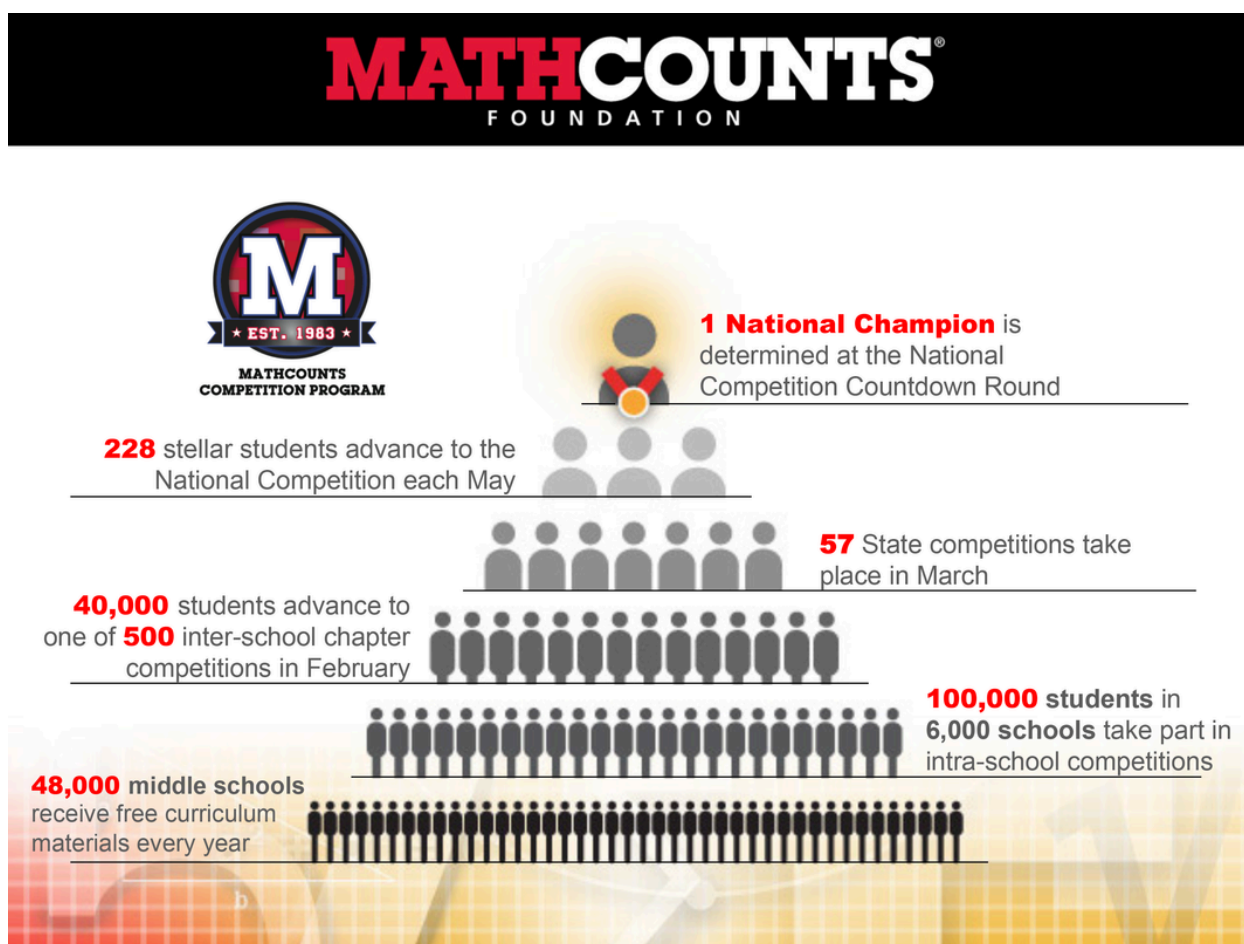


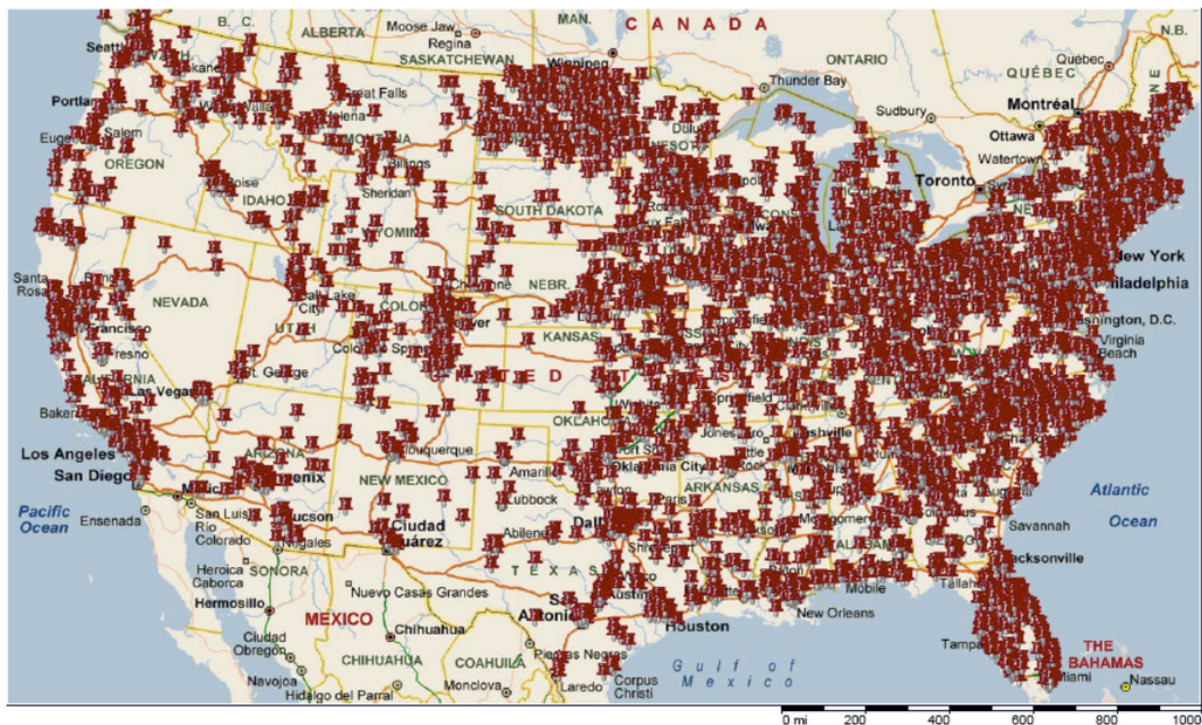
# FALLON MATHCOUNTS Program

## What Is MATHCOUNTS®?

1. It is a nationwide middle school mathematics competition held in various places in the United States. Its founding sponsors include the CNA **Foundation**, the National Society of Professional Engineers, and the National Council of Teachers of Mathematics.
2. It is one of the most prestigious middle school competitions with sponsors like Raytheon, 3M, Texas Instruments and Phillips 66.  
See <https://www.mathcounts.org/programs/competition-series> for more info.
3. The data in the below image are out of date, the number of participants are more than doubled as of last year, but still it gives you an idea of how the program runs.



## MATHCOUNTS Reach



## MATHCOUNTS competition format

## MATHCOUNTS Levels of Competition

The current plan is:

1. School Competition - Coach will host the school round competition. This round will be proctored by Coach.
2. Chapter Competition - Fallon team competes in the Diablo Chapter which includes schools from Danville, San Ramon, Livermore and Pleasanton
3. State Competition - The top teams (number varies each year based on number of participating teams from each chapter and next highest scoring top students in the chapter (based on their scores on the Sprint and Target Rounds) advance to the State Competition.
4. National Competition - The top students (up to 4) from each state (based on their scores on the Sprint and Target Rounds) advance to the current year's Raytheon Technologies MATHCOUNTS National Competition.

