

Titu Andreescu, Director  
Mathematical Association of America  
**American Mathematics Competitions**  
University of Nebraska - Lincoln  
P.O. Box 81606  
Lincoln, Nebraska 68501-1606



**2001-2 MAA AMC examination dates:**

**AMC 8**-TUESDAY, November 13, 2001

**AMC 10**-TUESDAY, February 12, 2002

**AMC 12**-TUESDAY, February 12, 2002

**AIME**-TUESDAY, March 26, 2002

**USAMO**-TUESDAY, April 30, 2002

**AMC 8**-TUESDAY, November 19, 2002

[www.unl.edu/amc](http://www.unl.edu/amc)

[amcinfo@unl.edu](mailto:amcinfo@unl.edu)

# Mathematical Association of America American Mathematics Competitions

*Presented by The Akamai Foundation*

# MAA AMC 8

**Tuesday, November 13, 2001**

# The MATHEMATICAL ASSOCIATION of AMERICA

## AMERICAN MATHEMATICS COMPETITIONS



*Presented by The Akamai Foundation*



### **I. INVITATION AND PARTICIPATION -**

A CORDIAL INVITATION is extended to your school to participate in the Seventeenth Annual AMC 8 to be held on Tuesday, November 13, 2001. A record number of 249,260 students (in grades 8 and below) from 3,523 schools participated in 2000. We truly hope that you will participate in this year's contests.

### **The Participation of The Akamai Foundation -**

In early February 2001, just as the AMC 10 and AMC 12 were being given and the AIME 2001 was going to press, the Akamai Foundation of Boston made a large charitable gift to the Mathematical Association of America (MAA) on behalf of the American Mathematics Competitions. This large charitable gift will allow the MAA American Mathematics Competitions to fund several important new projects.

The Akamai Foundation was established by Akamai Technologies, Inc. and initially has been funded by Akamai executives and its employees. Akamai Technologies helps companies by optimizing Web site performance, delivering broadcast-quality streaming media, and providing interactive application services. The Foundation chose to focus on mathematics because Akamai was conceived and founded on mathematical innovation.

The Akamai Foundation is dedicated to excellence in mathematics in the hopes that they can encourage America's next generation of technology innovators. Their mission is to reach out to students in grades K-12 with the message that mathematics is important, demonstrating to them that it can be magical and fun and in the process, helping them to realize that math can lead to some very exciting career opportunities.



The National Association of Secondary School Principals (NASSP) has placed the AMC 8 on the NASSP National Advisory List of Contests and Activities for 2001-02.

## II. Purpose -

The purpose of the contest is to increase interest in mathematics and to develop problem solving ability through a friendly competition. The questions range in difficulty from easy to very difficult in order to appeal to a broad range of students. For general information on the American Mathematics Competitions please visit us at [www.unl.edu/amc](http://www.unl.edu/amc). For information specific to the AMC 8 visit [www.amc8.org](http://www.amc8.org).

## III. Exam Subject Matter & Format -

The **AMC 8** covers material normally associated with the middle school mathematics curriculum. Each year an increasing number of accelerated fifth and sixth grade students take part in the AMC 8. The subject matter includes (but is not limited to) such topics as:

- ▶ Estimation
- ▶ Percent
- ▶ Graph Theory
- ▶ Reading and interpreting graphs
- ▶ Spatial Visualization
- ▶ Everyday Applications

No problem requires the use of algebra. Even though calculators are allowed, no problem requires the use of a calculator. The **AMC 8** is a 25-question, 40-minute multiple choice contest with no penalty for guessing. A student's score is the number of problems solved correctly.

## IV. Registration Deadlines & Fees -

Registration may be accomplished by mailing the **REGISTRATION FORM** found in this brochure. Fees for each school wishing to register are as follows:

- \* Early Registration (Jan. 1 - Oct. 10)      \$25
- \* Registration (Oct. 11 - Nov. 1)              \$35
- \* **Late Registration** (Nov. 2 - Nov. 5)        \$45

Exams (including student answer forms) are sold in Bundles of 10 @ \$10 per bundle. The minimum charge to participate in the **AMC 8** is \$40 (including the early registration fee & shipping charge) and would enable 10 students to participate.

