



MATHEMATICAL ASSOCIATION OF AMERICA

MAA

# American Mathematics Competitions 8

offered  
by



Competition date:  
Tuesday  
November 12, 2019

4:00 – 5:30 p.m.  
at Hope College

## Our Purpose

The mission of the MAA Competitions is to increase interest in mathematics and to develop problem solving through a fun competition. Students gain the opportunity to learn and achieve through competition with students in their school and from around the world. Teachers and schools benefit from the chance to challenge students with interesting mathematical questions that are aligned with curriculum standards at all levels of difficulty.

## What is the American Mathematics Competitions?

For over 60 years the AMC math contests have been the most respected school-based competitions in the nation. The AMC works with teacher, mathematicians, and professional organizations to provide high quality, challenging math problems aligned with curriculum standards. Many well-known colleges and universities request scores from AMC competitions at the higher-grade levels and use them for recruiting and admissions.

The material covered on the AMC8 is from middle school mathematics curriculum. Topics include (but are not limited to) Probability, Estimation, Percents, Elementary geometry including the Pythagorean Theorem, Spatial Visualization, Everyday Applications, and Reading/Interpreting Graphs.

The AMC 8 provides an opportunity for middle school students to develop positive attitudes towards analytical thinking and mathematics that can assist in future careers by applying classroom learned skills to unique problem-solving challenges in a low-stress and friendly environment.

Over 1 million additional STEM graduates will be needed by 2022 to fill the demands of the labor market. The AMC 8 can help students identify an interest in and prepare for STEM careers that will challenge and fulfill them.



The PATH program and Hope College are pleased to support our math students, as well as other local students who have a strong math aptitude, by allowing them to participate in the annual American Mathematics Competitions 8 (AMC 8) contest. Over 300,000 students in more than 6,000 schools worldwide participate annually in the highly regarded AMC competitions!

### **Some notes about the competition:**

- Students must be 14.5 years or younger, and in 8<sup>th</sup> grade or below to participate. Students in grades 6 – 8 are encouraged to participate, but younger PATH students are also eligible.
- Study guides and links to prior year tests will be distributed via email, in order to prepare the students for the competition. We will hold a practice session about 2 weeks prior to the competition day to help familiarize students with the types of questions that may be included. Students are encouraged to do additional preparation at home.
- **No calculators are allowed during the competition!**
- The competition takes only 40 minutes. There are 25 multiple choice questions and students are not penalized for guessing!
- Awards from MAA will be given to perfect scorers, Top scoring students in each state, and for other achievements.
- Students scoring exceptionally well in this competition may be invited to participate in the AMC10, as well as the AMC12. These upper level competitions can lead to invitation to participate on the USA Team at the International Mathematical Olympiad.

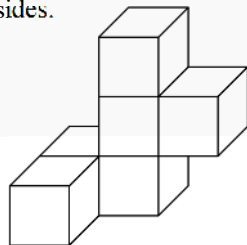
Students wishing to register should fill out the enclosed registration paperwork, and return it with the \$20 registration fee, made payable to PATH / Hope College, to:

PATH Office  
Hope College Education Dept.  
41 Graves Place  
Holland, MI 49423

If you have questions, feel free to contact us: [path@hope.edu](mailto:path@hope.edu)

## Sample questions from past AMC 8 Competition Tests

1. On average, for every 4 sports cars sold at the local car dealership, 7 sedans are sold. The dealership predicts that it will sell 28 sports cars next month. How many sedans does it expect to sell?
- (A) 7    (B) 32    (C) 35    (D) 49    (E) 112
2. On June 1, a group of students is standing in rows, with 15 students in each row. On June 2, the same group is standing with all of the students in one long row. On June 3, the same group is standing with just one student in each row. On June 4, the same group is standing with 6 students in each row. This process continues through June 12 with a different number of students per row each day. However, on June 13, they cannot find a new way of organizing the students. What is the smallest possible number of students in the group?
- (A) 21    (B) 30    (C) 60    (D) 90    (E) 1080
3. Which of the following integers cannot be written as the sum of four consecutive odd integers?
- (A) 16    (B) 40    (C) 72    (D) 100    (E) 200
4. The length of a rectangle is increased by 10% and the width is decreased by 10%. What percent of the old area is the new area?
- (A) 90    (B) 99    (C) 100    (D) 101    (E) 110
5. Six cubes, each an inch on an edge, are fastened together, as shown. Find the total surface area in square inches. Include the top, bottom and sides.
- (A) 18    (B) 24    (C) 26    (D) 30    (E) 36



Correct Answers to above: 1) D, 2) C, 3) D, 4) B, 5) C

## American Mathematics Competitions

is a program of The Mathematical Association of America



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**MAA**

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