

POINTS AND ANGLES

Newsletter of the Metropolitan
Mathematics Club of Chicago



Volume XL

March 2006

No. 7

If Archimedes Had a TI-84 ... Seeing Old Problems through New Eyes

BY RICH RUKIN

In ancient Greece, Archimedes calculated the value of π . His method involved inscribing polygons in ... Suppose that Archimedes had a calculator. What would he have been able to do? How would he have been able to proceed? L'Hopital's Rule in Calculus would have been approached differently if he had a calculator. Our March speaker, John Jensen, will try to look at the history of mathematics and see how technology would have changed things.

John Jensen is currently the Faculty Chair in Mathematics at Rio Salado College in Tempe, Arizona. Prior to this, he taught high school mathematics for 30 years in the Paradise Valley School District in Phoenix, Arizona. For 25 years, he taught Advanced Placement Calculus. John has been an AP Calculus reader and table leader for 13 years and has conducted over 150 workshops and institutes in the United States and abroad. He received the Presidential Award for Excellence in Teaching Mathematics in 1987 and the first Siemens Advanced Placement Award in 1998. He was given the Distinguished Service Award (1998), the Exemplar Award (2001) by the College Board; and the Tandy Technology (Radio Shack) Award in 1997. John is also a former fellow of the Woodrow Wilson Mathematics Institute at Princeton University and holds a National Board Adolescence and Young Adulthood Certificate in Mathematics

We would like to thank TI for sponsoring our March meeting. They will be providing two TI-84 calculators as door prizes. Also, they will be sponsoring hops d'oeuvres before dinner.

SPECIAL DINNER NOTE FOR MARCH: At our March meeting, the "default" entree will be meat. For those who prefer, there will be a **fish option** (salmon) available for a surcharge of three dollars. To get the fish, you must make arrangements in advance. If you reserve by e-mail, please indicate that you want the fish option. You will get a return confirmation. If you reserve by phone, be sure to say you want the fish and leave a phone number so that you can get a phone confirmation. You must ask for the fish with your advance reservation.

REMEMBER!! You can earn CPDU credits for attending dinner meetings!

Date: Friday, March 10, 2006
Time: 5:30 p.m. Doors Open
6:00 p.m. Social Hour
7:00 p.m. Dinner and Talk
Place: Fountain Blue Banquets &
Convention Center
2300 Mannheim Rd.
Des Plaines, IL
(847) 298-3636
Cost: Members \$31
Nonmembers \$37

RESERVATION DEADLINE
Monday, March 6th, by noon, please!

To RESERVE:
Call Evanston Math Department at
(847) 424-7600 or
email: reservations@mmcchicago.org
Requests for special meals must be made
in advance.



From Southbound I-294 &
Eastbound I-290:
Exit at I-190 West to O'Hare; Exit onto North
Mannheim Rd.; Take Mannheim Rd. North
2.25 miles.
From Northbound I-294:
Exit at West Touhy Ave.; Take Touhy Ave. to
Mannheim Rd.; Turn right on Mannheim Rd.
Public Transit:
Take the CTA Blue Line to the Rosemont
Bus Terminal; Take Pace Bus #223; Exit at
Touhy Ave. & Lee Rd.; Walk East on Touhy
to Mannheim Rd.

Future Meeting:
May 5

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Points from the Interior

BY JOHN DIEHL

Greetings! I'm wishing that this newsletter finds each one of you well, personally and professionally. I hope you were able to attend our February meeting. Thanks to Kristen for her sharing. It is always gratifying to see the talents of our own members. See details of the talk elsewhere in this newsletter. Don't forget to attend our March 10 meeting. John Jensen poses the intriguing question: What if Archimedes had a TI-84? Once again, more details are available in another article.

As I have written these articles for our newsletters, I believe I have focused on two main themes: changes in mathematics education and promoting mathematics. I have mentioned favorite books and activities including Numb3rs and Sudoku.

This week another enjoyable activity came along, as I stumbled on reruns of "Deal or no Deal", or as we now call it in my classroom "Diehl or no Diehl". It is a fun game show, that can be used to explore basic probability and expected value. To play the game in class, go to http://www.nbc.com/Deal_or_No_Deal/

Basically, the game is played with 26 suitcases, each containing money, from \$.01 to \$1,000,000. The contestant chooses one suitcase and owns the (unknown) amount of money inside. The contestant then chooses 6 more suitcases to reveal the amounts. At this point the "banker" offers to buy back the suitcase for a certain amount. The contestant can take the money, or continue by opening more cases and receiving different offers.