## Who Should Consider Joining?

Students who meet the following criteria:

1. Students who have a passion for math and want to find more challenging problems to work on.
2. Students who want to compete in math competitions and are willing to work hard to achieve the desired results.
3. Students who are willing to share ideas with other members and work as a team.

## Eligibility

### 1. *Important criteria:*

Parents need to make sure their kids are really passionate about MATH and ready to challenge themselves before signing up the kids.

2. Due to the amount of students applied, we will go through the following screening procedures:

#### A. Placement test

- a. Please make sure to register for the placement test **BEFORE** the deadline listed in the [Important Dates](#) section.
- b. **ONLY** students who have qualified scores will receive an email notice for further screening after the placement test. *Please add [fallonmathc2020@gmail.com](mailto:fallonmathc2020@gmail.com) to your email contacts, so it will not be treated as spam.*
- c. **NO MAKE UP PLACEMENT TEST WILL BE OFFERED.** Please reserve above mentioned potential time slots of the placement tests ahead of time
- d. Students need to obey the **PLACEMENT TEST RULES. ANYONE WHO VIOLATES THE RULES WILL BE DISQUALIFIED.**

#### B. Check the draft paper of the students of placement test and review the test results/awards:

- a. Students will be asked to submit the placement test draft paper through a link shared after submitting the placement test. Students who passed the placement test might be asked to provide proof of awards, competition scores they received.

#### C. Acceptance of offering of club membership:

- a. Students who passed Step B will receive the welcome email from the coach and will need to sign the enrollment forms sent from the coach.

- b. Parents of the students who got accepted will need to submit a check of \$70, payable to “Fallon PFC”, to the office by the time specified in the email notification. If the payment is not turned in by this date, the student’s spot will be passed on to a waitlisted student.
4. Online classes are hard to manage. If a student doesn’t follow the program class rules, we will give warnings to that student. After 3 warnings, if that student continues to violate the rules, the student will be dropped from the program. The student’s spot will be passed on to a waitlisted student.

## Registration:

[Registration deadline](#)

[Register for the placement test here](#)

## Important Dates

1. Registration Deadline: *9/17/2024, by 8pm PDT Spots are limited, please make sure to register before the deadline ends.*
2. Placement Test:  
An online placement test will be held on *9/20/2024 at 3:50 pm-5:45 pm PDT.*  
(Approximate, may be a little longer or shorter) *The test meeting information will be sent out to email addresses of all the participants 24 hours before the test time.*
3. School Competition:  
An in-person test proctored by the coaches. *The test date : TBD. We will announce it at least 1 week before the test date.*
4. Diablo Chapter Competition:  
It will be a day on one of the weekends of *February, 2024.* The MATHCOUNTS Chapter Round competition manager hasn’t determined the date yet. I will update this document when the date is available.
5. State Competition  
It will be a day on one of the weekends of *March, 2024.* The MATHCOUNTS State Round competition manager hasn’t determined the date yet. I will update this document when the date is available.
6. National Competition  
*TBD* Raytheon Technologies MATHCOUNTS National Competition in Washington, DC

## Test Rules

It is important for the students to obey test rules to maintain integrity of the tests as well as ensure the validity and reliability of the test results. Students who violate the test rules will be disqualified.

