THE WILLIAM LOWELL PUTNAM MATHEMATICAL COMPETITION

ANNOUNCEMENT OF WINNERS
of the fifty-seventh competition held on December 7, 1996

WINNING TEAMS

Rank	School	Team Members (in alphabetical order)
1	DUKE UNIVERSITY	Andrew O. Dittmer, Robert R. Schneck, Noam M. Shazeer
2	PRINCETON UNIVERSITY	Michael J. Goldberg, Craig R. Helfgott, Jacob A. Rasmussen
3	HARVARD UNIVERSITY	Chung-chieh Shan, Stephen S. Wang, Hong Zhou
4	WASHINGTON UNIVERSITY, ST. LOUIS	Mathew B. Crawford, Daniel K. Schepler, Jade P. Vinson
5	CALIFORNIA INSTITUTE OF TECHNOLOGY	Christopher C. Chang, Hui Jin, Hanhui Yuan

The first place team receives an award of $7,500 and each member of the team receives $500. The awards for second place are $5,000 and $400; for third place $3,000 and $300; for fourth place $2,000 and $200; and for fifth place $1000 and $100.

In each of the following categories, the listing is in alphabetical order.

THE PUTNAM FELLOWS—THE SIX HIGHEST RANKING INDIVIDUALS

Each receives an award of $1000.

JEREMY L. BEM	Cornell University
IOANA DUMITRIU	New York University
ROBERT D. KLEINBERG	Cornell University
DRAGOS N. OPREA	Harvard University
DANIEL K. SCHEPLER	Washington University, St. Louis
STEPHEN S. WANG	Harvard University

THE NEXT FOUR HIGHEST RANKING INDIVIDUALS

Each receives an award of $500.

FEDERICO ARDILA	Massachusetts Institute of Technology
MICHAEL R. KORN	Princeton University
OVIDIU SAVIN	University of Pittsburgh
NOAM M. SHAZEER	Duke University

THE NEXT FIVE HIGHEST RANKING INDIVIDUALS

Each receives an award of $250.

ANDREW O. DITTMER	Duke University
MICHAEL J. GOLDBERG	Princeton University
SAMUEL GRUSHEVSKY	Harvard University
CRAIG R. HELFGOTT	Princeton University
ADAM W. MEYERSON	Massachusetts Institute of Technology

THE NEXT TEN HIGHEST RANKING INDIVIDUALS

PRAMOD N. ACHAR	Massachusetts Institute of Technology
CONSTANTIN S. CHISCANU	Massachusetts Institute of Technology
MIKE L. DEVELIN	Harvard University
ANDREI C. GNEPP	Harvard University
HUI JIN	California Institute of Technology
CARL D. JOHNSON	Georgia Institute of Technology
AMIT KHETAN	Massachusetts Institute of Technology
ALEXANDRU A. POPA	Princeton University
ROBERT RICHARD SCHNECK	Duke University
CHUNG-CHIEH SHAN	Harvard University

HONORABLE MENTION—TEAMS

UNIVERSITY OF CHICAGO — Nathan D. Broaddhus, Benjamin M. Cowan, Christopher D. Jeris
MASSACHUSETTS INSTITUTE OF TECHNOLOGY — Federico Ardila, Eric Kuo, Adam W. Meyerson
NEW YORK UNIVERSITY — Aleksandr Bukharovici, Ioana Dumitriu, Yevgeniy V. Kovchegov
QUEEN'S UNIVERSITY — Joanna L. Karczmarek, Michael A. Levi, Allan J. Roberts
UNIVERSITY OF WATERLOO — Jason P. Bell, Kevin Purbhoo, Soroosh Yazdani

