

# Missouri Council of Teachers of Mathematics

## High School Regional Contest Coordinators' Handbook

The different events are described below; all events shall occur at each regional site.

**POWER QUESTION:** This is a multi-part, proof-oriented question that will test the students' higher-level mathematical reasoning skills. The power question is a team event in which groups of up to six work for one hour to produce a single multi-page answer. Scores for this event will be out of 100. Please note: due to time constraints the power question will not be offered as an event at local contests. However, one power round will be made available to member schools as part of the in-school contest set that coaches may administer in their own schools. Calculators are allowed on this event.

**TEAM TEST:** This is a ten question, twenty-minute test which a team of up to six works on together. Each question will be worth ten points, and the top team test score from each school will contribute to that school's overall point total. Calculators are allowed on this event.

**SPRINT ROUND:** In this individual test, students will have sixty minutes to complete 30 multiple choice questions. Four points will be awarded for each correct answer, with one point deducted for each incorrect answer; no penalty will be assessed for skipping. The top six scores from each school will be averaged to calculate that school's sprint round score. If fewer than six students take the test, zeros will be assessed for the leftover slots. This is to encourage schools to bring more students and not limit participation to only the one or two top math students in the school. Calculators are not allowed on this event.

**TARGET ROUND:** This is an individual event consisting of eight questions, each worth 10 points. Questions will be given out in pairs, and students will have ten minutes to complete each pair. Each question will be worth ten points. The top six scores from each school will be averaged to calculate that school's target round score. If fewer than six students take the test, zeros will be assessed for the leftover slots. This is to encourage schools to bring more students and not limit participation to only the one or two top math students in the school. Calculators are allowed on this event.

**RELAYS:** For this round, students will arrange themselves into teams of up to three. A relay consists of three questions, and each student will receive all three of these questions. The answer to question 1 is plugged in as TNYWR (The Number You Will Receive) to question 2 in order to solve question 2. This answer is then plugged in as TNYWR to question 3 in order to solve question 3. All three answers are integers in the range [0,99], and all three answers are written on the answer sheet, which is turned in at the end of three minutes. A correct answer for question 1 is worth 2 points; a correct answer for question 2 is worth 3 points; and a correct answer for question 3 is worth 5 points. Thus, each team can accumulate up to 10 points on each relay. There will be five relays in the relay round, and the top two teams from a school count toward the school's total. Calculators are NOT allowed on this event.

**SWEEPSTAKES:** A school's sweepstakes total is computed by adding its scores for each event. There are a maximum of 100 points available in the team test (the score of the highest scoring team from the school), 120 in the sprint round (average of the top six highest scores), 80 in the target round (average of the top six highest scores), and 100 in the relays (sum of the two highest scoring relay teams from the school), for a total of 400. At the state meet, the power question will be a competition event, so the maximum sweepstakes total will be 500.

Sample tests for these events can be found at <http://mathleague.org/freetests.php> .

Mathleague policies about homeschooled children, state qualification, and more can be found at <http://mathleague.org/hsrules.php>

# Before the Contest Checklist

- \_\_\_ read entire handbook at least one month in advance of contest date, and begin collecting scrap paper that can be used by students during the tests.
- \_\_\_ Sign up to host at <http://mathleague.org/hostform.php> and enter 14159 as the registration code—you will immediately receive the invoice email with your database link included (DO NOT LOSE THIS EMAIL!); MCTM pays, you do not.
- \_\_\_ facilities scheduled (at least one month prior to the contest date)
  - large room for all events and possibly smaller rooms for individual schools
  - grading room with tables for sorting answer sheets, located away from contest rooms' traffic
  - a table for registration near the main entrance
  - cafeteria or library for a waiting area for parents and sponsors
  - auditorium for awards (allow for at least twice the number of participants)
- \_\_\_ send an email/letter out to neighboring schools (one month prior to the contest date) that includes the following:  
date of the contest, directions to the site, agenda/timeline for the day, possible locations/directions for lunch, mathleague registration link for entering all students' names and grade levels, cost for each student to participate (\$10), registration deadline, how awards will be given, and [state tournament information](#). Make it clear that each school participating must send an adult sponsor who will be responsible for working during the contest. If your site is MCTM-sponsored, MCTM will pay for contest fees and send you awards; emphasize that checks should be made out to 'MCTM'.
- \_\_\_ all personnel committed
  - \_\_\_ registration table
  - \_\_\_ testing/proctoring overseer (instructions for proctors on page 9-11)
  - \_\_\_ arrange to have students present who can be runners on the contest date. They will bring completed answer sheets to the grading room after each round of each test, among other duties. Volunteering at these contests often counts as community service hours for high school students.
  - \_\_\_ timekeepers
  - \_\_\_ grading room judges (instructions for graders on pages 6-8)
  - \_\_\_ parents' room/program
- \_\_\_ all awards received from Contest Director
  - \_\_\_ winners' ribbons and plaques
- \_\_\_ data entry of participants (2 different links found in invoice email from [customercare@mathleague.org](mailto:customercare@mathleague.org) or [operations@mathleague.org](mailto:operations@mathleague.org) )
  - \_\_\_ Send out registration link to sponsors to enter their own students' names and grade levels (MUCH PREFERRED) or
  - \_\_\_ Coordinator enters all students' names and grade levels through the same link that you will use to enter scores
  - \_\_\_ MAKE SURE THAT ALL STUDENTS HAVE A VIABLE GRADE LEVEL (NOT Grade 14)
- \_\_\_ all materials duplicated
  - \_\_\_ all tests received from mathleague.org and copied at actual size (NOT scale to fit) (one of each event for each student)
  - \_\_\_ Team answer sheets copied (number of participants divided by two)
  - \_\_\_ Sprint answer sheets used as cover sheet for Sprint event
  - \_\_\_ Relay answer sheets copied (number of participants divided by two)
  - \_\_\_ information for proctors (pages 9, two needed per testing room plus five extra)
  - \_\_\_ contest rules (page 1)
  - \_\_\_ labels printed for each student to affix to answer sheets for digital grading
  - \_\_\_ high-speed copier/scanner that can save files as pdf, tested and ready for use for digital grading
  - \_\_\_ coordination with mathleague on time and method of sending answer sheet files for digital grading
  - \_\_\_ schedule of day's events (one copy for each school registered plus three extra)
  - \_\_\_ sample news release, signs, room assignments, etc.
- \_\_\_ other materials
  - \_\_\_ extra pencils (at least 5 per room already sharpened)
  - \_\_\_ scratch paper for Relay, Sprint and Team events
  - \_\_\_ red and blue marking pens (at least two different colors to double check)
  - \_\_\_ stopwatches or computer/projector with Internet to use <http://mathleague.org/timer/>
  - \_\_\_ refreshments (for workers)
- \_\_\_ publicity (notify the media in your area at least one week before the contest)
- \_\_\_ school packets for results (9" x 12" or larger envelopes, one per school)
  - \_\_\_ place to put all students' answer sheets after they are graded and entered into the database
- \_\_\_ last-minute facilities readiness (keys, custodian, temperature control, PA system)

