

# MAA American Mathematics Competitions

# 2019 AMC 8

## TEACHER'S MANUAL

A guide for administering a successful and rewarding AMC 8 Competition



COMPETITION DATE: TUESDAY, NOVEMBER 12, 2019



**MAA AMC**  
*American Mathematics Competitions*

Mathematical Association of America  
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# Introduction to AMC 8 for Middle School

## WELCOME TO THE 35TH AMC 8 COMPETITION

11.12.2019

*Students all over the  
country will compete!*

### What is the MAA AMC Program?

The Mathematical Association of America's American Mathematics Competitions program leads the nation in strengthening the mathematical capabilities of the next generation of problem solvers. Through classroom resources and friendly competition, the MAA AMC program helps America's educators identify talent and foster a love of mathematics. The MAA AMC program positively impacts the analytical skills needed for future careers in an innovative society.

The MAA American Mathematics Competitions are a series of examinations and accompanying curriculum materials that develop problem-solving skills and mathematical knowledge in middle and high school students.

### What is the AMC 8?

The AMC 8 is a 25-question, 40-minute, multiple choice competition in middle school mathematics designed to develop students' problem-solving skills and interest in mathematics.

### When is the AMC 8?

This competition is administered around the country on November 12, 2019. However, the competition may be given officially during the week of November 12-18, 2019, if there are circumstances which prevent the institution from administering the competition on November 12, 2019. Registrations are accepted until October 29, 2019 for participating institutions located in Canada, Alaska, Puerto Rico, Hawaii, Guam, and the Northern Mariana Islands and until November 5, 2019 for participating institutions located within the continental United States.

### Why Host the AMC 8?

- By the time students reach high school, many have formed a perception of mathematics without fully exploring their own potential as analytical thinkers and problem solvers. The AMC 8 helps middle school students discover their love of problem solving and develop their potential.
- The AMC 8 helps middle school students develop positive attitudes towards analytical thinking, a skill that is highly valued by universities and employers. The AMC 8 connects classroom skills to unique problem-solving challenges in a low-stress, friendly environment.
- Over 1 million additional STEM graduates will be needed by 2022 to meet the growing demands of the labor market. The AMC 8 can help your students identify an interest in and prepare them for future STEM careers that will challenge and fulfill them.

### Important Dates

October 29, 2019	Final day to order additional AMC 8 bundles for participating institutions located in Canada, Alaska, Puerto Rico, Hawaii, Guam, and the Northern Mariana Islands.
October 29, 2019	AMC 8 regular registration deadline.
November 1, 2019	Final day to order additional AMC 8 bundles for participating institutions located within the continental United States.
November 11, 2019	Have participants pre-fill all name and demographic information on answer sheets.
<b>November 12, 2019</b>	<b>Official AMC 8 date.</b> The AMC 8 may be administered from November 12, 2019 until November 18, 2019.
November 13, 2019	Return answer sheets to the MAA AMC office within 24 hours of the competition administration. Use an overnight or 2-day shipping service, with a tracking number, to guarantee timely arrival of these materials. FedEx, UPS, or USPS Overnight are <u>strongly recommended</u> .
November 22, 2019	Last day that AMC 8 answer sheets will be accepted by the MAA AMC office for scoring.

# Pre-Competition Preparation

## How do you Prepare Students for the AMC 8?

The best way to prepare students for the MAA American Mathematics Competitions is to practice creative, analytical thinking throughout the year. Schools involved with the MAA AMC often have year-round activities connected to special classes, math clubs, or other extracurricular groups. Individual students can benefit greatly from practicing math problems from past MAA AMC exams. The MAA AMC offers a [variety of resources](#) designed to improve the problem-solving skills of students.

## Who is Eligible to Participate in the AMC 8?

Students with a passion for problem-solving who are in grade 8 or below and under 14.5 years of age on the day of the competition are eligible to participate in the AMC 8.

## Benefits for Teachers

Teachers and competition managers who register their school for the AMC 8 exam receive a complimentary K-12 Teacher Membership to the Mathematical Association of America. The membership benefits for you and your classroom include:

- Access to the [MAA Curriculum Inspirations project](#), which provides free video and print materials, based on past AMC questions designed to help educators teach students creative problem-solving skills. All Curriculum Inspirations videos and materials are cross-referenced to the Common Core State Standards in mathematics and designed to capture your students' interest in mathematics.
- Digital resources sent to your inbox throughout the year. These include MAA AMC program updates, practice problems, classroom tips and the latest math news.
- A subscription to [Math Horizons](#), a quarterly digital magazine with articles, problems, contests, student research profiles, career ideas, and book reviews.
- A subscription to [MAA FOCUS](#), a bi-monthly digital newsmagazine full of ideas about mathematics and the mathematics community.