**Late Registrations** (after November 1), will be accepted via FAX **402-472-6087** (please do not fax your order before this date). Visa, Mastercard, and American Express are accepted. Unpaid orders will be accepted only with a Purchase Order number, and a \$5 invoicing fee will be added.

## V. Participation Rules & Eligibility

The **AMC 8** is to be given in each participating school on **TUESDAY, NOVEMBER 13, 2001** in a convenient 40-minute period. If it is not possible to administer the exam at the same time to all students, the exam may be given several times throughout the day during a regular mathematics class period. This exam is for individual recognition; schools are not ranked. **All exams will be scored in Lincoln, Nebraska.** ALL PARTICIPANTS MUST BE IN GRADE 8 OR BELOW.

## VI. Alternate AMC 8 Dates -

**EARLY ADMINISTRATION OF THE EXAM IS NEVER PERMITTED** and will lead to disqualification since this would jeopardize all scores from other participating schools!

**Administration on a later "window" date (Nov. 14-20) is permitted** in cases of school academic conflicts or school closing. When a "window" date is used, schools are still granted "official" status with regard to all intramural and national award recognition.

## VII. Security & Integrity of the Exam -

Since the exam can be taken on alternate dates, in order to protect its integrity, publication or reproduction of the problems/solutions via copier, telephone, e-mail, www or media of any type is strictly prohibited.

## VIII. Calculators -

No problem on the exam requires the use of a calculator. However, any non-typewriter keyboard calculator may be used.

## IX. Braille and Large Print Exams -

Braille and Large Print editions of the 2001 **AMC 8** will be available at a cost of \$1.00 for each exam ordered plus \$5 for all postage and handling. Requests for Braille and Large Print copies of the exam must be received by the office of the Director, **not later than NOVEMBER 1, 2001.**

## X. Results and Awards -

The registration fee provides each participating school with a copy of the exam and solutions pamphlet, individual school results, intramural awards and the *National Summary of Results and Awards*.

National Awards are given to all official participants who write a perfect paper. In addition, an elegant award plaque is given to the top scoring student(s) in each state.

## XI. Intramural Awards -

- \* A **Certificate of Distinction** is given to all students who receive a perfect score.
- \* An **AMC 8 Winner Pin** is given to the student(s) in each school with the highest score.
- \* The top three students in each school section will receive a gold, silver, or bronze **Certificate for Outstanding Achievement**. In case of ties, additional certificates will be included with your results.
- \* An **AMC 8 Honor Roll Certificate** is given to all students who score in (approximately) the top 2%.
- \* An **AMC 8 Merit Roll Certificate** is given to all students in 6th grade and below who score in (approximately) the top 2%.

## XII. School & Teacher Recognition -

The "Edyth May Sliffe" Award will be given regionally to fifty teachers from high scoring **AMC 8** schools. This award consists of a \$100 check, membership in the National Council of Teachers of Mathematics, a Teacher Recognition Certificate and an Award pin.

## XIII. AMC 8 Publications -

Many teachers order copies of prior year exams in order to provide an opportunity for their students to prepare for the **AMC 8** and reinforce concepts taught in their classes.

- **Specimen Sets of Prior Years AMC 8** (and AJHSME's)

Each specimen set (at \$1 each) consists of a question booklet and a solutions pamphlet. For a wider distribution of prior year exams and solutions, bulk orders of specimen sets may be purchased at a reduced rate.

- **Summary of Results and Awards**

The Summary (at \$5 each) contains a listing of Participating Schools, Student Awards, Student Honor Roll, statistical results and more (See Publications Order Form later in this brochure).

## XIV. AMC 10, AMC 12, AIME & USAMO -

A 2002 AMC 10/AMC12 Invitation Brochure will be included with your results if you have students with a high score. The date of the AMC 10/AMC 12 is Tuesday, February 12, 2002. The AMC 10 and AMC 12 are the High School level contests sponsored by the MAA American Mathematics Competitions. Students who are in the top 5% of all participants or score at least 100 points on the AMC 12 and those who are in the top 1% of the AMC 10 participants are invited to participate in the American Invitational Mathematics

Examination (AIME), scheduled for TUESDAY, March 26, 2002. The top-scoring U.S.A. AMC 10 and AMC 12/AIME students (according to a weighted average) will be invited to take the prestigious U.S.A. Mathematical Olympiad (USAMO) in early May, 2002. More details about these competitions are provided in the AMC 10 and AMC 12 Teachers' Manuals which you would receive after registering your school for the AMC 10/AMC 12.

