

Sample questions from the AMC 10 & 12

4. In multiplying two positive integers a and b , Ron reversed the digits of the two-digit number a . His erroneous product was 161. What is the correct value of the product of a and b ?
- (A) 116 (B) 161 (C) 204 (D) 214 (E) 224
5. At an elementary school, the students in third grade, fourth grade, and fifth grade run an average of 12, 15, and 10 minutes per day, respectively. There are twice as many third graders as fourth graders, and twice as many fourth graders as fifth graders. What is the average number of minutes run per day by these students?
- (A) 12 (B) $\frac{37}{3}$ (C) $\frac{88}{7}$ (D) 13 (E) 14
10. Rectangle $ABCD$ has $AB = 6$ and $BC = 3$. Point M is chosen on side AB so that $\angle AMD = \angle CMD$. What is the degree measure of $\angle AMD$?
- (A) 15 (B) 30 (C) 45 (D) 60 (E) 75
11. Square $EFGH$ has one vertex on each side of square $ABCD$. Point E is on \overline{AB} with $AE = 7 \cdot EB$. What is the ratio of the area of $EFGH$ to the area of $ABCD$?
- (A) $\frac{49}{64}$ (B) $\frac{25}{32}$ (C) $\frac{7}{8}$ (D) $\frac{5\sqrt{2}}{8}$ (E) $\frac{\sqrt{14}}{4}$
15. How many positive two-digit integers are factors of $2^{24} - 1$?
- (A) 4 (B) 8 (C) 10 (D) 12 (E) 14
17. In the eight-term sequence A, B, C, D, E, F, G, H , the value of C is 5 and the sum of any three consecutive terms is 30. What is $A + H$?
- (A) 17 (B) 18 (C) 25 (D) 26 (E) 43

Answers: 4) E 5) C 10) E 11) B 15) D 17) C

American Mathematics Competitions

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Contributors

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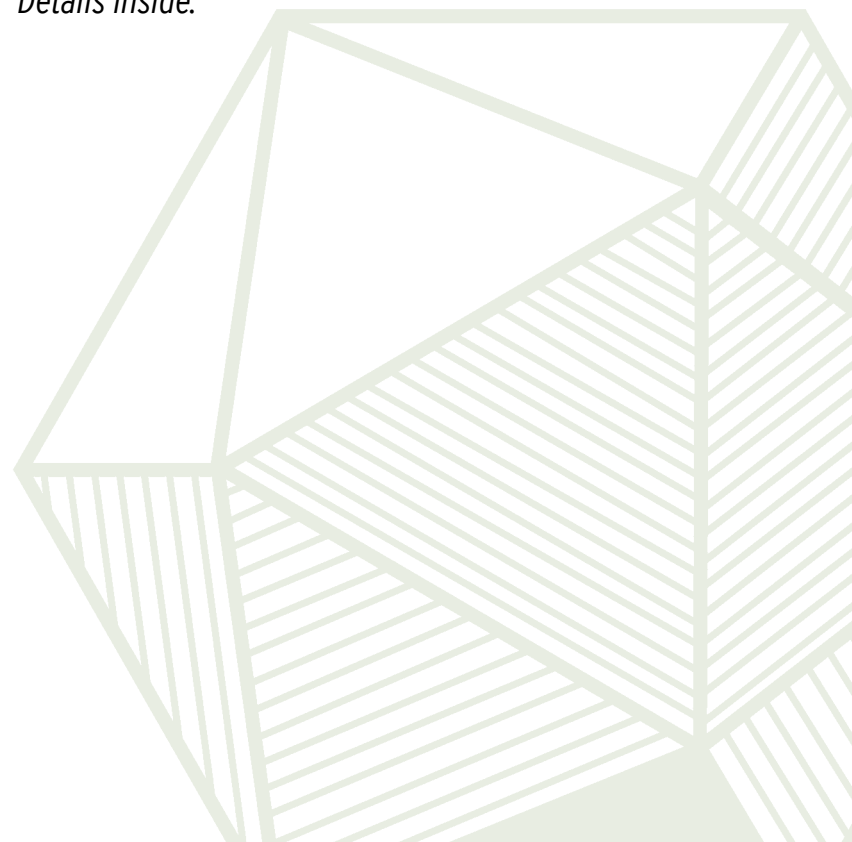


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American Mathematics Competitions 10/12

Register now for the high school level AMC 10/12 held in February of each year! Details inside.



