

# REPORT DOCUMENTATION PAGE

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6. AUTHOR(S) Dr. Marcia P. Sward, Project Director (Executive Director, MAA)
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7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) The Mathematical Association of America (MAA) 1529 Eighteenth Street, N.W. Washington, DC 20036	8. PERFORMING ORGANIZATION REPORT NUMBER  1991 MOTS
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13. ABSTRACT (Maximum 200 words)  Technical Objective: The objective is to prepare a team of U.S. high school students to compete in the International Mathematical Olympiad held July 17-18 in Sigtuna, Sweden. Those selected will be introduced to a wide range of mathematical problems and theory at the Mathematical Olympiad Training Session, June 11 - July 10, 1991, at the U.S. Military Academy.	
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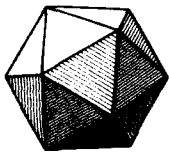
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# The MATHEMATICAL ASSOCIATION of AMERICA

1529 Eighteenth Street, N.W.    ■    Washington, D.C. 20036    ■    Telephone (202) 387-5200

March 20, 1992

Department of the Navy  
Office of Naval Research  
Resident Representative  
National Academy of Sciences  
2135 Wisconsin Avenue, N.W., Rm 102  
Washington, DC 20007

**YOUR REF: ONR GRANT N00014-91-J-1382**

To:                Ms. Adrienne Louden

From:             Maureen Callanan

At the request of Dr. Marcia Sward, I am enclosing a copy of the performance report for ONR Grant N00014-91-J-1382. This report concerns activities of the 1991 MOTS (Mathematical Olympiad Training Session) held at the U.S. Military Academy from June 11 to July 10, 1991.

CC with encs.:     DTIC (Original)  
                       Dan Fasko/Ms. Louden  
                       Neil Gerr (3 copies)

                           Rhoda D. Goldstein (MAA)

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ONR Grant Number N00014-91-J-1382

Report on the  
1991 Mathematical Olympiad Training Session

The 1991 Mathematical Olympiad Training Session (MOTS) was held at the U.S. Military Academy June 11 - July 10, 1991. Twenty-four students attended the MOTS, along with three instructors and two student assistants.

The MOTS instructors were:

Professor Cecil Rousseau, Director  
Professor Gail D. L. Ratcliff, Associate Director  
Professor Dan Ullman, Associate Director

The Student assistants were:

Mr. Royce Peng  
Mr. Sam Vandervelde

A list of the student participants is attached to this report.

The curriculum of the MOTS included instruction in areas of mathematics that are traditionally emphasized in IMO competitions but are often not treated adequately in the U.S. high school curriculum. The students also received instruction in techniques of problem solving and extensive drill in solving problems from past *IMO* examinations.

At the MOTS, a team of six students was selected to represent the United States at the 32nd International Mathematical Olympiad, held on July 17-18 in Sigtuna, Sweden. The U.S. team placed fifth in competition with teams from 55 countries. Every member of the U.S. team won an individual medal.

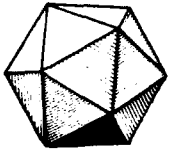
A news release about the U.S. team is attached to this report.

Marcia P. Sward  
Project Director

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# The MATHEMATICAL ASSOCIATION of AMERICA

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FOR IMMEDIATE RELEASE  
Mailed: July 23, 1991

Contact:  
Kathleen Holmay  
301-588-6168

## USA TEAM PLACES FIFTH IN INTERNATIONAL MATHEMATICAL OLYMPIAD

(Washington, DC) . . . . A team of six American high school students placed fifth in the 32nd International Mathematical Olympiad (IMO), held from July 17-18 in Sigtuna, Sweden. Every member of the American team won an individual medal. The team scored 212 points out of a possible 252.

IMO judges awarded an individual gold medal to Joel Rosenberg, silver medals to Kiran Kedlaya, Robert Kleinberg, Lenhard Ng, and Michail Sunitsky, and a bronze medal to Ruvim Breydo, all U.S. team members.

The fifty-five Olympiad teams competed by working on solutions to six challenging mathematical problems in two, 4 1/2-hour sessions. The cutoff scores for gold, silver, and bronze medals were as follows: 34-42 for gold, 23-33 for silver, and 16-22 for bronze.

U.S. IMO team coach Cecil Rousseau, Memphis State University, said, "I was very proud of our team's performance. We have a young team this year with only two seniors and we knew that we would face strong teams from China, the new Germany, and such experienced

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competitors as the Soviet Union, Romania and Hungary."

The US team was chosen on the basis of performance in the Twentieth Annual United States of America Mathematical Olympiad (USAMO), held this year on April 23, and on an evaluation of their work at a rigorous 4-week training session, held from June 11 to July 11 at the U.S. Military Academy at West Point, NY.

The winners of the 1991 USAMO were honored on June 10 at the National Academy of Sciences and the US Department of State in Washington, DC.

The Mathematical Olympiad activities are sponsored by eight national associations in the mathematical sciences with arrangements made by the Mathematical Association of America. Financial support was provided by IBM, the Army Research Office, the Office of Naval Research, Hewlett-Packard, and the Matilda R. Wilson Fund.

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IMO team members:

Ruvim Y. Breydo, Stuyvesant High School, New York City  
Kiran S. Kedlaya, Georgetown Day High School, Washington DC  
Robert D. Kleinberg, Iroquois High School, Elma, NY  
Lenhard L. Ng, Chapel Hill Senior High School, Chapel Hill, NC  
Joel E. Rosenberg, Hall High School, West Hartford, CT  
Michail G. Sunitsky, Stuyvesant High School, New York City

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A sample problem from the 32nd International Mathematical Olympiad:  
Let  $S = \{1, 2, 3, \dots, 280\}$ . Find the smallest integer  $n$  such that each  $n$  - element subset of  $S$  contains five numbers which are pairwise relatively prime.

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Sponsors of the USA Mathematical Olympiad and the US International Mathematical Olympiad team are:

American Mathematical Association of Two-Year Colleges  
American Mathematical Society  
American Statistical Association  
Casualty Actuarial Society  
Mathematical Association of America  
Mu Alpha Theta  
National Council of Teachers of Mathematics  
Society of Actuaries

Top ten countries and scores in the 32nd IMO:

USSR	241
China	231
Romania	225
Germany	222
USA	212
Hungary	209
Bulgaria	192
Iran	191
Vietnam	191
India	187

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AMERICAN MATHEMATICS COMPETITIONS

1991 MATHEMATICAL OLYMPIAD PROGRAM

U.S. MILITARY ACADEMY  
WEST POINT, NEW YORK

JUNE 11 - JULY 10, 1991

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