The Akamai Foundation is generously providing funds for the expansion of several MAA AMC activities. These include scholarships, new in 2001, and other programs. This information follows.

### **Scholarships -**

#### **What:**

This school year(2001-2002)as last school year, The Akamai Foundation is providing \$1,000 scholarships to the top scoring male and female on the American Invitational Mathematics Examination (AIME) in each state. They are also providing additional funds for an award ceremony. The top scorers will receive their awards and a certificate at a special ceremony in each state or district, arranged by the AMC State Director for that area. More details will be announced as they become available.

The scholarships will be payable to the top scorer's chosen institution of higher education upon verification of enrollment. Ties for top score on the AIME 2002 will be broken by using the score from the AMC 12.

#### **Who:**

The top male and female scorers on the AIME 2002 from:

- ✱ Each of the 50 United States;
- ✱ The District of Columbia;
- ✱ Combined U.S. Possessions and Territories; and
- ✱ Combined U.S. Citizens and permanent residents living abroad and taking the AIME 2002 outside of the United States and its possessions and territories.

#### **When:**

After final scores for all participants on the AIME 2002 have been tabulated and verified, the scholarship winners will be notified by mail. Winners of the scholarships will be announced publicly in May 2002, and honored at a special ceremony in their state or district targeted for **late May 2002**. More details will be announced as they become available.

### **Expanded Activities Scheduled for 2002 -**

During the 2001-2002 academic year two project expansions will begin, funded by the Akamai Foundation. There will be more information available as the details are finalized.

- ✱ Participants in the United States of America Mathematical Olympiad (USAMO) will be flown in May to a central location (probably the Massachusetts Institute of Technology, Cambridge, MA) for the administration of the Olympiad. Through its charitable gift, The Akamai Foundation will serve as host to the students, proctors, and exam graders for this three day event. Students will also be treated to area tours, special guest speakers, and related social and mathematical activities.
- ✱ In June, there will be an enhanced Mathematical Olympiad Summer Program (MOSP) program, expanding the number of students to over 100 with special emphasis on including younger, female and minority participants.

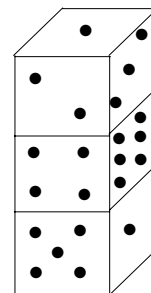
## 2000 AMC 8 Sample Questions

5. Each principal of Lincoln High School serves exactly one 3-year term. What is the maximum number of principals this school could have during an 8-year period?

(A) 2      (B) 3      (C) 4      (D) 5      (E) 6

8. Three dice with faces numbered 1 through 6 are stacked as shown. Seven of the eighteen faces are visible, leaving eleven faces hidden (back, bottom, between). The total number of dots NOT visible in this view is

(A) 21      (B) 22      (C) 31      (D) 41      (E) 53

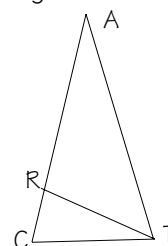


10. Ara and Shea were once the same height. Since then Shea has grown 20% while Ara has grown half as many inches as Shea. Shea is now 60 inches tall. How tall, in inches is Ara now?

(A) 48      (B) 51      (C) 52      (D) 54      (E) 55

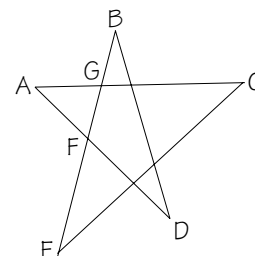
13. In triangle  $CAT$ , we have  $\angle ACT = \angle ATC$  and  $\angle CAT = 36^\circ$ . If  $\overline{TR}$  bisects  $\angle ATC$ , then  $\angle CRT =$

(A)  $36^\circ$       (B)  $54^\circ$       (C)  $72^\circ$       (D)  $90^\circ$       (E)  $108^\circ$