### Online Test:

#### Before The Test

1. Please make sure that you are available during the club meeting time, specified in the [program format](#) section.
2. Please make sure to fill in *a personal, non-DUSD Gmail address*, not a student's DUSD account, as non-school email accounts can't send emails to students' school emails. Students are *required to login to* their gmail account to fill out the answer sheet, so make sure they know the password and each student needs to have a *unique email address*.
3. The test meeting information and student Test IDs will be sent out to email addresses of all the participants at least 24 hours before the test. *IT IS STUDENTS' RESPONSIBILITY TO MAKE SURE THAT THEY CHECK THEIR EMAIL, GET THE TEST INFORMATION ON TIME AND READ THE TEST RULES THE DAY BEFORE THE TEST.*
4. *Please add [fallonmathc2020@gmail.com](mailto:fallonmathc2020@gmail.com) to your email contacts, so it will not be treated as spam.*
5. *IF THE STUDENT CHECKED EMAIL AND CAN'T FIND TEST INFORMATION 24 HOURS BEFORE, CHECK THE JUNK FOLDER FIRST IF THE STUDENT STILL CAN'T FIND IT, CONTACT [fallonmathc2020@gmail.com](mailto:fallonmathc2020@gmail.com) AT LEAST 12 HOURS BEFORE THE TEST TO MAKE SURE VOLUNTEER HAS AMPLE TIME TO RESPOND.*
6. Students should not eat or drink or go to the bathroom during the test. So please make sure the students eat/drink/go to the bathroom *BEFORE* the test.
7. Students should make sure they have access to a *computer* with *STABLE* internet access, a *camera* (*Make sure to adjust the camera before the test to show the student's FULL FACE.*), a *headphone*, *student ID*, several sharpened pencils, eraser, a ruler and some blank lined paper to work out the problems.
8. **Regarding to Student ID:**
  - Please make sure to ask your student to have a student ID ready. Without a student ID, we can't validate the student. Hence, the student will be disqualified.
  - For students who didn't take the picture this year, last year's student IDs, which have the name and student picture on it, will do.
  - *If a student doesn't have any of the above mentioned documents, please provide an official ID with student name and picture on it. Please send a screenshot of Infinite campus main page with photo and name on it to this email ASAP and no later than 2 days before the placement test*



9. *SPECIAL NOTE* for Placement Test:

If the students have taken some of the below mentioned competitions last year, please ask them to refresh their memories before the test date regarding the scores/awards they received from last school year, this is an **OPTIONAL** information for the placement test.

MOEM for elementary division, top 2% nationally

AMC8 score

AMC10 score

*NOTE: ALL AWARDS/SCORES A STUDENT CLAIMED WILL SUBJECT TO VERIFICATION THROUGH ONE OF THE FOLLOWING DOCUMENTS, **YOU DON'T NEED TO SUBMIT IT TILL YOU ARE ASKED TO.***

- *ELECTRONIC COPY OF THE AWARD CERTIFICATE*
- *EMAIL NOTIFICATION OF THE AWARD FROM THE COMPETITION ORGANIZER*
- *WEBSITE. IF A WEBSITE IS PROVIDED, THE FOLLOWING NEEDS TO BE PROVIDED TOO:*
- *SCREEN SHOT WHICH SHOWS THAT THE STUDENTS' NAME LISTED ON THE WEB PAGE for the competition, it should have year information on the page.*

During The Test

10. Students will need to login **at specified time** and wait to be admitted into the Zoom meeting. Note: People who join the test late will miss some problems of the test. Thus, lose points from that.
11. Students need to **RENAME** the participant's name in zoom using format: *Student Test ID-full name*. No spaces. For example: **A1-John-Doe**. At the placement test, students are *Required to show their STUDENT ID*.
12. *Note: Answer sheet link will be sent out during the test.*
13. *If you have any questions for the problem, you need to **message the proctor through the PRIVATE Chat, NOT speak in the zoom meeting**, so that other students can focus on their work.*
14. *Students need to work out the problem on the draft paper, **COPY THEIR ANSWERS INTO THE ONLINE TEST FORM**. THE TEST FORM link will be provided during the test.*

*This way, in case for whatever reasons, a student experiences any network issue during the test, the student can rejoin the meeting and fill out the answer sheet again. At the same time, send a chat message to the host and inform the host of the issue.*

