

Sample Questions

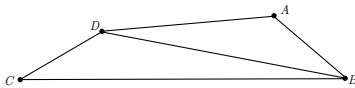
2009 AMC 10A

10A-09. Positive integers a , b , and 2009, with $a < b < 2009$, form a geometric sequence with an integer ratio. What is a ?

- (A) 7 (B) 41 (C) 49
(D) 287 (E) 2009

2009 AMC 10A/12A

10A-12, 12A-10. In quadrilateral $ABCD$, $AB = 5$, $BC = 17$, $CD = 5$, $DA = 9$, and BD is an integer. What is BD ?



- (A) 11 (B) 12 (C) 13
(D) 14 (E) 15

2009 AMC 12A

12A-09. Suppose that $f(x+3) = 3x^2 + 7x + 4$ and $f(x) = ax^2 + bx + c$. What is $a + b + c$?

- (A) -1 (B) 0 (C) 1
(D) 2 (E) 3

12A-16. A circle with center C is tangent to the positive x - and y -axes and externally tangent to the circle centered at $(3, 0)$ with radius 1. What is the sum of all possible radii of the circle with center C ?

- (A) 3 (B) 4 (C) 6 (D) 8 (E) 9

Answers
10A-9. B 10A-12 + 12A-10. C 12A-09. D

THE MAA AMERICAN MATHEMATICS COMPETITIONS

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For 2009-2010 the National Association of Secondary School Principals (NAASP) has again placed the AMC 8, AMC 10, and AMC 12 on the NAASP National Advisory List of Contests and Activities.



MATHEMATICAL ASSOCIATION OF AMERICA
AMERICAN MATHEMATICS COMPETITIONS

amcinfo@maa.org http://www.unl.edu/amc/ 800-527-3690



AMC 10 AMC 12 DECADES OF EXCELLENCE

**American Mathematics
Competitions**

2009-2010 CONTEST DATES

AMC 8 - November 17, 2009

AMC 10 - February 9 and/or February 24, 2010

AMC 12 - February 9 and/or February 24, 2010

AIME - March 16 or March 31, 2010

USAMO - April 27-28, 2010

MOSP - June 2010

IMO - July 2010, Kazakhstan

On Thursday, May 11, 1950 the first Mathematical Contest, sponsored by the New York Metropolitan Section of the Mathematical Association of America (MAA) took place. It was given in 238 schools to 6,000 students in the New York area only. Today the contest is taken in every state and around the world. It is translated into braille, French, Spanish and Chinese, and has evolved into a series of five contests.

1950-2010 THE AMERICAN MATHEMATICS COMPETITIONS

Help us celebrate over 60 years of the American Mathematics Competitions by registering your school to participate in the **61st annual** American Mathematics Contest 12 and the 11th annual American Mathematics Contest 10. The **AMC 10** is designed for 9th and 10th grade students, and the **AMC 12** is designed for 11th and 12th grade students. The Contests will be held on two dates:

TUESDAY, February 9, 2010 and/or
WEDNESDAY, February 24, 2010.

AMC 12 & AMC 10

PARTICIPATION & ELIGIBILITY

Both AMC 10 and AMC 12 are 25-question, 75-minute multiple-choice contests administered in your school by you or a designated teacher. The AMC 12 covers the high school mathematics curriculum, excluding calculus. The AMC 10 covers subject matter normally associated with grades 9 and 10. To challenge students at all grade levels, and with varying mathematical skills, the problems range from fairly easy to extremely difficult. Approximately 12 questions are common to both contests. Students may not use calculators on the contests.

AMC 12 Eligibility – A student in a program leading to a high school diploma, and under 19.5 years of age on the day of the contest.

AMC 10 Eligibility – A student in a program leading to a high school diploma, under 17.5 years of age on the day of the contest, and not enrolled in grades 11 or 12 or equivalent.

Home schools must indicate the site of the exam (not the student's home) and the name of the proctor (not a parent) and attach this information to the registration form. *Please call the AMC office for details.*



ADMINISTRATION

The **AMC 10A** and **AMC 12A** date is **TUESDAY, February 9, 2010**, and the **AMC 10B** and **AMC 12B** date is **WEDNESDAY, February 24, 2010**. The contests are given at the same time to all participating students in a convenient 75-minute interval, preferably in the morning. The contests should be proctored by a faculty/staff member of the participating school.

To offer more opportunities for students to participate, the AMC is encouraging colleges and universities to offer the AMC **10B/12B** on their campuses. Contact local math departments to see if they will be offering the B-date contests in your area. In the fall we will post the names of participating institutions on our website as they become available.

REGISTRATION AND FEES

Register by returning the enclosed registration form or on the web at www.unl.edu/amc.

Standard fees are as follows:

- Registration & Std Shipping (to Dec 18, Contest A only)..... \$40
- Registration & 2-day Shipping (Dec 19-Jan 22)..... \$50
- **Registration & 1-day Shipping 12A (Jan 23-Feb 1)..... \$60**
- **Registration & 1 day Shipping 12B (Jan 23-Feb 19) ... \$60**
- AMC 10 - One bundle of 10 Contests..... \$16
- AMC 12 - One bundle of 10 Contests..... \$16

Schools using a credit card or purchase order may register at www.unl.edu/amc or fax to us at 402-472-6087. We accept Visa and Mastercard. When paying by check, please mail your registration form with payment well in advance of the deadline dates.



ADDITIONAL OPTIONS

Spanish and French editions of the 2010 AMC 10 and AMC12 are available on request. Braille and large print editions are also available. All requests must be made at least three weeks before the contest.

Early registration will reduce your cost and provide you extra time to fully utilize the study guide found in the Teachers' Manual and the Math Club package, if you have ordered the 2009-2010 edition.



RESULTS & STUDENT AWARDS

Each participating school receives a copy of the contest and solutions, 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. The USA and Canada are divided into eleven contest regions, and National Awards are given in each region to the top five schools and top ten students who officially participate in the contests. There are a variety of other national and student awards; they can be seen on our website.

AMC 12 students who rank in the top 5% nationally (or score at least 100) will qualify for the **American Invitational Mathematics Exam (AIME)**. AMC 10 students who rank in the top 1% nationally (or score at least 120) will also qualify for the AIME. The **USA Mathematical Olympiad (USAMO)** qualifiers are picked from the top students on the AIME.

PURPOSE

The Mathematical Association of America wants to increase interest in mathematics and to develop problem solving through a friendly, *and fun*, competition. We believe that one way to meet this goal is to identify, recognize, and reward excellence in mathematics through a series of national contests.



EDYTH MAY SLIFFE AWARD

The **Edyth May Sliffe Award for Distinguished High School Teaching** is given each year to at least twenty teachers, based on students who do well on the AMC 12 and the nominations of the student team members. The winners receive a cash prize, a certificate, and a one-year complimentary membership in the Mathematical Association of America (MAA) and in the National Council of Teachers of Mathematics.

MATH CLUB PACKAGE

For an additional \$25.00 you can order a Math Club Package, which includes a Club Advisor's Handbook (with additional problems taken from the AMC archives) plus a CD with all the contests given from 2001 through Spring 2009, including the AMC 8, 10, and 12, the AIME, and the USAMO.