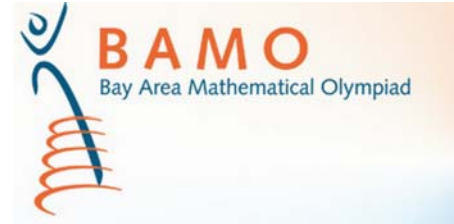


Math to wake you up

Prove that among any 12 consecutive positive integers there is at least one which is smaller than the sum of its proper divisors.

(The proper divisors of a positive integer n are all positive integers other than 1 and n which divide n . For example, the proper divisors of 14 are 2 and 7.)



- From BAMO 1999
- Adapted from Moscow Math Olympiad, 1972

A Partial History of Math Circles

Brandy Wieggers, Central Washington University
Diana White, University of Colorado Denver

Math Circles

Form of education outreach and enrichment through which mathematicians and mathematical scientists share their passion with K-12 teachers and students

Significant content with a setting that encourages a sense of discovery and excitement about mathematics through problem solving and interactive exploration.



Pre-cursors - U.S.

1974- MOP Math Camp

1991- Mecklenburg Mathematics Club
(Harold Reiter)

1993- USA/ Canada Math Camp

Origins - U.S.

Spread from Eastern Europe in 1990s.

First formal Math Circles in US

Bob and Ellen Kaplan with T. Guillermo (1994)

-The Math Circle



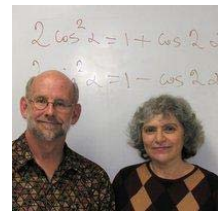
Zvezdelina Stankova (1998)

-Berkeley Math Circle



Tatiana Shubin (1998)

-San Jose Math Circle



Origins - Eastern Europe

Bulgaria - 1910s, Russia - 1930s

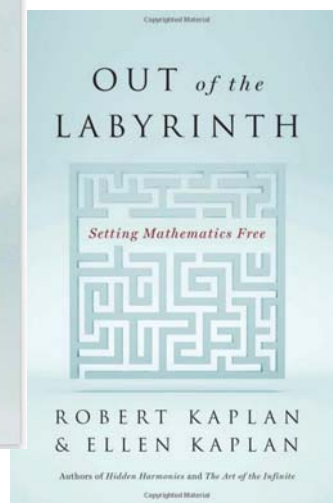
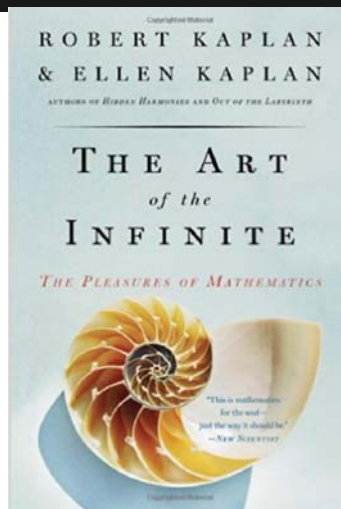
Aspects of Mathematical Culture

- Math through problems
- Vertical integration - researchers and young students
- Deep sense of community (sports analogy)

Bob and Ellen Kaplan with Thomas Guillermo- 1994



The Math
torus knot
 $T(7,2)$
Circle



Zvezdelina Stankova

- Started the Berkeley Math Circle
- Former Math Circle participant in Bulgaria - started in 5th grade
- As freshman at Sofia University, won competition to come to U.S. to study
- Degrees from Bryn Mawr College, Harvard
- Post-doc at Berkeley from 1997-1999



Math Circle Creating Confluence - 1997

Hugo Rossi



David Eisenbud



Zvezdelina Stankova

Paul Zeitz



Tatiana Shubin



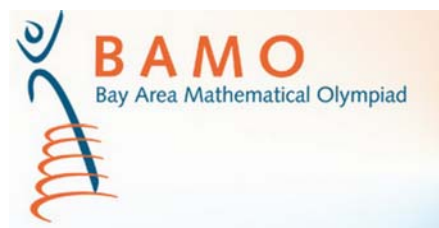
Tom Davis



BAMO - 1997

Prove that among any 12 consecutive positive integers there is at least one which is smaller than the sum of its proper divisors.

(The proper divisors of a positive integer n are all positive integers other than 1 and n which divide n . For example, the proper divisors of 14 are 2 and 7.)