15. However, any answer sheet submitted **after** the test submission cut off time **will not be graded**.
16. Once a student finishes all the problem sets, the student will need to click on the **submit** button to submit the answer sheet.
17. **After the placement test**, a specific link to a folder for **uploading the draft paper** will be shared with the students. the student needs to scan the draft papers into One PDF file and **upload the draft paper to the folder provided by 9pm on the day of the placement test**. For the **file name** of the draft paper PDF, please make sure to put the student's name in the following format: **<LastName>\_<FirstName>.pdf**
18. **Camera needs to be on all the time during the test. Make sure to set Virtual Background to none. Make sure to adjust the camera before the test to show the FULL FACE.** Proctors will monitor the students during the test. If there is any issue with the camera, the student needs to send a private message to the host through the chat.
19. **STUDENTS CAN NOT USE ANY CALCULATORS, REFERENCE MATERIALS, WEBSITES, FRIENDS, OR RELATIVES TO HELP ANSWER THE QUESTIONS.**
20. The surface of the student's table should be empty except for the items mentioned in item **#4**.
21. Follow the [Zoom meeting security rules mandated by PFC](#).

#### In person Tests:

At the end of each round of the competition, collect all competition booklets, problems and scratch paper.

1. Use of notes and other aids (including graph paper, rulers, compasses, protractors, reference tables, and dictionaries) is not permitted.
2. The use of connected wearable technology and "smart" devices including, but not limited to **cellular phones, smartphones, laptops, tablets, e-readers, calculator wrist watches and smartwatches** is prohibited. Students are not permitted to access such devices during any round of the competition.
3. **The Target and Team Rounds assume the use of a calculator.** Calculator use is permitted in these rounds only. Any calculator that does not contain a QWERTY (i.e., typewriter-like) keypad is permitted. Calculators that have the ability to enter letters of the alphabet but do not have a keypad in a standard typewriter arrangement are acceptable. **Students may not use calculators to exchange information with another person or device during the competition.**
4. Talking and signals are permitted only during the Team Round.
5. Before the competition, coaches should review with students the rules for acceptable forms of answers, found in the SCORING section of this booklet.

## Form of Answers:

### SCORING

- The following rules explain acceptable forms for answers.
  - Units of measurement are not required in answers, but they must be correct if given.** When a problem asks for an answer expressed in a specific unit of measure or when a unit of measure is provided in the answer blank, equivalent answers expressed in other units are not acceptable. For example, if a problem asks for the number of ounces and 36 oz is the correct answer, 2 lbs 4 oz will not be accepted. If a problem asks for the number of cents and 25 cents is the correct answer, \$0.25 will not be accepted.
  - All answers must be expressed in simplest form.** A “common fraction” is to be considered a fraction in the form  $\pm \frac{a}{b}$ , where  $a$  and  $b$  are natural numbers and  $\text{GCF}(a, b) = 1$ . In some cases the term “common fraction” is to be considered a fraction in the form  $\pm \frac{A}{B}$ , where  $A$  and  $B$  are algebraic expressions and  $A$  and  $B$  do not share a common factor. A simplified “mixed number” (“mixed numeral,” “mixed fraction”) is to be considered a fraction in the form  $\pm N \frac{a}{b}$ , where  $N$ ,  $a$  and  $b$  are natural numbers,  $a < b$  and  $\text{GCF}(a, b) = 1$ .
  - Ratios should be expressed as simplified common fractions** unless otherwise specified.
  - Radicals must be simplified.** A simplified radical must satisfy: 1) no radicands have a factor which possesses the root indicated by the index; 2) no radicands contain fractions; and 3) no radicals appear in the denominator of a fraction. Numbers with fractional exponents are *not* in radical form.
  - Answers to problems asking for a response in the form of a dollar amount or an unspecified monetary unit (e.g., “How many dollars...,” “How much will it cost...,” “What is the amount of interest...”)** should be expressed in the form **(\$)**  $a.bc$  or  $a.bc$  (dollars), where  $a$  is an integer and  $b$  and  $c$  are digits. The *only* exceptions to this rule are when  $a$  is zero, in which case it may be omitted, or when  $b$  and  $c$  are both zero, in which case they both may be omitted. Answers in the form **(\$)**  $a.bc$  or  $a.bc$  (dollars) should be rounded to the nearest cent unless otherwise specified.
  - Do not make approximations for numbers** (e.g.,  $\pi$ ,  $\frac{2}{3}$ ,  $5\sqrt{3}$ ) in the data given or in solutions unless the problem says to do so.
  - Do not perform any intermediate rounding** (other than the “rounding” a calculator performs) when calculating solutions. All rounding should be done at the end of the calculation process.
  - Scientific notation** should be expressed in the form  $a \times 10^n$  where  $a$  is a decimal,  $1 \leq |a| < 10$ , and  $n$  is an integer.
  - An answer expressed to a greater or lesser degree of accuracy than called for in the problem will not be accepted. Whole number answers should be expressed in their whole number form.** Thus, 25.0 will not be accepted for 25, and 25 will not be accepted for 25.0.
  - The plural form of the units will always be provided in the answer blank, even if the answer appears to require the singular form of the units.**
- Specific instructions stated in a given problem should take precedence over any general rule or procedure.
- Scores are kept for individuals and teams. The **individual score** is the number of Sprint Round questions answered correctly plus two times the number of Target Round questions answered correctly. **The maximum possible individual score is 46.** The **team score** is calculated by dividing the sum of the team members’ individual scores by four, and then adding two times the number of Team Round questions answered correctly. **The maximum possible team score is 66.**