We played several rounds in my AP statistics classes, recording the amounts revealed, the amounts remaining hidden, and the offers. We computed expected values, medians, and the probability of winning an amount exceeding the offer. We are working on methods to predict what the banker's offer will be, as well as strategy for a contestant. Of course, my students take big risks, but it is not the real thing. I am trying to persuade them to make decisions as if it were the real thing.

It's a great simulation, and another example of my hopes to promote interest in mathematics while doing real mathematics. Hope to see you at the next meeting!

POINTS AND ANGLES

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The official club website: <http://www.mmccchicago.org/>

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Using Dynamic Technology to Investigate Real World Questions

Kristen Clegg, Dynamic Math Institute

presented to MMC on 2/10/2006

BY HARLAN GOLDBERG

Kristen began her presentation by giving credit to MMC colleagues who have been influential in her teaching career. A dynamic teacher in her own right, she has taken that talent and now influences teachers around the country. The sizable crowd would be fortunate to see, in action, her philosophy of “investigation means involvement”.

She proceeded to ask the group a societal question: “Why is math important?” A few of the interesting responses were: “It is the steroid of the mind.” “Math is intrinsically beautiful.” “Empowering.” “It has allowed each of us to be gainfully employed!” [Except for the student teachers attending—but their resumes were on the back table!] And finally, “We live in a quantitative world.”

This “*quantitative*” answer is a really good one - **math can help us to understand the world around us by making sense of data.**

It was from this point that Kristen really took off! Having previously left sheets of paper entitled “Questions about YOU!” at the dinner tables, she asked attendees to type into a computer, before dinner, answers to 5 questions. She then proceeded to use the software program, Fathom, to display really neat histograms from data representing coffee consumed, pulse rates, gender, exercise, and bed-times. Data about us is always the most intriguing, and they lead to more involvement in trying to find various relationships between them. We were hooked! Viewing the relationship between two sets of data (such as coffee consumed and pulse rates) lead to an investigation involving scatterplots, the least-squares regression line, and the influence of horizontal and vertical outliers on the LSRL. The use of personal data, as well as data from numerous websites, allows the instantaneous organization and representation of data in meaningful ways—investigation leads to involvement.

Geometry from a data perspective is yet another aspect of the use of dynamic technology. A problem is posed: Where can a person stand in order to photograph, with a fixed-angle lens, the exact width of a building? One might originally shutter (sigh) at such a question, but the group focused well enough to make a few snappy conjectures. By having various participants use a camera and stand in different locations, the problem came to life. Kristen then replaced people with representations using the Geometer Sketchpad—the building became the chord of a circle determined by the locus of points of people, with the fixed lens angle the inscribed angle intercepting that chord. What happens if the angle changes? What if the size of the building changes? There were no negatives to where this discussion ultimately lead—dynamic technology allows students to focus and discover various relationships we aim to teach in mathematics.

Kristen came full-circle and connected the data from Sketchpad back to Fathom, leading to the “discovery” of a LSRL with slope of 2, the relationship between the intercepted arc and inscribed angle data. One can also use the many “applets” on websites to spur similar investigations in the classroom. The goal—to get our students to say, “I want to know what happens if . . .”

Kristen’s enthusiasm in her presentation was infectious. Regarding her initial remarks about how others have influenced her—the feeling is mutual! Thanks for a dynamic evening.

Now, about the slide of that baby surrounded by all those bottles . . . !

Board of Directors Election Information

By the time this issue of Points and Angles reaches you, you may have already received your ballot in the mail – a blue postcard like the one pictured below. To cast your vote, either bring the card with you to the March 10 dinner meeting (and see John Jensen's talk), or mail it back (please be sure to put a 24stamp on it and get it postmarked by March 25). Results will be announced in May.

**METROPOLITAN MATHEMATICS CLUB OF CHICAGO
2006 BOARD OF DIRECTORS ELECTION BALLOT**

Bring this ballot to the March 10 meeting or mail it in.
Mailed ballots must be postmarked by March 25, 2006. Don't forget the stamp!

