

Sample questions from the 2010 AMC 10 & 12

- 10B 6. A circle is centered at O , \overline{AB} is a diameter and C is a point on the circle with $\angle COB = 50^\circ$. What is the degree measure of $\angle CAB$?
- (A) 20 (B) 25 (C) 45 (D) 50 (E) 65
- 10B 13. What is the sum of all the solutions of $x = |2x - |60 - 2x||$?
- (A) 32 (B) 60 (C) 92 (D) 120 (E) 124
- 12A 11. The solution of the equation $7^{x+7} = 8^x$ can be expressed in the form $x = \log_b 7^7$. What is b ?
- (A) $\frac{7}{15}$ (B) $\frac{7}{8}$ (C) $\frac{8}{7}$ (D) $\frac{15}{8}$ (E) $\frac{15}{7}$
- 12B 9. Let n be the smallest positive integer such that n is divisible by 20, n^2 is a perfect cube, and n^3 is a perfect square. What is the number of digits of n ?
- (A) 3 (B) 4 (C) 5 (D) 6 (E) 7
- 12B 20. A geometric sequence (a_n) has $a_1 = \sin x$, $a_2 = \cos x$, and $a_3 = \tan x$ for some real number x . For what value of n does $a_n = 1 + \cos x$?
- (A) 4 (B) 5 (C) 6 (D) 7 (E) 8

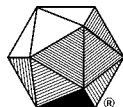
Answers: 6) B 13) C 11) C 9) E 20) E

American Mathematics Competitions

is a program of The Mathematical Association of America and is sponsored by The Akamai Foundation

Contributors

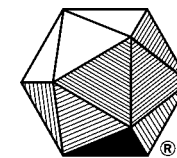
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American Mathematics
Competitions

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62nd Annual American Mathematics Competitions 10/12

February 8, 2011
February 23, 2011

Register now for the high school level AMC 10 & 12!
Details inside.

What are the American Mathematics Competitions 10/12?

Thank you for your interest in the high school level American Mathematics Competitions 10 & 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.

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*

School and student awards for the AMC 10/12

Each participating school receives individual school results, school awards, and the National Summary of Results and Awards booklet. 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 1% 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 students on the AIME. Please visit amc.maa.org for more details.

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.

Our Purpose

The mission of the MAA Competitions is to increase interest in mathematics and to develop problem solving through a fun competition. 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. In addition, students gain the opportunity to learn and achieve through competition with students in their school and from around the world.

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 Tuesday, February 8, 2011. The AMC 10 & 12 B date is Wednesday, February 24, 2011. Students may not use calculators on the contest. For more information about how to involve your school in the competitions, read the FAQs at amc.maa.org. *Spanish, French, braille and large print editions of the 2011 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. Offering to administer this contest at your college allows more students, teachers, and schools to participate in the MAA High School contests. You will attract bright, motivated and highly qualified students to your department and major! This will create outreach and publicity for your department with minimal time and effort.

Registration and fees for the 2011 AMC 10/12

Register online at amc.maa.org/registration or by returning the enclosed registration form. See below for registration fees and bundle cost:

Registration & standard shipping (through Dec. 18, 2010)	\$40
Registration & express shipping (Dec. 19, 2010–Jan. 15, 2011)	\$50
12A Registration & expedited shipping (Jan. 16–Feb. 1, 2011)	\$60
12B Registration & expedited shipping (Jan. 16–Feb. 12, 2011)	\$60
One bundle of 10 contests	\$16

Schools using a credit card or purchase order may register online or by sending a fax to 402-472-6087. We accept Visa® and Mastercard®. When paying by check, be sure to mail your registration form with payment well in advance of the deadline dates.

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 Spring 2010, including the AMC 8, 10, and 12, the American Invitational Mathematics Examination (AIME), and the United States of America Mathematical Olympiad (USAMO).