## The Week Before the Contest Date

- \_\_\_\_\_ Assign sponsors (only those who have sent in their confirmation of attendance) and any other adult volunteers to rooms for proctoring or to the grading room. Graders should be sponsors who are very familiar with mathleague.org policies and tests. Try to place any inexperienced sponsor with an experienced sponsor in each testing room. If you have questions about how to organize testing rooms, please contact Sonya Land or an experienced site coordinator for more details.
- \_\_\_\_\_ Distribute copies of the instructions for proctoring the test (page 9) to any volunteers who are unfamiliar with mathleague.org contests. Ask them to read these prior to the day of the contest and ask questions about any instructions that are unclear.
- \_\_\_\_\_ Make signs for the appropriate rooms (Grading Room, Hospitality Room, Testing Rooms).
- \_\_\_\_\_ Make folders for each sponsor, including instructions for proctoring, room assignments, schedule of events with times, directions for fast food for lunch, and a few copies of the [American Regions Math League \(ARML\) sheet](#) of given information that is assumed knowledge on MATHLEAGUE.ORG tests. You should also mention how ties will be broken at your contest.
- \_\_\_\_\_ Using 9”X12” manila-clasp folders (or something similar to this in size), prepare packets for the sponsors to take home at the end of the contest. Each school’s packet should include all students’ answers sheets each school.
- \_\_\_\_\_ Obtain any missing school or sponsor information from sponsors, especially cell and school phone numbers and an email address (if necessary, that of a colleague of the sponsor).
- \_\_\_\_\_ Make a list of all schools attending, the students attending from each, amount paid or owed for the registration table.
- \_\_\_\_\_ In testing rooms, have a computer/projector accessible to the Internet that will allow you to show the <http://mathleague.org/timer/> to all students.
- \_\_\_\_\_ Have some cash on hand for making change when sponsors pay their students' fees. *Checks should be made out to MCTM.*

## The Day of the Contest

- \_\_\_\_\_ Make sure each room has the appropriate supplies (pencils, extra copies of the proctoring instructions, a stopwatch, answer sheets for the Relay, Target, and Team Rounds, SCRAP PAPER) before students begin to arrive.
- \_\_\_\_\_ Hang directional signs.
- \_\_\_\_\_ Designate at least one person (possibly yourself) to work the registration table and collect payments from sponsors. Also, have each sponsor check the spelling and attendance of each student before handing them the folder of information about the contest.
- \_\_\_\_\_ Designate at least one grader per twenty students in attendance for the grading room. Do not include the person who is entering data on the computer as a grader.
- \_\_\_\_\_ Have your runners or yourself deliver the test questions to the rooms, handing them only to the proctor for that room. Be careful that the tests are not left unattended when students/proctors take breaks between the different rounds.
- \_\_\_\_\_ As site coordinator, do not expect to be a grader—you should be walking around, monitoring the tests and making sure everything is running smoothly.
- \_\_\_\_\_ Make copies of the Sprint answer sheets and/or scan them into a PDF to be sent to [customercare@mathleague.org](mailto:customercare@mathleague.org) if not having the Sprint event graded digitally.
- \_\_\_\_\_ Make sure your graders have lunch available as they finish their grading. Inform graders that each student’s Sprint Round answer sheet must be graded TWICE, once by one grader and then by another grader. This should also be done for other rounds if feasible. When they complete the grading process and the data entry for all answer sheets into the online database, they can begin stuffing each school’s packet with the students’ answer sheets and the results of the contest.
- \_\_\_\_\_ Organize awards and certificates wherever you are holding the awards ceremony. If you are sponsoring an MCTM contest, please consult the awards listing to determine which places receive ribbons or plaques.
- \_\_\_\_\_ Hold the awards ceremony and mention that all results will be posted online as soon as the contest is finalized. Send packets of ONLY student answer sheets home with all sponsors. Electronic copies of the test and solutions will be sent out at the end of the contest month.

