will begin at 10 am and Noetic for grades 1-8 will begin at 11 am. Please arrive 15 to 30 minutes early for check-in.

Noetic Learning Math Contest

The Noetic Learning Math Contest (NLMC) is a semiannual problem-solving contest for elementary and middle school students. Separate contests are written for each grade 2-8. This is a nice contest for 1st time contest takers, so much so, that we give the 2nd grade contest to 1st graders as well. NOTE: this contest does challenge experienced contest participant and building their confidence as scores run higher. This contest tends to have a number of problems that are particularly friendly to those who think visually (understand, they can change their contest at any time).

The goal of the competition is to encourage students' interest in math, to develop their problem-solving skills, and to inspire them to excel in math.

During the contest, students are given 45 minutes to solve 20 problems. Many problems are designed to challenge students and to enrich their problem-solving experiences.

Awards: NNVMath awards for meet winners at the MathRocks! contest following each meet.

Recognition by Noetic Learning:

- National Honor Roll Medal: The top 10% of all participants in each grade will receive 'National Honor Roll' medals.
- Team Winner Medal: The highest scorer of each grade will receive a 'Team Winner' medal.

The Fall Noetic Learning Math Contest is being included as 1 of our 3 MathRocks! contest rounds on Saturday, November 23rd, (students will also participate in Speed and Team rounds). Individual MathRocks! dates are \$15; entire MathRocks! series is \$75.

The Spring Noetic Learning Math Contest is being held on Saturday, April 18th at 11 am. Due to the testing window, this contest is not included as part of the MathRocks! series but it's a great contest, so we want to make sure it is available to our students that want to participate in it. Cost to participate is \$10.

More information about Noetic Learning contests and their online learning programs, can be found at <https://www.noetic-learning.com/mathcontest/index.jsp>

Cost: \$15 for Fall, \$10 for Spring; both are included in the full MathRocks! series for \$75.

Toller Contest – See Mathematical Talent Exhibition

Other Contests (in date order)

Math League (Grades 6-8)

Friday, February 21st

In addition to the Math League High School series, Math League writes a yearly contest for grades 6-8. This contest is grade specific and each is 30 minutes long (number of problems per contest is approximately 30-35).

Math League designs their contests to allow all students success on the first half, while the last half should prove challenging to the best students and introduce students to new ideas.

Bonus: All Math League registrations include student use of the online Math League Adaptive Learning System for no additional fee!

More information about the Math League and their contests can be found at <https://www.MathLeague.com>

Awards: NNVMath awards for meet winners at the following MathRocks! contest. Math League awards certificates of achievement to the highest scoring students on each grade level.

Grades 6-8 will take place on Friday, February 21st at 6:40. Please arrive between 6:10 and 6:25 to check in.

Cost: \$10 and includes student use of Math League's online Adaptive Learning System!

Math Kangaroo

Thursday, March 18th

This is our 3rd year being a testing site for Math Kangaroo. Math Kangaroo provides a grade specific single round contest that takes place on the 3rd Thursday of March each year for all grades 1-12. This contest requires registration through their website and typically closes in December. The website for Math Kangaroo is <http://www.mathkangaroo.us/mk/default.html>. Please note: if you have problems registering for this contest, you will need to contact Math Kangaroo directly.

Awards: All awards are provided by Math Kangaroo and include prizes by grade based on local and national placement.

Math League (Grades 4 & 5)

Saturday, April 18th

In addition to the Math League High School series, Math League writes a yearly contest for grades 4 & 5. This contest is grade specific and each is 30 minutes long (number of problems per contest is approximately 30-35).

Math League designs their contests to allow all students success on the first half, while the last half should prove challenging to the best students and introduce students to new ideas.

Bonus: All Math League registrations include student use of the online Math League Adaptive Learning System for no additional fee!

More information about the Math League and their contests can be found at <https://www.MathLeague.com>

Awards: NNVMath awards for meet winners at the following MathRocks! contest. Math League awards certificates of achievement to the highest scoring students on each grade level.

Grades 4 & 5 will take place on Saturday April 18th at 10 am. Please arrive between 9:30 and 9:45 to check in.

Cost: \$10 or included in the full MathRocks! series for \$75. Registration in this contest includes student use of Math League's online Adaptive Learning System!

Noetic Learning Math Contest (grades 1-8)

Saturday, April 18th

The Noetic Learning Math Contest (NLMC) is a semiannual problem-solving contest for elementary and middle school students. Separate contests are written for each grade 2-8. This is a nice contest for 1st time contest takers, so much so, that we give the 2nd grade contest to 1st graders as well. NOTE: this contest does challenge experienced contest participant and building their confidence as scores run higher. This contest tends to have a number of problems that are particularly friendly to those who think visually (understand, they can change their contest at any time).

The goal of the competition is to encourage students' interest in math, to develop their problem-solving skills, and to inspire them to excel in math.

During the contest, students are given 45 minutes to solve 20 problems. Many problems are designed to challenge students and to enrich their problem-solving experiences.

Awards: NNVMath awards for meet winners at the MathRocks! contest following each meet.

Recognition by Noetic Learning:

- National Honor Roll Medal: The top 10% of all participants in each grade will receive 'National Honor Roll' medals.
- Team Winner Medal: The highest scorer of each grade will receive a 'Team Winner' medal.

The Spring Noetic Learning Math Contest is being held on Saturday, April 18th at 11 am. Due to the testing window, this contest is not included as part of the MathRocks! series but it's a great contest, so we want to make sure it is available to our students that want to participate in it. Cost to participate is \$10.

More information about Noetic Learning contests and their online learning programs, can be found at <https://www.noetic-learning.com/mathcontest/index.jsp>

Cost: \$10 for Spring; this is not an official MathRocks! Saturday contest but is included in the full MathRocks! series for \$75.