Because the School Competition is not the only mechanism available to determine which students should advance to the Chapter Competition, ties on the School Competition needn’t be broken. At the Chapter, State and National Competitions, however, ties among individuals or teams will be broken by comparing the scores of specific rounds.



## FAQ

1. Who should I contact if I have questions?

Answer: You need to send a private chat message to the co-host assigned to your test ID group. For example, if your test id is A1\_your\_name, you need to send a private chat message to group A co-host

2. How long is the Placement Test?

Answer: See [here](#)

3. Do I need to keep my scratch work for the test?

Answer: Absolutely. After the test is over, Coach will send out a link to the folder for uploading the draft paper. Please scan all the draft papers into one PDF and upload the PDF into the designated folder. And it needs to be turned in by 9pm on the test day

4. For the file name of the draft paper PDF, please make sure to put the student's name in the following format: <LastName>\_<FirstName>.pdf

5. What kind of calculator can be used?

Calculators are not allowed during the Placement test.

However, it can be used in the Target Round part of the School Round and other rounds of competitions. Any calculator (including programmable and graphing calculators) that does not contain a QWERTY (typewriter-like) keypad. Calculators that have the ability to enter letters of the alphabet but do not have a keypad in a standard typewriter arrangement are acceptable.

6. This will be my child's first time participating in the Mathcount competition. I was wondering if you have any sample tests/questions for my child to look at and get a feel for what to expect in the placement tomorrow ?

Answer:

- a. The test will have 4 sets of problems, each set has 4 to 5 problems
- b. Each set has a time limit, for example, 12 mins.
- c. When a set of problems are displayed on the screen, a time clock will also be started and displayed. So students can see the clock counting down and know how much time is left
- d. Only one set of the problems will be displayed at any one time. You will need to do the set of problems within the time limit. Tip: Do not spend too much time on any one problem.
- e. The answer sheet link will be provided in the chat message when the test is started.
- f. Students need to login using their NON-DUSD gmail account password to enter the answers on the answer sheet. Each student needs a unique Gmail account for taking the test.
- g. There is nothing to prepare for the test. No sample test questions will be available.
- h. There will always be questions your child might not know how to solve. But that is okay, just encourage your child to try to solve as much as your child can.
- i. One thing I would say is that most of the problems do **not** require a Brute Force way of solving it.