## After the Contest Checklist

- \_\_\_ send out an email to all participating schools with a link to the results <https://mathleague.org/results/highschool/> and <https://mctm.org/mctm-math-contest/mctm-high-school-math-contest.html> for High School State Contest information
- \_\_\_ email all sponsors an electronic copy of the tests and solutions at the end of the month in which your contest is being held
- \_\_\_ Mail (or email electronic copies if no money to be sent) the following forms and money to Sonya Land, 1402 Sycamore Manor Dr., Chesterfield, MO 63017 **WITHIN 30 DAYS of your contest**
- \_\_\_ all money received (with a sheet labeling what checks/cash were from each school)
- \_\_\_ [Expense Form & Complimentary NCTM and MCTM membership forms](#)

As entry forms/emails are received from each school, the following actions should be taken:

1. The number of entrants per grade level and fees should be recorded. A computer spreadsheet can be helpful in recording and summarizing this information, or your information may be directly entered into the mathleague.org contest results file using the link they provide to you as site coordinator. Detailed instructions for this can be found near the end of this document.
2. Examine the check or money order to make certain that it is properly completed, including a proper date, signature, matching numbered and written amounts, and that it is made out to 'MCTM'. Or encourage schools to pay by credit card through the PayPal link received with the registration confirmation. Do NOT put payment information into the mathleague database; keep paper records accordingly.
3. In the event a school sends a **purchase order** in lieu of a check or money order for payment of entry fees, do not accept the purchase order. Accept the school's entry form but return the purchase order to the school principal and request a check made payable to MCTM.

## Correspondence with Schools

School sponsors who are entering the contest for the first time are unaware of the operational procedures of the contest. You may want to drop them an email indicating that you have received their entry form/email and that additional information will be mailed later. This will probably save a phone call from an anxious, first-time sponsor.

About two weeks prior to your contest, you should correspond with all the schools entered in your contest. Essential information in the e-mail or letter should be the specific location of the contest, where the registration table can be found, that only the sponsor need report to the registration table to "check in" and pick up the school's information packet, where the contest participants should go upon arrival, and any changes in this year's contest. You should include your email address and telephone number and best time(s) to call.

## Personnel

Plan to have 3-5 assistants who know as much about their assigned duties as you know! **Delegate responsibility!** It is easy to overload yourself on the morning of the contest. You must have people on whom you can depend for these key positions. You need to be free to answer questions and coordinate the entire event. Attain commitment from responsible persons who will serve as your assistants in the key areas of responsibility. Orient each assistant to his or her assigned responsibilities prior to the Saturday contest. Prepare a list of assigned responsibilities so each assistant knows his or her responsibilities as well as those of others.

One way to delegate the responsibilities to your assistants follows:

1. One assistant should be assigned to the registration table. (This person could later work as an assistant in the grading room or in the contest headquarters.)
2. One assistant should be in charge of testing. This assistant should meet with the proctors before the testing begins and orient them to their responsibilities. After the orientation the assistant should be responsible for distributing and collecting tests, answer sheets and student answer sheets, as well as for accounting for all test materials. (A "walk-in" sponsor or two may be used to assist in collecting the student answer sheets and taking them to the grading room.)
3. One assistant should organize and supervise the grading room and serve as the Grading Judge. This could be the same person who worked earlier at the registration table.

4. Another person may be responsible for arranging for refreshments and having them available for the workers and/or for coordinating the sale of refreshments.

5. One person should be in charge of double-checking all names, grade levels, teams, scores and other data into the online results program prior to the contest and on the day of the contest. This person can also be the one who scans all of the test answer sheets in bundles for digital grading. This could be the same person who worked the registration table at the beginning of the day.

### Labels (only needed if using digital grading)

To print the labels (only after entering all students into the database), go into your results file online. Click on View Results. Click on Create Avery 5363 Labels. Then click on Get PDF of Avery 5363 labels. This should open up a PDF of your labels ready for you to print. Print using the labels that I sent to you. Be sure to only print out the pages with your students' names as well as maybe one zzz extra page of labels. **Each kid will get 12 labels to use on all tests; the new labels for digital grading are 3 columns of 8 on each sheet.** I have included several pages of extra labels in case you have a printer mishap. Printing, especially for the labels, must be of the highest possible quality. If the labels are printed on an inkjet printer for instance or a printer with low toner, the ink may be unreadable.

If a student shows up at your contest that was not originally listed within the database, use one of the extra sets of labels (e.g., zzz extra 101) and put that student's name and grade level on each label (not over the QR code). Then be sure to enter that student's name, school and grade level into the database in place of the SAME zzz extra code (e.g., zzz extra 101) you used. Now that student is linked with his/her labels in the database.

### Scanning (only needed if using digital grading)

When testing your scanner, please try 50 or more sheets in the scanner, and send the file to yourself. If your scanner will not handle emailing a file as large as 50 sheets, you should strongly consider using one of MCTM's scanners or grading the target round by hand and entering all target results online by yourself. If you have the option of using a flash drive to save your scans rather than emailing them to yourself, you will be able to scan much larger batches and have fewer difficulties with digital grading.

Scan a test copy of at least one of the answer sheets with a student label and answers written in pencil a couple of days before your contest. This will not only check whether your scanner is working but also allow Tim Sanders to tell you if the quality of scanning is good enough for digital grading. Please be sure to choose "GRAYSCALE" and "300 dpi" on your scanner otherwise the QR stickers do not scan correctly. Share with [customercare@mathleague.org](mailto:customercare@mathleague.org) through the folder that they will send in invitation to you in the days before your contest. This will be through Google Drive, so whoever is scanning sheets will need a Gmail account with Chat access by computer or phone. If there are many contests on the day of your contest, Tim Sanders may send additional directions to you through Google Chat.

As soon as the first Target round is finished, you can begin scanning answer sheets. All of the files should be uniformly named starting with the name of the school and then the name of the test (sprint, target12, etc.). Also, it would be really helpful to upload all tests of a single type at once and by itself. In other words, Tim wants a file with all the target12's and nothing else. This will really help with keeping track of what has been done and what still needs to be done on his end. Send all of the Target Round questions 1 and 2 in one batch or PDF. **If not possible, consider using one of MCTM's batch scanners that WILL do large PDFs.** OPEN all of the PDFs before sharing them with mathleague; if some of the pages are skewed or not oriented all in the same direction, you

will need to re-scan this bunch. Count how many pages are in a batch and make sure the PDF has the same number of pages.