## Pre-Competition Checklist:

- ☐ Have participants carefully pre-fill all name and demographic information on their answer sheet prior to the competition day. The most common errors are filling in more than one circle in a column, not completely filling in the circles, or failing to use a #2 pencil. Participants must use their full legal name, no nicknames or abbreviations. Failure to do so will disqualify their results and cause delays in scoring. **The MAA AMC program office will not edit the information provided on the answer sheets.**
- ☐ Use only the answer sheets that were provided with the 2019 competition materials. Answer sheets from previous competition cycles will not be scored.
- ☐ Reserve a quiet room for at least 70 minutes on the day your school will hold the competition to allow time for pre- and post-competition activities.
- ☐ Review the rules on the AMC 8 [Competition Certification Form](#) that is included with the AMC 8 competition materials.
- ☐ Remind participants of the time and location of the AMC 8 prior to the competition day.
- ☐ Obtain a supply of #2 pencils and unmarked scratch paper. Inform participants that no aids are permitted other than scratch paper, graph paper, rulers, protractors, and erasers. **NO CALCULATORS OR ELECTRONIC DEVICES OF ANY KIND ARE ALLOWED.** No AMC 8 question requires the use of a calculator.

## Guidelines for Administering the Competition

- The competition is administered by a competition manager. This person is usually a teacher or coach and must be an adult who is not related to any of the participants. Under no circumstances may a parent administer the competition for their child.
- The competition must take place in a public building, (e.g., schools, universities, and places of worship). Provide as quiet an environment as possible.
- All participants must take the competition at the same time, either in one group or in separate classrooms. Each group of participants must be under the supervision of a competition manager or an adult who fully understands the responsibilities and is not related to any of the participants. Parents, relatives, and legal guardians of the participants are not permitted in the classroom during competition administration.

# Competition Day

## Tips for First-Time Participants

- Encourage participation by students who have not taken these competitions before. Help them prepare and make sure they know what to expect.
- Make sure they set appropriate goals for themselves, so that the competition is a positive experience for every student. Even getting a few questions correct is an accomplishment.
- Set aside post-competition class time for discussion of solutions, and inform participants that they will get the chance to discuss the problems during the following week.

## Before the Competition

**Do not open the bundles until one hour before the start of the competition.**

- Seat participants so they are separated by an empty space, if possible.
- Hand out the answer sheets with the participants' pre-filled name and demographic information and provide a #2 pencil with a good eraser to each of them.
- Open the bundles, hand out the AMC 8 competition booklets and inform participants that they are not to open the competition booklet containing the problems until instructed to do so.
- Instruct participants to read the entire front cover of the AMC 8 competition booklet. Allow 3 minutes for them to review the front cover.
- Tell the participants to be AS CERTAIN AS POSSIBLE OF THEIR ANSWERS BEFORE THEY MARK THE ANSWER SHEET. Sheets that contain stray marks may not be read correctly by the scanner that scores the competition.
- Ask if there are any questions about the competition procedures. Inform participants that talking or asking questions during the competition is not allowed. They must do their own work.
- When it is time to begin, tell the participants to open the competition booklet. Remind students that there are 25 problems and that they have 40 minutes to finish. Then tell them to begin.

## During the Competition

- Participants should be continuously monitored by the competition manager.
- Be sure that no participant has access to any electronic devices, including calculators and cellphones.
- Warn any participants whose eyes wander, and disqualify any that are clearly copying answers or collaborating.
- Make an announcement to the participants when there are 15 minutes left and again when there are 5 minutes left.
- When time is up after 40 minutes, tell the participants to STOP and have them sign their name in the space provided at the bottom of the answer sheet. Collect the answer sheets and competition booklets as quickly as possible. These may be returned to the participants after November 18, 2019.
- Inform the participants that the competition and solutions may not be discussed with anyone outside of the room either orally or digitally (e.g. email, online, and social media of any type) until after November 18, 2019.



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**CHECK EACH STUDENT  
ANSWER SHEET FOR  
COMPLETE AND CORRECT  
NAME AND DEMOGRAPHIC INFORMATION**

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# Competition Day

## After the Competition

- **Please do not score the answer sheets.** Send them to the MAA AMC for scoring.
- Check each participant answer sheet for complete and correct name and demographic information.
- Arrange the answer sheets by section (if applicable) and organize them so that each sheet faces the same direction with the same side up. Remove all paper clips, rubber bands, and note paper attached to answer sheets. Make sure that no two sheets are stuck together.
- Place no more than 200 sheets in one return envelope.
- Do not return blank sheets or sheets you do not wish to be scored.
- Complete the [Competition Certification Form](#), and ask your principal or person with comparable title to sign it and complete their section of the form.
- Place the School ID Form on top of the answer sheets and insert them into the return envelope.
- Place the [Competition Certification Form](#) in the AMC 8 return envelope with the answer sheets and seal the envelope. Return the report envelope to the MAA AMC office the day after competition administration. Use an overnight or 2-day shipping service, with a tracking number, to guarantee timely arrival of these materials. FedEx, UPS, or USPS Overnight are strongly recommended. The MAA AMC is not responsible for lost or delayed answer sheets.
- November 22, 2019 is the last day that AMC 8 answer sheets will be accepted by the MAA AMC office for scoring.
- Indicate the total number of return envelopes you are shipping to the MAA AMC office in the space provided.
- AMC 8 answer sheets submitted for scoring will not be returned to your school.
- After you have mailed all of your return envelopes, you may discuss the competition and solutions with your students. Remember that there will be schools taking the competition in other locations on different days and at different times between November 12, 2019 and November 18, 2019. It is important that no one discusses problems and solutions in any online or public forum.