7. My child is in 6th grade, will my child need to score higher than 7th or 8th grade to get in?  
Answer:
- Nope. The scores are categorized by grade, i.e. each student's score is compared to the scores of the students of the same grade.
8. What is the answer sheet format?
- Please make sure there is no space in your answer, ie. do not add spaces, write as 20miles, not 20 miles.
  - No need to write units, for example, if the answer is 20km/hour, you can write as 20
  - Write square root as sqrt, for example:  $\sqrt{b}$ , write as sqrt(b)
  - Use pi to represent  $\pi$ . For example, for  $2\pi$ , write as  $2pi$
9. I am stuck on one question, what should I do?
- Read the question again, if you still can't not answer it, put your best guess and move on to the next problem. There is no penalty for guessing.
10. Can I leave after I am done?
- Yes. But please make sure to submit your answer sheet first, so that you get the credit. Then you can leave.
11. What if I have another appointment and have to leave before the test is finished?
- Just answer whatever you can answer before you go and submit your answer sheet. Please also send an email to [fallonmathc2020@gmail.com](mailto:fallonmathc2020@gmail.com) to inform the coach about this situation **before** the test is conducted, credit will be awarded based on the answer sheet.
12. I accidentally submitted my answer sheet. What can I do?
- First of all, **DO NOT SUBMIT** your answer sheet **BEFORE** you are done.
  - If you did submit it by accident, you need to use a **new** gmail account to submit a new answer sheet. You also need to send an email to [fallonmathc2020@gmail.com](mailto:fallonmathc2020@gmail.com) to inform the coach about that right after the test. If the email is not received within **3 hours** after the test is conducted, credit will be awarded based on the original answer sheet.

## Program Format

Club members will have two meetings per week during the competition season **except for school holidays or other days determined by the coach. A detailed schedule will be announced in the first training class**, most likely in the first week of October.

Weekly:

- Virtual session**: on Wednesday: 4:20-5:20 pm,

b. ***In-person session***: on Friday: 4:00-5:00 pm. (limited by the school classroom availability, the in person training will only has 5 sessions between October and December) The chapter team will have additional in-person trainings between January and February, 2025

## Contacts

Should you have questions, please send email to: [fallonmathc2020@gmail.com](mailto:fallonmathc2020@gmail.com)

## Zoom Meeting Security Rules Mandated by PFC

1. Please ensure that the Zoom sessions are password protected and the password is shared **only** among the participants.
2. There will be **no recording** of the session.

## Competitions Problem Difficulty Scales

There are a bunch of math competitions for middle school students. I list their problem difficulty scales from 1 to 3 here. Students who want to keep challenging themselves can use this information as a reference. The difficulty scale information comes from [here](#).

### MATHCOUNTS

- Countdown: **1-2**.
- Sprint Round: **1-1.5** (school/chapter), **1.5-2** (State), **2-2.5** (National)
- Target Round: **1-2** (school/chapter), **1.5-2.5** (State), **2-3** (National)

### MOEMS, Division M:

Website: <http://www.moems.org/>.

All the problems: difficulty scale: **1**

### AMC 8

Website: <https://www.maa.org>

The MAA was established in 1915. But the roots of the Association can be traced to the 1894 founding of the American Mathematical Monthly by Benjamin Finkel, who wrote "Most of our existing journals deal almost exclusively with subjects beyond the reach of the average student or teacher of mathematics or at least with subjects with which they are familiar, and little, if any, space,

is devoted to the solution of problems...No pains will be spared on the part of the Editors to make this the most interesting and most popular journal published in America."

25 problems.

- Problem 1 - Problem 12: difficulty scale: **1**
- Problem 13 - Problem 25: difficulty scale: **1.5-2**

## AMC10

Website: <https://www.maa.org>

25 Problems.

- Problem 1 - 10: difficulty scale: **1-2**
- Problem 11 - 20: difficulty scale: **2-3**
- Problem 21 - 25: difficulty scale: **3.5-4.5**

## Math League

I didn't find much data regarding how the Math League problems compare to above mentioned competitions in difficulty scales.

Mathleague.org is a competition that mimics MATHCOUNTs with one huge difference, there is no limit to the number of students that can compete. I encourage students who are serious about competing to attend some of their contests and get a taste of competing against other schools.

Previous year's Mathleague.org contests were held either on Saturday or Sunday at schools in San Jose, Pleasanton or Saratoga.

When competition is not held online, parents will be responsible for taking your child to the competition or arranging a carpool for them with a driver that has the [driver volunteer clearance](#).