## Copying and Preparing the Tests

When you receive the contests from mathleague.org as email attachments, print a copy of each event. The Target event also is its own answer sheet, and students will do all scratchwork on the sheet itself. The Target event needs to be printed with each pair of questions on the front side of a sheet of paper. For the Sprint event, print and collate the actual test as one-sided **WITHOUT STAPLING** the answer sheet to it. Print the Sprint answer sheet (found in your email attachment) separately. The team event can simply be printed on the front side of a sheet of paper and distributed face-down after each team has received a team answer sheet (generic form found at <http://mathleague.org/teamans.pdf> ). Divide your total student attendance by two to determine the number of team answer sheets needed. You will need as many of each Relay round answer sheet as you made for the Team event. **EVERY STUDENT TAKES EVERY TEST, INCLUDING TEAM AND RELAY. SO MAKE ENOUGH COPIES OF EVERY EVENT FOR EVERY STUDENT IN ATTENDANCE.** Make enough complete copies of all of the solutions for graders to use the day of the contest.

## Graders and Proctors

Prior to the contest date, known sponsors' and teachers' names may be selected from the emails you receive and assigned to specific testing rooms as proctors. At least two persons should be assigned to each testing room. Preferably, these persons should be notified of their assignment in the correspondence to the school sponsor. However, they can be informed upon their arrival at the contest. Sponsors and teachers who are known to be dependable and responsible should be assigned as proctors. It is important that proctors follow instructions and take their responsibility seriously. All proctors should read mathleague's conduct standards before the date of the contest: <http://mathleague.org/conduct.pdf> . If you choose to have all of the students (> 75 students) in one large room like a cafeteria for the testing, assign at least four people to proctor so that the collection of answer sheets is efficient.

Sponsors and teachers unknown to you may be assigned to the grading room. These persons work under the supervision of the Grading Judge. It is generally not a good idea for parents to be proctors unless the parent has had classroom experience. Try to use at least one sponsor from each school in some capacity.

## Possible Schedule

8:00-8:45 a.m.	Check-in. Pick up room assignments for proctors and students.
9:00-10:00 a.m.	Sprint Event (individual event, calculators may not be used)
10:10-11:10 a.m.	Target Event (individual event, calculators may be used)
11:20 a.m.-11:45 p.m.	Team Event (calculators may be used)
11:50-12:30 p.m.	Relays (3 person teams, calculators may not be used)
12:30 p.m.	Lunch
2:00 p.m.	Awards Ceremony

## Grading Room Information

All events can be graded electronically if the site coordinator has access to a high-speed scanner (as mentioned previously on page 5). The scanner will be used to scan in all the answer sheets to multiple pdf files that will be shared to mathleague.org on a Google Drive folder to grade those tests electronically. The Sprint Event should definitely be scanned because it will take a fraction of the time for the scores to be automatically inputted into the



online results file. Your scanner may be different but many of the settings will need to be the same (refer back to Scanner information on page 5). If a site has fewer than 30 participants, the site coordinator may choose to grade everything by hand. If all events will be graded by hand, the schedule should be Sprint, Target, Team, and Relay, allowing more time to double check the Sprint round.

**New in 2023:** Mathleague has hired graders for all contests, so that as long as you upload all files to Google Drive for digital grading, you will have no responsibilities for grading online. Instead, your grading room volunteers can sort papers by school and find specific papers that are marked as INCOMPLETE in the database for whatever reason (and need to be double-checked by hand).

### **Target Event**

If grading the Target round by hand, please instruct proctors to bring all of questions 1 & 2 to the grading room once students start on questions 3 & 4. Proctors should continue this process throughout all four rounds. Group your graders accordingly. Approximately  $\frac{3}{4}$  of the graders should get a red pen and grade all of questions 1 & 2 first, putting a score for #1 and #2 (10 points if correct, 0 if incorrect) and initialing in the correct place on the Target answer sheet. The remaining quarter of your graders should be given a blue pen and be double-checkers, double-checking the accuracy of the first grader and initialing in the second place on the Target answer sheet. Graders should grade all of questions 1 & 2 first (both first check and double check). Then graders grade all of questions 3 & 4, all of questions 5 & 6 and all of questions 7 & 8. This causes less human error when all of a certain question are graded at one time. Then graders can re-organize the students' answer sheets and staple all four pairs of questions together for each individual and total them in the upper right corner.

### **Sprint Event**

If grading the Sprint round by hand, be aware that this will take the longest of all events to grade. It is also the most prone to errors in grading, so double-checking the accuracy of the grading and the calculation of the score is REQUIRED. Hole-punch approximately 10 templates with the correct answers BEFORE the day of the contest. Approximately  $\frac{1}{2}$  of the graders should get a red pen and grade the entire sheet (4 points for each correct answer, -1 for each incorrect answer, 0 points for a skipped answer), calculating a score using the box in the upper right corner and initialing in the appropriate place. The remaining  $\frac{1}{2}$  of the graders should be given a blue pen and be double-checkers, double-checking the accuracy of the answers as well as the scoring calculation in the upper right corner. This person should initial and circle the score if he/she agrees with it. If he/she finds an error, he/she should correct any error in grading or scoring and then ask another grader to confirm the correction(s). If grading Sprint by hand, you will need to send an electronic copy of all Sprint answer sheets to Tim Sanders within one week of the contest.

### **Team Event**

Approximately  $\frac{3}{4}$  of the graders should get a red pen and mark the correct answers with a check next to the answer and mark an X next to the incorrect answers. Each grader should then calculate a total score (10 points for each question if correct, 0 if incorrect), write the score next to Score #1 and initial in the correct place on the Team answer sheet. The remaining quarter of your graders should be given a blue pen and be double-checkers, double-checking the accuracy of the first grader and initialing in the second place on the Team answer sheet.