HONORABLE MENTION—INDIVIDUALS

DAN E. ANGELESCU, California Institute of Technology
JASON P. BELL, University of Waterloo
NATHAN D. BROADDUS, University of Chicago
CHRISTOPHER C. CHANG, California Institute of Technology
DONNY C. CHEUNG, University of Waterloo
PATRICK K. CORN, Harvard University
JACOB ELIOSOFF, McGill University
GALEN B. HUNTINGTON, Reed College
CHRISTOPHER D. JERIS, University of Chicago
DANIEL B. JOHNSTON, Washington University, St. Louis
JOANNA L. KARCZMAREK, Queen's University
TRAVIS J. KOPP, Stanford University
FRANÇOIS LABELLE, McGill University
ONDŘEJ LHOTÁK, University of Waterloo

TAMAS NEMETH, Macalester College
JACOB A. RASMUSSEN, Princeton University
ROBERT RIBCIUC, Harvard University
ALEX SALTMAN, Harvard University
YULIY V. SANNIKOV, Princeton University
NAOKI SATO, University of Toronto
MARK J. TILFORD, California Institute of Technology
JIRI J. L. VANICEK, Harvard University
JADE P. VINSON, Washington University, St. Louis
MICHAEL J. WESTOVER, California Institute of Technology
ERIC G. YEH, Harvard University
JUN ZHANG, University of Utah
HONG ZHOU, Harvard University
ALEKSEY ZINGER, Massachusetts Institute of Technology

ELIZABETH LOWELL PUTNAM PRIZE

Winner receives an award of $500.

IOANA DUMITRIU — New York University

QUESTIONS COMMITTEE

Mark I. Krusemeyer, Carleton College (Chair); Richard K. Guy, University of Calgary; and Michael J. Larsen, University of Pennsylvania

A total of 2,407 students from 408 colleges and universities in Canada and the United States participated in the Competition. There were teams from 294 institutions. More complete details will appear in the *American Mathematical Monthly*.

March 1, 1997 — Leonard F. Klosinski, Director; Gerald L. Alexanderson and Loren C. Larson, Associate Directors

THE WILLIAM LOWELL PUTNAM MATHEMATICAL COMPETITION

March 4, 1997

Dear Colleague:

Enclosed is a report on your contestants in the 57th Competition and your team rank (if it was in the range 1—150), a list of the top 500 contestants (which you may wish to share with your committee on graduate students), an announcement of winners, and a list of participating schools. Some tables are given below. Your contributions to the Competition are greatly appreciated.

Leonard F. Klosinski, Director
Gerald L. Alexanderson, Associate Director
Loren C. Larson, Associate Director

Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank
98	1	60	17.5	45	42.5	32	115.5	24	214	12	608
89	2	59	19.5	44	47.5	31	127	23	224	11	681
80	3.5	58	21.5	43	51.5	30	138.5	22	244	10	799.5
76	5.5	56	23	42	55	29	154.5	21	276	9	948.5
73	7	55	24	41	59.5	28	170.5	20	321	8	1086.5
70	8	52	25	40	67.5	27	185	19	383	6	1145
68	9.5	51	26	39	77	26	197.5	18	447	5	1147.5
66	11	50	29	38	89	25.9	202	17	500.5	4	1157
65	12	49	32.5	37	97.5	25.8	203	16	532.5	3	1184.5
64	13	48	34	36	100.5	25.7	204	15	543.5	2	1288.5
62	14.5	47	35.5	35	104	25.6	205.5	14	552	1	1473.5
61	16	46	38	33	107.5	25	208	13	571	0	1991

FREQUENCY DISTRIBUTION OF PROBLEM SCORES OF THE TOP 206 CONTESTANTS

	A-1	A-2	A-3	A-4	A-5	A-6	B-1	B-2	B-3	B-4	B-5	B-6	TOTAL
10	87	6	63	3	4	4	113	85	20	40	34	0	459
9	26	11	18	7	4	4	72	13	19	4	4	1	183
8	47	27	6	7	2	11	17	6	8	7	7	9	154
7	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0
2	6	65	0	7	0	18	3	15	14	17	3	2	150
1	9	23	0	19	13	13	1	7	36	4	2	0	127
0	31	46	47	67	40	46	0	28	56	48	58	23	490
blank	0	28	72	96	143	110	0	52	53	86	98	171	909