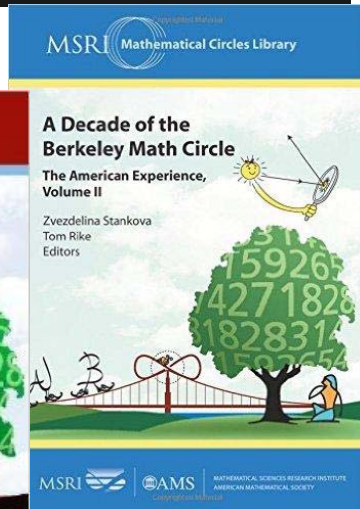
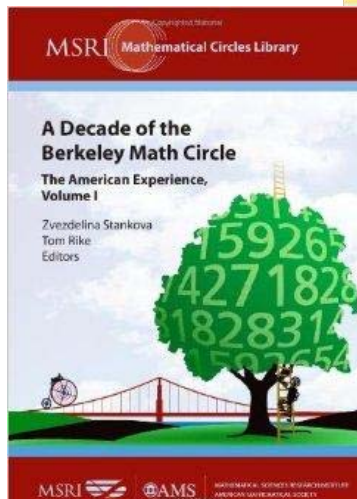


- From BAMO 1999
- Adapted from Moscow Math Olympiad, 1972

Berkeley Math Circle - 1998



BERKELEY
MATH CIRCLE



Math Circles and Olympiads Conference at MSRI 2004

Mira Bernstein, Tom Davis, Mary Fay-Zenk, Zuming Feng, Dmitri Fomin, John Howe, Ellen Kaplan, Robert Kaplan, Harvey Keynes, Tom Leighton, Bob Megginson, Steve Olson, Tom Rike, Richard Rusczyk, Alexander Soifer, James Tanton, Abigail Thompson, Ravi Vakil, Josh Zucker.



Photo: <http://www.amitetoday.com/columns/momentum-once-you-get-ball-rollingroll-ball>

Results of the Conference

- SF Math Circle
- Russia Trip
- Circle in a Box
- What would eventually become NAMC / SIGMAA-MCST
- Math Teachers' Circles
- ??? Much Much More

SF Math Circle- 2005

Paul Zeitz
Matthias Beck
Kentaro Iwasaki



Math Circle Observation Trip to Russia- 2007

Key Goal: Learn about Eastern European Secondary School Math Culture

- Moscow High School 57
- Math Circles in Moscow
- Math Circles in St. Petersburg

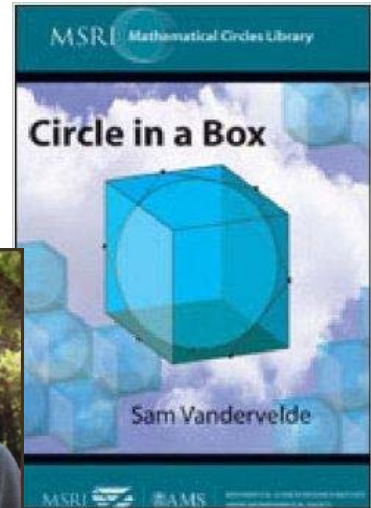
Armando Arciniega
Matthias Beck
Shea Burns
Jamyllie Carter
David Eisenbud
Dagan Karp
Joseph Meynsse
Kathy O'Hara
Mark Saul
David Savitt
Amanda Serenevy

Tatiana Shubin
Jim Sotiros
Zvezda Stankova
Monica Stephen
Dan Ullman
Sam Vandervelde
Phil Wagreich
Paul Zeitz
Joshua Zucker

Circle in a Box

Sam Vandervelde - published 2009

1. Molding a Math Circle
2. Supporting a Math Circle
3. Sustaining a Math Circle
4. Leading a Math Circle
5. Presentations
6. Sample Documents



Circle Snapshots



Name: San Diego Math Circle
Location: University of California, San Diego
Director: Richard Rusczyk
Email: rusczyk@artofproblemsolving.com
Meeting time: Saturdays 8:30–11:30am
Web site: math.ucsd.edu/resources/sd_math_circle/



Like many math circles, the San Diego Math Circle began in a somewhat unpredictable fashion. By the spring of 2003 Richard Rusczyk was already making a substantial impact on the high school mathematics culture through his online community at <http://www.artofproblemsolving.com>. As a result he was asked to discuss math contests and problem solving at a meeting of parents in the San Diego area. Among those attending was Professor Don MacLeod from the University of California, San Diego, who became eager to see Richard work with kids in the area. Thus the San Diego Math Circle began as a group of a dozen youngsters gathering weekly in the UCSD psychology department to work on interesting mathematics. The math department got wind of the event the following year and invited the group to relocate to their building, where they have been ever since.