### **Relay Event (NEW for 2019-2020)**

Have proctors bring the finished relay rounds to the grading room as soon as one round is complete. For this round, students will arrange themselves into teams of up to three. A relay consists of three questions, and each student will receive all three of these questions. All three answers are integers in the range [0,99], and all three answers are written on the answer sheet, which is turned in at the end of three minutes. A correct answer for question 1 is worth 2 points; a correct answer for question 2 is worth 3 points; and a correct answer for question 3 is worth 5 points. Thus, each team can accumulate up to 10 points on each relay. Enter the total number of points earned in each relay for each team, up to a possible 10 points. All teams must have a score for each of the five

relay rounds. Labels can be affixed to each relay answer sheet so that these answer sheets are graded digitally as well.

Have graders organize the students' tests into piles/envelopes by school to make data entry and the returning of materials easier. Even if you grade all students' tests by hand, **all scores and ITEM ANALYSIS must be entered into the mathleague.org online results file within one week of your contest date and finalized. All item analysis for all events must be entered before your results are finalized.** For example, when Target is complete, have one person read the correct problems to the data enterer (e.g., 1 0 0 1 0 0 0 1 would indicate that the student got problems 1, 4 and 8 correct.). Then check to make sure the total score for the kid matches the total score you calculated (30 for our example student). **Designating which students are on which teams for Relay and Team events must occur BEFORE entering the item analysis for Team or Relay scores.** This reading off of the scores makes a huge difference in the amount of time you have to enter data. The same can be done with Team and Relay.



## Instructions for administering mathleague.org high school tests

Students may NOT use cell phones as a calculator or be using earbuds during testing. All cell phones should be silenced and put away. Calculators should also be placed on the floor until events that allow their use.

- **Team Test:** Distribute one set of questions face down to each person, and give each team an answer sheet. Teams may include any number of students up to six. Instruct the teams to affix a label for each student on the answer sheet. Tell the students "You will have twenty minutes to complete the team test. Your team may work together but may not consult any books, other teams, or any other resources. You may use any mathleague.org-approved calculators. You will be given ten points for each problem answered completely correct; there is no penalty for incorrect answers. Are there any questions?" Give a verbal time warning when 3 minutes remain. After twenty minutes, instruct the teams to " Stop! Put your pencils down and hold your answer sheet in the air; a proctor will be by to collect your answer sheet." Send the answer sheets to the grading room.
- **Target Round:** While the first pair of questions is being distributed (face down or with the problems otherwise unreadable), explain to the students that "Affix your label to your sheet. You will be given four pairs of questions in the target round, and the first pair is being handed out now. Once the signal is given to begin you will have exactly ten minutes to solve the two questions you have been given. Make sure your answers are written in the answer blank before time is called. After ten minutes all official answer slips for questions one and two will be collected. You may use any calculator approved by mathleague.org [the approved calculator list is the same as the SAT approved list]. Do not turn your questions over until the signal is given to begin. Are there any questions?" Once everyone is ready to start the first round, tell the students they may begin. Give a verbal time warning when one minute remains. After exactly ten minutes, tell the students to "Stop! Put your pencils down and hold your answer slip in the air; a proctor will be by to collect your answer slip." After all the answers are collected, begin to pass out the next set of questions. After making sure every student has a copy of the questions for round two and has affixed a label to the answer sheet, begin the second round. Continue this pattern until all four rounds have been completed. **AFTER THE END OF EACH ROUND**, make sure the answer slips are sent to the grading room.
- **Sprint Round:** Pass out a copy of the test (face down or with the problems otherwise unreadable) to each student, along with an answer sheet and scratch paper (these may be stapled to the front of the test if you prefer). Explain to the students that "Affix your label to your answer sheet. You will have one hour to complete this test. There are thirty multiple choice questions. You will be awarded 4 points for each question answered correctly, -1 for each incorrect answer, and no points for unanswered problems. No calculators are allowed on the sprint round. Are there any questions?" Give verbal time warnings when 30 minutes remain and when 5 minutes remain. Give the students exactly one hour to work, at which point they should be instructed to "Stop! Put your pencils down and hold your answer sheet in the air; a proctor will be by to collect your answer sheet." Collect the answer sheets and send them to the grading room.
- **Relays (NEW for 2019-2020):** For this round, students will arrange themselves into teams of up to three. Please read the following aloud: "A relay consists of three questions, and each student will receive all three of these questions. The answer to question 1 is plugged in as TNYWR (The Number You Will Receive) to question 2 in order to solve question 2. This answer is then plugged in as TNYWR to question 3 in order to solve question 3. All three answers are integers in the range [0,99], and all three answers are written on the answer sheet, which is turned in at the end of three minutes. A correct answer for question 1 is worth 2 points; a correct answer for question 2 is worth 3 points; and a correct answer for question 3 is worth 5 points. Thus, each team can accumulate up to 10 points on each relay. There will be five relays in the relay round, and the top two teams from a school count toward the school's total. Calculators are NOT allowed on this event. Are there any questions?" When you are ready, tell the students to begin. After 2:45 announce "15 second warning". At 3 minutes, announce, "Three minutes. Stop working and put your answer sheets in the air." Once all the answer slips are collected, read the answers to all three parts, asking for a show of hands to indicate how many students got each part correct. Pass out the second round of questions and repeat this process through all five rounds. After each round is complete, send the answer slips to the grading room.

## Strategies to Share with Sponsors and Students

(Feel free to distribute this page in an email to all sponsors and in a hard copy to all sponsors the day of the contest.)

