

SAMPLE QUESTIONS

2006 AMC 10

10A-#6. What non-zero real value for x satisfies $(7x)^{14} = (14x)^7$?

- (A) $\frac{1}{7}$ (B) $\frac{2}{7}$ (C) 1 (D) 7 (E) 14

10B-#11. What is the tens digit in the sum $7! + 8! + 9! + \dots + 2006!$?

- (A) 1 (B) 3 (C) 4 (D) 6 (E) 9

2006 AMC 10/12

10A-#22, 12A-#14. Two farmers agree that pigs are worth \$300 and that goats are worth \$210. When one farmer owes the other money, he pays the debt in pigs or goats, with "change" received in the form of goats or pigs as necessary. (For example, a \$390 debt could be paid with two pigs, with one goat received in change.) What is the amount of the smallest positive debt that can be resolved in this way?

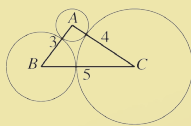
- (A) \$5 (B) \$10 (C) \$30 (D) \$90 (E) \$210

10B-#9, 12B-#6. Francesca uses 100 grams of lemon juice, 100 grams of sugar, and 400 grams of water to make lemonade. There are 25 calories in 100 grams of lemon juice and 386 calories in 100 grams of sugar. Water contains no calories. How many calories are in 200 grams of her lemonade?

- (A) 129 (B) 137 (C) 174 (D) 223 (E) 311

2006 AMC 12

12A-#13. The vertices of a 3-4-5 right triangle are the centers of three mutually externally tangent circles as shown. What is the sum of the areas of these circles?



- (A) 12π (B) $\frac{25\pi}{2}$ (C) 13π (D) $\frac{27\pi}{2}$ (E) 14π

12B-#10. In a triangle with integer side lengths, one side is three times as long as a second side, and the length of the third side is 15. What is the greatest possible perimeter of the triangle?

- (A) 43 (B) 44 (C) 45 (D) 46 (E) 47

ANSWERS
10A-#6 (B), 10B-#11 (C)
10A-#22, 12A-#14 (C), 10B-#9, 12B-#6 (B)
12A-#13 (E), 12B-#10 (A)

The National Association of Secondary School Principals (NASSP) has placed the AMC 8, AMC 10, and AMC 12 on the NASSP National Advisory List of Contests and Activities for 2007-2008.



THE MATHEMATICAL ASSOCIATION OF AMERICA
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THE MATHEMATICAL ASSOCIATION OF AMERICA
American Mathematics Competitions

9th Annual AMC 10 59th Annual AMC 12

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A Year of

Euler

Celebrating the 300th anniversary of Leonhard Euler's birth

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

Dates of the 2007-2008 Contests

AMC 8 - November 13, 2007
AMC 10 - February 12, and/or February 27, 2008
AMC 12 - February 12, and/or February 27, 2008
AIME - March 18 or April 2, 2008
USAMO - April 29-30, 2008
MOSP - June
IMO - July, Spain

AMC 10 & AMC 12

Your students are invited to participate in the 9th annual **American Mathematics Contest 10** and the 59th annual **American Mathematics Contest 12**. 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 **TUESDAY, February 12, 2008** and/or **WEDNESDAY, February 27, 2008**.

PURPOSE

The Mathematical Association of America wants to increase interest in mathematics and to develop problem solving through a friendly, *and fun*, competition.

When you register for the AMC 10 &/or AMC 12 we will include a free gift – a set of three posters celebrating the birth of **Leonhard Euler**.



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 12A** dates are **TUESDAY, February 12, 2008**, and the **AMC 10B and 12B** dates are **WEDNESDAY, February 27, 2008**. 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 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 16, Contest A only)\$40
- Registration & 2-day Shipping (Dec 17-Jan 27).....\$50
- **Registration & 1-day Shipping 12A (Jan 28-Feb 5)**.....\$60
- **Registration & 1 day Shipping 12B (Jan 28-Feb 20)**.....\$60
- AMC 10 - One bundle of 10 Contests.....\$14
- 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 2008 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 2007-2008 edition.

SCHOOL 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 web site.

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 USAMO (USA Mathematical Olympiad) qualifiers are picked from the top students on the AIME.

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 2007, including the AMC 8, 10, and 12, the AIME, and the USAMO.