## AMC Toolkit:

### Results and Resources for Competition Managers:

Score reports will be emailed to competition managers as part of the *AMC Toolkit: Results and Resources for Competition Managers* as soon as the answer sheets are scored. If you do not receive your results via email from the MAA AMC program within 30 days of administering the AMC 8, please contact [amcinfo@maa.org](mailto:amcinfo@maa.org) to verify that your answer sheets were received.

Please retain the digital score report for future reference. Many students cite these scores on applications to college and other programs. The MAA AMC cannot look up individual student scores after the competition cycle has been completed.

The *AMC Toolkit* is also a valuable resource for your classroom! You can use it to:

- Access your students' results.
- Find resources for problem-solving lessons.
- Explore [MAA's Top Ten Problem-Solving Strategies](#) to find videos and essays that bring excitement to mathematics learning and thinking.
- Download and print fillable PDF certificates to recognize student participation and high scores on the AMC 8.

Please add [amcinfo@maa.org](mailto:amcinfo@maa.org) to your list of approved email contacts so that you receive important emails.

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**SCORE REPORTS WILL BE EMAILED TO  
COMPETITION MANAGERS  
AS SOON AS ANSWER SHEETS  
ARE SCORED**

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# AMC Policies

## Policy for Changes

The MAA Committee on American Mathematics Competition may change the program rules, regulations, awards and conditions of participation in whole or in part. Whenever possible, competition managers will be notified of these changes ahead of time.

## Early Administration

Early administration is NEVER permitted and will result in DISQUALIFICATION of all scores from your institution. Early administration jeopardizes the validity of all scores from other institutions.

## Official Administration

The AMC 8 should be given officially on the first day that the institution has an available testing time. Competition managers should prioritize administering the competition as close to, but not before, November 12, 2019.

Please note that because the competition may be given officially during the entire week from November 12 to November 18, 2019, you must collect the participants' competition booklets and instruct them not to discuss the questions and solutions outside of the group that took the AMC 8 together until after November 18, 2019.

## Unofficial Administration

The AMC 8 can be administered unofficially after November 19, 2019. Answer sheets will be scored but results will be considered unofficial. Be sure to mark the exceptions box at the bottom of the [Competition Certification Form](#) as indicated when submitting answer sheets from unofficial administration. December 4, 2019 is the last day that AMC 8 answer sheets from unofficial administrations will be accepted by the MAA AMC office for scoring.

## Inclement Weather Policy

Inclement Weather and School Cancellation Policy: If school is canceled on the day that the AMC 8 was scheduled, the competition manager can administer the AMC 8 on a different day from November 12, 2019, until November 18, 2019. The competition cannot be administered officially after November 18, 2019. The competition can be offered at a different location if, and only if it is administered by the competition manager who originally registered for the competition and has received prior approval by the institution administration.

## Refund/Credit Policy

If your institution is unable to take the competition, please use the materials as practice sets to prepare for next year's competition or as supplemental classroom materials. Do not return the competition materials. WE CANNOT GIVE REFUNDS OR CREDITS AFTER THE COMPETITION MATERIALS HAVE BEEN SHIPPED.

## Students with Accommodation Plans

The AMC 8 time limit for participants who require accommodations (e.g., for physical and learning disabilities) is 70 minutes. A teacher or a school administrator may read the questions to the participant and mark the answers as directed by the participant. Braille and large print competition booklets must be ordered by October 15, 2019 for institutions located in Canada, Alaska, Puerto Rico, Hawaii, Guam, and the Northern Mariana Islands and by October 15, 2019 for institutions located within the continental United States. It is the responsibility of the institution and the competition manager to make arrangements consistent with the participant's accommodation plan. Please contact MAA AMC at [amcinfo@maa.org](mailto:amcinfo@maa.org) for more information.

## Lost or Delayed Answer Sheets

The MAA AMC cannot accept any answer sheets for scoring that arrive after November 22, 2019, even if the envelopes are lost or delayed while in transit. This is to ensure that there are no delays in generating the score reports for all schools.

## Questionable Scores

If it is clear to the competition manager from personal observation that a participant has cheated, then the competition manager must disqualify that participant. If the competition manager receives an accusation or obtains indirect evidence of cheating, then the competition manager must immediately report all the facts of the situation to the MAA AMC Office at [amchq@maa.org](mailto:amchq@maa.org). The MAA AMC Director, in conjunction with the MAA Committee on American Mathematics Competitions, will determine what to do. UNDER NO CIRCUMSTANCES may the institution decide on its own to accept a questionable score.

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# GOOD LUCK TO YOUR STUDENTS ON THE AMC 8!

We hope they find the competition  
to be a challenging and exciting

# FIRST STEP TOWARDS a future in analytical thinking.

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