- The descriptions on page 1 of the handbook should be shared with all students prior to the day of the contest. Teams may consist of students of different grade levels.
- No student will be allowed to enter a testing session after a test has begun. Students are expected to remain in their assigned rooms and to refrain from talking throughout the individual testing sessions. Any student making disruptive noises may be asked to leave the room. During the team event, students should talk quietly with their teammates so that they do not inadvertently share answers with other teams.
- Students should bring at least 2 sharpened pencils and a calculator. Any calculator allowed on the SAT may be used (<http://sat.collegeboard.org/register/calculator-policy>).
- Calculators are allowed ONLY on the Target and Team Events. A student must furnish his or her own calculator. Calculators are NOT allowed on the Relay and Sprint Events.
- Students may not use any dictionaries or other reference materials. If any student's proficiency in the language(s) the tests are offered in is so severely limited as to preclude participation in mathleague.org contests, that student's coach may make arrangements with mathleague.org to provide a written translation of the tests, so long as the translation can be accomplished in a timely and secure fashion, and at no cost to mathleague.org. Any such translation must be approved by mathleague.org before use at a contest.
- Fractional numbers must be expressed in simplest (lowest) terms or as an equivalent decimal fraction, unless a ratio is requested. For example, 0.33 is not equivalent to  $1/3$  and would be counted incorrect if the answer were  $1/3$ . All improper fractions may be expressed as mixed numbers or improper fractions.
- In addition to releasing the test materials on the day of the contest, results of ALL sites will be available online at mathleague.org to the public after the results have been finalized by the site coordinator. Students' names will not be listed; the school's name will be listed and the student's first and last initials. Students will now be able to see how they rank with regard to everyone else at a particular site and across the state. Please encourage all students to understand the penalty for guessing on all events. On Sprint, students should once again work accurately and generally not guess unless they can narrow it down to 2 choices. It is possible and probable that students will receive negative scores on the Sprint round due to not understanding the penalty for incorrect answers. For example, a student who gets 2 questions correct on Sprint and then guesses on the remaining 28 (getting all 28 wrong) would have a score of  $4 \times 2 - 28 \times 1 = -20$ . On Target, Team, and Relay, students should never leave a question blank—they should always guess since there is no penalty for guessing.
- For the Regional and State Math Competitions, there is a two-step process for breaking ties for awards. If two students tied with the same score in an event (e.g. Target with a score of 30), their Borda scores were compared to see which student answered the more difficult questions. The student with the **lower** Borda score would place higher than the other. To break absolute ties in Sprint or Target, we looked at the students' opposing event scores. Say that Students A, B and C are all tied with a score of 30 on Target, all with the same Borda scores indicating they answered the same 3 questions correct. We then look at their Sprint scores. Say Student A has a Sprint score of 60, Student B has a sprint score of 55, and Student C has a sprint score of 50. Then to break the tie on Target, Student A would be first, Student B would be second, and Student C would be third.
- Detailed information and a registration link for the High School State Contest can be found at <https://moctm.org/mctm-math-contest/mctm-high-school-math-contest.html> .

# Awards

For all MCTM-sponsored sites, ribbons are given to the top five students in each grade level in both the Target and Sprint events. Medals are given to the top three students who have the highest overall individual combined score regardless of grade level or school size. Ribbons are also given to the top 5 relay teams (regardless of school size). Plaques and ribbons are given to the top three teams in the Team event for both small and large schools, and a plaque is given to the top Sweepstakes score for both small and large schools.

For the Regional and State Math Competitions, there is a two-step process for breaking ties for awards. If two students tied with the same score in an event (e.g. Target with a score of 30), their Borda scores were compared to see which student answered the more difficult questions. The student with the **lower** Borda score would place higher than the other. To break absolute ties in Sprint or Target, we looked at the students' opposing event scores. Say that Students A, B and C are all tied with a score of 30 on Target, all with the same Borda scores indicating they answered the same 3 questions correct. We then look at their Sprint scores. Say Student A has a Sprint score of 60, Student B has a sprint score of 55, and Student C has a sprint score of 50. Then to break the tie on Target, Student A would be first, Student B would be second, and Student C would be third.

Detailed instructions for viewing the results online are located at the end of this document.

Any student or team from a mathleague.org member school scoring either (at least 50% of the available points) or (strictly higher than 80% of the participants at their site) on any test at any qualifying meet will be invited to compete in all events at their state championship and may qualify from state to attend the end-of-year league championship. The 80th percentile rule applies to each grade level separately for individual qualification, and all participants in the mail-in round are considered to be part of the same site. If fewer than 50 students qualify for the state meet in any state, the state meet coordinator may relax these qualification requirements upon receiving mathleague.org approval to do so. Within the database, there is an additional link, [Qualifiers for the Next Level](#), that specifically shows all state qualifiers from your regional competition. Please encourage sponsors to look at this list after your contest results are available online.

In addition to releasing the test materials, results of ALL sites will be available online at mathleague.org to the public after the results have been finalized by the site coordinator. Students' names will not be listed; the school's name will be listed and the student's first and last initials. Students will now be able to see how they rank with regard to everyone else at a particular site and across the state. Please encourage all students to understand the penalty for guessing on all events. On Sprint, students should once again work accurately and generally not guess unless they can narrow it down to 2 choices. It is possible and probable that students will receive negative scores on the Sprint round due to not understanding the penalty for incorrect answers. For example, a student who gets 2 questions correct on Sprint and then guesses on the remaining 28 (getting all 28 wrong) would have a score of  $4 \times 2 - 28 \times 1 = -20$ . On Target and Team, students should never leave a question blank—they should always guess since there is no penalty for guessing.

The remainder of the handbook includes forms needed by the site coordinator for planning and hosting your contest.