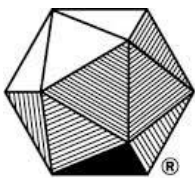
Great Circles at MSRI April 2009

Q: What is a USA Math Circle?

“There are over forty active math circles in the United States today in locations as diverse as San Diego, CA; Mobile, AL; Flint, MI; Salt Lake City, UT; St. Louis, MO; and Albany, NY.”

- Proceedings 2009 Great Circles

SIGMAA-MCST / NAMC 2008 - 2009 Professionalizing Math Circles



MATHEMATICAL ASSOCIATION OF AMERICA

<http://sigmaa.maa.org/mcst/>

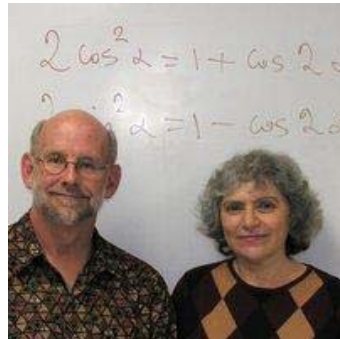
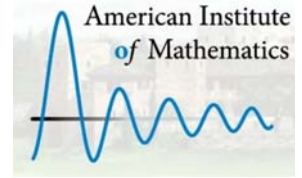
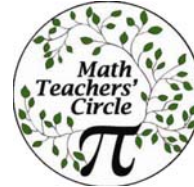
MAA



mathcircles.org

Responding to Community Need - Math Teachers' Circles -2006

Mary Fay-Zenk,
San Jose Math Circle



Natural Math - Online Math Circles

NEW

NEW

Books & Goods

MAKE

[Calculus for Kids May 17, 2015 \[Sundays\]](#)

This is the story of the fifth and final meeting of the Sunday Natural Math Circle doing activities inspired

CROWDFUND OUR NEW BOOK

MATH ADVENTURES BY EMAIL

Activities, courses, books, reviews for the Natural Math community.

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NEWSLETTER



Maria
Droujkova

Math Circles

Form of education outreach and enrichment through which mathematicians and mathematical scientists share their passion with K-12 teachers and students

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Origins - Eastern Europe

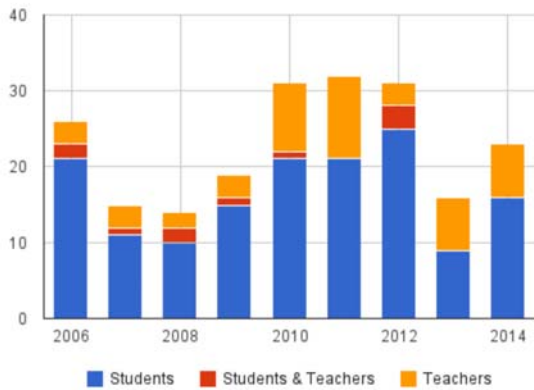
Bulgaria - 1910s, Russia - 1930s

Aspects of Mathematical Culture

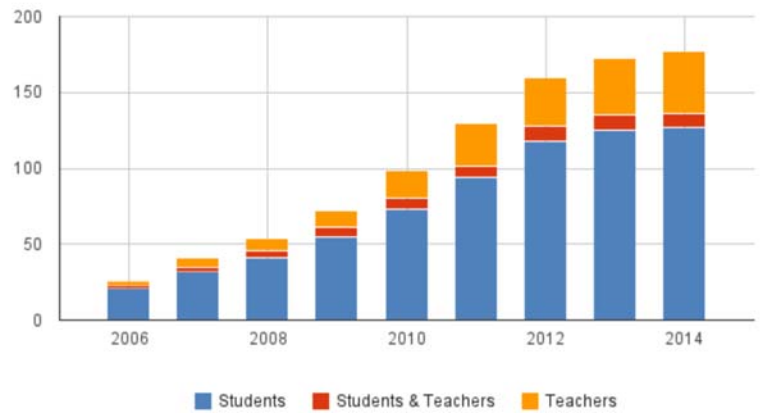
- Math through problems
- Vertical integration - researchers and young students
- Deep sense of community (sports analogy)

Growth of Circles

Number of Circles Founded Each year



Growth in Number of Active Math Circles Over Time



NAMC Map of Circles



Thank you

Dr. Diana White

University of Colorado
Denver
diana.white@ucdenver.edu

Dr. Brandy Wieggers

Central Washington
University
brandy@msri.org

Next Generation... Growing going forward

Come to the
SIGMAA-MCST session

Today
9:30- 9:45am.
Washington 6