President Elect
 Conrad Wayne

Board Members: (vote for three)
 J.B. Hanson Lake Zurich HS
 Robin Levine-Wissing Glenbrook North HS
 Bob Ruzich Fenton HS
 Ron Vavrinek IMSA (retired)
 Jenny Wexler New Trier HS

Candidate for President

Conrad Wayne

Conrad Wayne is supervisor of mathematics student teachers at Chicago State University. He is an active member of NCTM, ICTM and MMC and has recently served five years on the MMC board and retired in May 2005 after 36 years in the Rich Township School District.

Candidates for the Board

JB Hanson

Lake Zurich High School

J.B. Hanson is a teacher at Lake Zurich High School. He is a member of ICTM, NCTM as well as MMC. He feels that the MMC community has taught him a great deal, and he hopes to continue to extend its wisdom to others.

Robin Levine-Wissing

Glenbrook North High School

Robin E. Levine-Wissing is Instructional Supervisor of Mathematics at Glenbrook North High School. Her professional affiliations include NCTM, ICTM, MMC, CPAM, and T³. Over the course of her 28 years in teaching, Robin has taught in 7 different states and came to Illinois because of the strong mathematics teaching community.

Bob Ruzich

Fenton High School

Bob Ruzich teaches at Fenton High School. He is an active member in MMC, ICTM, NCTM, and Teachers Teaching with Technology. He has been teaching mathematics for 25 years and has had the opportunity to present at national (NCTM and T3) and local (ICTM, MMC) mathematics conferences and has been a Teacher Teaching with Technology instructor for 10 years. He also enjoys spending an evening with his colleagues at MMC while sipping on a fine single malt scotch.

Ron Vavrinek

IMSA (retired)

Ronald Vavrinek retired from teaching at IMSA in 2003. He is a member of NCTM, ICTM, as well as MMC. Ron has taught for over 30 years and is a recipient of the ICTM Life Member Award. Ron has served as the MMC treasurer for the last 3 years.

Jenny Wexler

New Trier High School

Jenny Wexler teaches at New Trier High School. Her professional affiliations and memberships include MMC, ICTM, and NCTM. Jenny has been teaching for 14 years and has been an active member of MMC for 15 years. She has been editor of Points and Angles for several years prior to living in Paris from 2000 to 2002 and was elected to the MMC Board in 2003. Jenny would be honored to continue to serve this organization as a board member.



Once again, MMC is sponsoring a \$1000 scholarship to a graduating high school senior who intends to become a mathematics teacher. Students must be sponsored by a current member of MMC. The application should be sent along with an official school transcript, a letter of recommendation from the sponsoring teacher, and an essay explaining why he or she wants to become a mathematics teacher. The application and guidelines are posted on the web site at www.mmcchicago.org. The winning student and his or her parents will be invited to the May 2006 dinner meeting to receive the award.

All materials are due by March 17, 2006 and should be sent to:
 Phil Gartner
 Glenbrook South High School
 4000 W. Lake Ave
 Glenview, IL 60026

MMC Membership and Change of Address Form

Mail to: MMC
 415 S. Ridgeland Ave. #2
 Oak Park, IL 60302

Make check payable to MMC.

Please use a different form for each person.

Name _____

Address _____

Phone _____

School _____

Address _____

Phone _____

E-Mail _____

Check preferred mailing address above.

Change of Address

Membership: New Renewal

Choose one:

1 year (\$20) _____

2 year (\$35) _____

3 year (\$50) _____

1st year teacher _____

retired (\$10) _____

student _____

Donations:

Scholarship Fund _____

Speaker Fund _____

Total amount of check: _____

NOTICES & REMINDERS

WE NEED YOU! VOLUNTEER!!

Volunteer to help at the NCTM Regional Meeting
in Chicago September 20-22, 2006

It takes great people like you to make the conference
a success!

Contact either Gwen Zimmermann
(gzimmerm@hinsdale86.org) or
Laura DiMarco (ldimarco@hinsdale86.org)
for more information. (or phone 630.570.8421)

NCTM ANNUAL MEETING

April 26 -29

St. Louis, Missouri

The Bylaw Votes Are In!

The MMC Bylaw changes were approved.

Illinois Mathematics Association of Community
Colleges (IMACC) conference

March 30th- April 1st

Information and registration form available at:
www.imacc.org

Conference open to anyone who teaches math

If you would like a notice or reminder to appear in POINTS AND ANGLES, please email the text you would like to appear to kristenclegg@comcast.net
no later than the date of the MMC meeting preceding the issue in which you would like it to appear. All notices are subject to editing.

Your membership renewal date appears in the upper right corner of the label.

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