Letter to School Administrator

If you would like for the Contest Director to send a letter of commendation/recognition to your school administrator acknowledging your service as a Regional Coordinator, complete the information below and return with your expense form.

Your Name:

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Administrator's Name & Title: \_\_\_\_\_

School Address (include city and zip code): \_\_\_\_\_

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## **Guidelines for Reimbursement MCTM Regional Math Contest Coordinators**

The MCTM Board makes the following recommendations to help streamline and clarify the reimbursements for expenses associated with the regional math contests. Some guidelines are meant to try to limit expenses, but most are more concerned with potential problems during an audit.

Note that these are more like “guidelines” rather than absolutes in the “contest code” (apologies to Pirates of the Caribbean). So contact the director if there is a special case that might warrant bending the guidelines a little.

1. An expense form (next page) is being used that is consistent for all expenses at every level (including Math & Art).
2. Receipts are required for all expenses (when a receipt is reasonably generated). For example, the normally small phone charges, and a few copying charges, and minor postage charges may not easily generate a receipt for expense. However, building / custodial charges and refreshments must be submitted with a receipt. *Note that the reimbursement form has an explanation section to include a comment about the situation that makes receipts impossible.*
3. Building rental/custodial charges greater than \$100 should be approved through discussion with the director.
4. Food/refreshments (intended for contest workers) greater than \$60 should be approved through discussion with the director.
5. No expense reimbursements for electronic equipment/hardware should be expected. (See the director for special cases.)

# MCTM Contest Expense Report Form *rev: Jan. 2013*

Circle which level(s):      *Elementary*                      *Middle*                      *Math 'n' Art*                      *High*

Directions: Please attach all receipts to the back of this form, and mail to:

Sonya Land  
 1402 Sycamore Manor Dr.  
 Chesterfield, MO 63017

Be sure to make copies for yourself, and include notes for any receipts which are to be only partially reimbursed. Read the 'Guidelines for Reimbursement'. Please check amounts having receipts.  
 Mail-in Deadline: **30 days after your contest**

Site: \_\_\_\_\_  
CITY BUILDING

Submitted by: \_\_\_\_\_

Expenses:

<i>Item</i>	<i>Description / Explanation</i>	<i>Amount</i>	<i>Receipt?</i>
a] Postage	_____	\$ _____	_____
b] Printing, copying	_____	\$ _____	_____
c] Phone Calls	_____	\$ _____	_____
d] Refreshments	_____	\$ _____	_____
e] Building / Custodial	_____	\$ _____	_____
f] Other: _____	_____	\$ _____	_____
g] _____	_____	\$ _____	_____
Total Expenses:		\$ _____	

Reimbursements:

1 } Make check payable to: \_\_\_\_\_ in amount: \$ \_\_\_\_\_

and mail to: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_, MO \_\_\_\_\_ - \_\_\_\_\_

2 } Make check payable to: \_\_\_\_\_ in amount: \$ \_\_\_\_\_

and mail to: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_, MO \_\_\_\_\_ - \_\_\_\_\_

# Complimentary NCTM Membership Form

rev: Jan. 2013

Coordinator:

In appreciation of your hard work and dedication for running an MCTM Contest, MCTM offers to pay for a one-year membership [individual or e-member] in NCTM for you or your assistant. To obtain this, please complete this form and mail or email it to Sonya Land within 30 days of your contest. I will forward it to the MCTM Treasurer, who will make the payment to NCTM for the membership. All parts of this form must be completed to process the membership.

Site: \_\_\_\_\_  
CITY BUILDING

\_\_\_\_ I am currently a member of NCTM, and would like to have my membership extended by one year at no cost to me.

Name \_\_\_\_\_ NCTM member # \_\_\_\_\_  
[ Your membership # is on the mailing label of each issue of your *NCTM Bulletin* and *NCTM Journal* ]

**or**

\_\_\_\_ I am not currently a member of NCTM, and would like to receive a one-year membership at no cost to me.

Name \_\_\_\_\_

Home Address

and

Work Address

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Phone # \_\_\_\_\_ Email \_\_\_\_\_

Circle one: Individual Membership E-Membership [only an online journal]

Circle one NCTM Journal (9 issues, August to May):

TCM [Teaching Children Mathematics – grades preK-6]

MTMS [Mathematics Teaching in the Middle School – grades 5-9]

MT [Mathematics Teacher – grades 8-14]

Mail Journal to (Circle one): Home Address Work Address

Please mail or attach via email this form to:

Sonya Land  
1402 Sycamore Manor Dr.  
Chesterfield, MO 63017  
[sonya@mathisfun.org](mailto:sonya@mathisfun.org)





**Missouri Council of Teachers of Mathematics**  
*Affiliated with National Council of Teachers of Mathematics*

**COMPLIMENTARY MEMBERSHIP FORM for Contest Coordinator**

Name:					
Street Address:					
City:		State:		Zip:	
School District:					
# of Yrs in Teaching:					
Phone:	(       )				
E-Mail Address:					

If you do NOT wish to be included in the MCTM directory, please check this box.

Choose One	Teaching Level
	Elementary
	Middle School
	Secondary
	Higher Education
	Administration
	Student
	Retired
	Other

## News Release for Regional Contests

The Missouri Council of Teachers of Mathematics sponsored a regional high school mathematics contest based upon the mathleague.org format at [Site Name] on [Contest Date]. Any student or team from a mathleague.org member school scoring either at least 50% of the available points or strictly higher than 80% of the participants at their site on any test at any qualifying meet will be invited to compete in all events at the Missouri State High School Championship in Columbia, Missouri, on Saturday, April 22, 2023, and may qualify from state to attend the end-of-year league championship. The 80th percentile rule applies to each grade level separately for individual qualification, and all participants in the mail-in round are considered to be part of the same site.