24. If  $\angle A = 20^\circ$  and  $\angle AFG = \angle AGF$ , then  $\angle B + \angle D =$

(A)  $48^\circ$       (B)  $60^\circ$       (C)  $72^\circ$       (D)  $80^\circ$       (E)  $90^\circ$



Answers: 5. (C) 8. (D) 10. (E) 13. (C) 24. (D)

### SPONSORING ORGANIZATIONS

Mathematical Association of America  
The Akamai Foundation  
University of Nebraska--Lincoln

*Contributors*

- Society of Actuaries • Mu Alpha Theta  
National Council of Teachers of Mathematics  
Casualty Actuarial Society • American Statistical Association  
American Mathematical Association of Two-Year Colleges  
American Mathematical Society  
American Society of Pension Actuaries  
Consortium for Mathematics and its Applications  
Pi Mu Epsilon • National Association of Mathematicians  
School Science and Mathematics Association  
Clay Mathematics Institute • Kappa Mu Epsilon • INFORM

# REGISTRATION FORM

## 2001 AMC 8 - Individual School Registration

1-800-527-3690 or FAX 402-472-6087

**Date of Exam:** Tuesday, November 13, 2001

PLEASE NOTE: Except for this brochure, all materials are copyrighted. DUPLICATING IS NOT PERMITTED.

### Registration Record – (please print clearly)

School Zip Code: \_\_\_\_\_ BILLING ADDRESS (if different from school): \_\_\_\_\_  
 Contest Manager: \_\_\_\_\_  
 School Name: \_\_\_\_\_  
 School Street Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_  
 City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_ Phone #: \_\_\_\_\_ (\_\_\_\_\_) \_\_\_\_\_  
 School Phone #: \_\_\_\_\_ (\_\_\_\_\_) \_\_\_\_\_  
 E-mail (for sending results) Please Print Clearly \_\_\_\_\_

**Circle:** School Type: Public Home Private Grades: K 1 2 3 4 5 6 7 8

**Registration Fee –** (use rate chart below) .....\$ \_\_\_\_\_

1. Early Registration (Jan. 1 - Oct. 10) .....	\$25
2. Registration (Oct. 11 - Nov. 1) .....	\$35
3. <b>*Late Registration</b> (Nov. 2 - Nov 5 expedite please) .....	\$45 .... ( fax please)

### 2001 Contest Order:



Contest Bundles of 10 exams and answer forms ..... # \_\_\_\_\_ @ \$ 10/bundle = ....\$ \_\_\_\_\_  
 Solutions Sets of 10 pamphlets (optional) ..... # \_\_\_\_\_ @ \$ 6/set = .....\$ \_\_\_\_\_

**Shipping –** (First Class/UPS Shipping and Handling:) **REQUIRED..** (choose 1 below) ..... \$ \_\_\_\_\_

- < United States and Military Schools: .....\$ 5.00 flat fee
- < Canadian Schools: (Shipping by DHL) .....\$ 15.00 flat fee
- < Foreign Schools:.....# \_\_\_\_\_ @ \$ 5.00 per bundle (with a \$60 maximum)

OPTIONAL: (International Schools Only): The AMC office will send results by Express Mail for a \$25 fee .....\$ \_\_\_\_\_

**Payment Options –** Please do not submit order without payment method  
 Check P.O. # \_\_\_\_\_ Visa Master Card American Express

Unpaid Purchase Orders requiring an invoice from our office – add an additional \$5 charge, non-refundable ..\$ \_\_\_\_\_

**GRAND TOTAL** (minimum \$40, includes early registration fee and shipping) .....\$ \_\_\_\_\_

### TERMS – Payment in U.S. Funds only. Make checks payable to: AMERICAN MATH COMPETITIONS

Visa, MasterCard, and American Express accepted. Cardholder's home address required:

Card # \_\_\_\_\_ Exp. Date: \_\_\_\_\_ Address: \_\_\_\_\_

Cardholder Name (please print): \_\_\_\_\_

\*\*\*\*\*

Mail along with your payment or Purchase Order to:

**MAA American Mathematics Competitions**  
 ATTN: AMC 8 Registration  
 P.O. Box 81606  
 Lincoln, NE 68501-1606