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amcinfo@maa.org • amc.maa.org

1-800-527-3690

What are the American Mathematics Competitions 10/12?

Thank you for your interest in the high school level AMC 10 and AMC 12 contests! For over 60 years the AMC math contests have been the most respected school-based competitions in the nation. The AMC works with teachers, mathematicians, and professional organizations to provide high quality, challenging math problems aligned with curriculum standards. Many well-known colleges and universities request scores from our contests and use them for recruiting and admissions.

The AMC 12 covers high school mathematics, and is for students in high school who are under 19.5 years of age. The AMC 10 covers mathematics normally associated with grades 9 and 10, and is for students under 17.5 years of age who are not enrolled in grades 11, 12, or equivalent. Both contests are given in a convenient 75-minute interval, is 25 questions in length, with approximately 12 questions common to both contests.

The AMC 10 and the AMC 12 contests are the first in the series that lead to the USA Team at the International Mathematical Olympiad. Encourage your students to reach for the stars!

School and student awards for the AMC 10/12

Each participating school receives individual school results, school awards, and high scorers are listed on our website. Schools with at least three participants on a contest date will be eligible for team, state and national awards. National awards are given in each region to the top five schools and the top ten students who officially participate in the contests. AMC 12 students who rank in the top 5% nationally will qualify for the American Invitational Mathematics Exam (AIME). The AMC 10 students who rank in the top 2.5% nationally will also qualify for the AIME. The USA Mathematical Olympiad (USAMO) and the USA Junior Mathematical Olympiad (USAJMO) qualifiers are selected from the top performing students on the AIME. Please visit amc.maa.org for more details.

Administration of the AMC 10/12

Our contests are administered by a school or school-based organization and offer individual and school recognition for high scorers. The AMC 10 & 12 A date is held in early February each year. The AMC 10 & 12 B date is held in late February each year. For more information about how to involve your school in the competitions, read the Frequently Asked Questions at amc.maa.org. *Spanish, French, braille and large print editions of the AMC 10/12 are also available.*

Offer the AMC 10/12 at your college or university

The AMC is encouraging colleges and universities to offer the AMC 10B and 12B on their campuses. This is a fantastic outreach and recruitment opportunity that will attract bright, motivated and highly qualified students to your department with minimal time and effort. Offering to administer this contest at your college allows more students, teachers, and schools to participate in the MAA High School contests, while increasing publicity for your school.

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 are people saying about the AMC?

"I appreciate everything the AMC has done to set up the AMC 10, the AIME, the USAMO, and so on. All I can say is that it has really made my high school experience infinitely more enjoyable." - *Student, Georgia*

"Our students look forward to competing in up to 20 different math contests each year, and the American Mathematics Competitions are the contests that the students strive to take every year. They generate great discussions and are a joy of the participating students." - *Mathematics Department Head, Michigan*

Math Club Package

For an additional \$25 you can order an AMC 10/12 Math Club Package, which includes a Club Advisor's Handbook (with a new set of problem worksheets taken from the AMC archives), plus a CD with all the contests given from 2001 through the most recent year, including the AMC 8, 10, and 12, the American Invitational Mathematics Examination (AIME), and the United States of America Mathematical Olympiad (USAMO).

Edyth May Sliffe Teaching Award

The Sliffe Award is given each year to approximately 20 teachers and is based on students who score well on the AMC 12 and nominations received from student team members. Winners receive a certificate, a cash prize, and a one-year membership to the Mathematical Association of America. A special reception during the NCTM spring meeting honors the award winners.