Students from \_\_\_\_\_ School

competed in the Regional Contest held at \_\_\_\_\_

on \_\_\_\_\_. The students were . . .

Teachers from the school who accompanied the students to the contest as sponsors were . . .

Principal \_\_\_\_\_ is pleased that students from the school were willing to prepare for the contest and to represent their school in the statewide event.

Winners from the school included . . .

The students who will be competing in the State Finals Contest in Columbia are

Congratulations to this school and to these students.

For additional information contact the Contest Director:

## Online Registration and Results Data Entry

To enter a new school and its participants into the online mathleague.org database, click on the results link that you received from mathleague.org. Click on Add Students in the upper left corner, and you should see the following screen:

Choose the school name from the dropdown menu, enter the number of participants and each student's name and grade level. If a school's name is not in the dropdown menu, that school has not filled out the mathleague membership form at <http://mathleague.org/membershipform.php>. Click Submit. *Apostrophes and symbols (e.g. &) cannot be included in school names or students' names.* In order to make changes to a school's information that you have already entered, click on View/Edit Students. **Make sure to click Update at the bottom when you are finished making changes.**

If grading by hand, enter team numbers in the View/Edit window for each student (e.g., Enter 1 for all of the kids on Ozark's first team, enter 2 for all of the kids on their second team, enter 3 for all of the kids on the next school's first team).

School	First Name	Last Name	Grade	Paid	Relay#	Team#	Power#
MO - Ozark High School	Joshua	Land	9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MO - Ozark High School	Rachel	Land	10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MO - Ozark High School	Sonya	Land	11	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Schools should be told to send a list of which students are on which teams prior to the day of the contest so that you do not have to enter this on the day of the contest. **If you are electronically grading the team and relay tests, you do not need to enter team numbers.**

If you would like a spreadsheet of all students attending your site, click on View/Edit Students and then Click Here to Download Registration Data. This will include sponsor names and emails of who registered the students.

In order to begin entering scores on the day of the contest, click on the same results link in which you have been entering students. Click on Enter Scores. In order to enter scores for all events, choose the correct event from the Test drop down menu and click on Enter Scores. You will then see the following screen if you choose Target.



[Add Students](#)

School:

[View/Edit Students](#)

Test:

[View Results](#)

### Target data entry for all

Enter 1 for a correct answer and 0 for an incorrect answer

School	First Name	Last Name	Grade	1	2	3	4	5	6	7	8
Ozark High School	Joshua	Land	9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ozark High School	Rachel	Land	10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ozark High School	Sonya	Land	11	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
zzz extra	101	101	14	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
zzz extra	102	102	14	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
zzz extra	103	103	14	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
zzz extra	104	104	14	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
zzz extra	105	105	14	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

As it states on the page, enter a 1 for each correct answer and 0 for an incorrect answer. The red squares indicate that no score has been entered for this question. This allows the results program to do item analysis on all of your students' scores, breaking ties mathematically. Click on Submit at the bottom of the screen. Then you should see the actual scores of all students for whom you have entered your data. Repeat this process until you have entered all data for all events.

**If you have chosen to scan all of your events (Target, Sprint, Team, and Relay) and send them to mathleague.org for grading, all of these results will automatically be entered for you.**

**Once you believe that all results have been entered (manually or digitally), click on View/Edit Students and look for any INCOMPLETEs or Grade Levels that are listed as 14.**

First Name	Last Name	Grade	Paid	Relay#	Team#	Power#	Sprint	Target	Relay	Team
<input type="text" value="Joshua"/>	<input type="text" value="Land"/>	<input type="text" value="9"/>	<input type="checkbox"/>	<input type="text" value="1"/>	<input type="text" value="1"/>	<input type="checkbox"/>	32	20	20	incomplete
<input type="text" value="Rachel"/>	<input type="text" value="Land"/>	<input type="text" value="10"/>	<input type="checkbox"/>	<input type="text" value="1"/>	<input type="text" value="1"/>	<input type="checkbox"/>	65	30	20	incomplete
<input type="text" value="Sonya"/>	<input type="text" value="Land"/>	<input type="text" value="11"/>	<input type="checkbox"/>	<input type="text" value="1"/>	<input type="text" value="1"/>	<input type="checkbox"/>	100	incomplete	20	incomplete

Fix the appropriate grade levels from 14 to the correct grade. Looking at our example above, notice that there are incomplete Target and Team scores. Incompletes occur when a student's answer is unreadable in the scans. To check this score and manually enter the correct data, choose Target from the dropdown menu and click on Enter. You should then see the red blank that needs to be filled in with a 1 or 0; check the student's actual paper and enter the appropriate score, clicking Submit when finished.

To view results for your students and determine awards, click on View Results. To see one event's scores, click on Target Results, Sprint Results, Relay Results, Team Results, or Sweepstakes Results. If two students are tied with the same score, look at the Borda number. The student with the *lower* Borda score should win the tie and be given the higher place. In our example below, Rachel would place higher than Sonya. If two students have the exact same score and the exact same Borda in Target or Sprint, look at their respective Sprint or Target scores to break the tie.



[Add Students](#)

School:

[View/Edit Students](#)

Test:

[View Results](#)

## Target Results - Overall

### Junior High

School First Name Last Name Score Borda

### 9th Grade

School	First Name	Last Name	Score	Borda
Ozark High School	Joshua	Land	20	3

### 10th Grade

School	First Name	Last Name	Score	Borda
Ozark High School	Rachel	Land	30	4
Ozark High School	Sonya	Land	30	5

### 11th Grade

School First Name Last Name Score Borda

### 12th Grade

School First Name Last Name Score Borda

### Overall

School	First Name	Last Name	Score	Borda
Ozark High School	Rachel	Land	30	4
Ozark High School	Sonya	Land	30	5
Ozark High School	Joshua	Land	20	3