

# Points & Angles

Newsletter of the Metropolitan Mathematics Club of Chicago  
Volume XLIII No. 8, May 2009

## Using the Newest (Yet-to-be-Released!) Version of Geometer's Sketchpad to Improve Learning

Nicholas Jackiw  
KCP Technologies

By PAUL CHRISTMAS

Nick Jackiw is the Chief Technology Officer of KCP Technologies and is the software designer responsible for The Geometer's Sketchpad. As one of the founding members of the Visual Geometry Project at Swarthmore College in 1987, he was responsible for the design and development of all of the VGP interactive software and formulated the dynamic approach that defines the Sketchpad experience.

Among the many changes that will find their way into the next major version of The Geometer's Sketchpad are a variety of capabilities relating to pictures and sound. Fancy graphics and sounds are commonplace in "edutainment" software, but they also have a rich historical tradition in geometry. For pictures, no field of mathematics has placed as much historical and intellectual emphasis on the visual image as geometry. For sound, the classical Greek conception of the vibrating string as a model of fraction and ratio remains accessible even to today's classroom. (The Pythagoreans treated music as a foundational mathematical science, and their quivering string was, perhaps, the first "dynamic geometry!")

In his talk, Nick will introduce these capabilities and discuss how they could evolve, in use, from "software features" to conceptual homes for diverse and powerful mathematical ideas. This technology is still an active work in progress, so in addition to describing its imagined purposes and applications, Nick hopes to share some insight into the process, rationales, and serendipities behind Sketchpad's mathematical software design.

Thanks to Texas Instruments for providing meals for the scholarship winners and to Key Curriculum for sponsoring Nick's travel.



**From I-90 & Southbound I-294:** Exit at I-190 West to O'Hare; Exit onto North Mannheim Rd.; Take Mannheim Rd. North 2.25 miles.

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**Public Transit:** Take the CTA Blue Line to the Rosemont Bus Terminal; Take Pace Bus #223 to Touhy Ave. & Lee Rd.; Walk East on Touhy to Mannheim Rd.

### Friday, May 8, 2009

5:30 PM Doors Open, 6:00 PM Social Hour,  
7:00 PM Dinner and Talk

### Fountain Blue Banquets & Convention Center

2300 Mannheim Rd., Des Plaines  
(847) 298-3636

\$31 for Members, \$37 for Nonmembers

### Reserve by Noon, Monday, May 4

reservations@mmcchicago.org or (847)  
486-4690, day or night, leave a voicemail.

# Points from the Interior

By PHIL GARTNER

As we approach that 100<sup>th</sup> Anniversary of MMC's founding in 1913, it is with appropriate curiosity that we ask, "What is our history?" and "What stories would this organization tell if it could?"

The abbreviation M-M-C originally stood for the Men's Mathematics Club of Chicago. Before the ladies get indignant about discrimination, this "men only" club had a female equivalent that met regularly, as well. It was called the Women's Mathematics Club of Chicago. It was noted in the archives of documents saved over the past ninety-six years that the female members objected to the clouds of cigar smoke generated by the men at their meetings. And I understand the men were none too smitten with the smell of the ladies' cigarette smoke.

NCTM's 100th Anniversary isn't until 2020, seven years after MMC's, yet we are their affiliate...

Obviously smoking was a burning issue back then... I don't mean to make light of such an unimportant fact, but dwelling on odd, insignificant facts is a bad habit of mine.

Treasurers' records indicate that \$21.45 was spent on cigars for seven meetings one particular year. There was a joint meeting at the end of the year with both sexes, which became customary after several years. For that meeting the expenditure of \$1.90 on cigarettes was recorded. The fiscal year ended with a deficit of \$6.45 in the Cigar Fund despite a very generous donation by a Northwestern University Professor in the amount of \$15.

Eventually the notion of having two math clubs in Chicago, one for men and one for women, would go up in smoke. The Women's Math Club wanted to merge with the Men's Math Club. The men declined

## Points & Angles, Volume XLIII

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Correspondence may be directed to the editor:

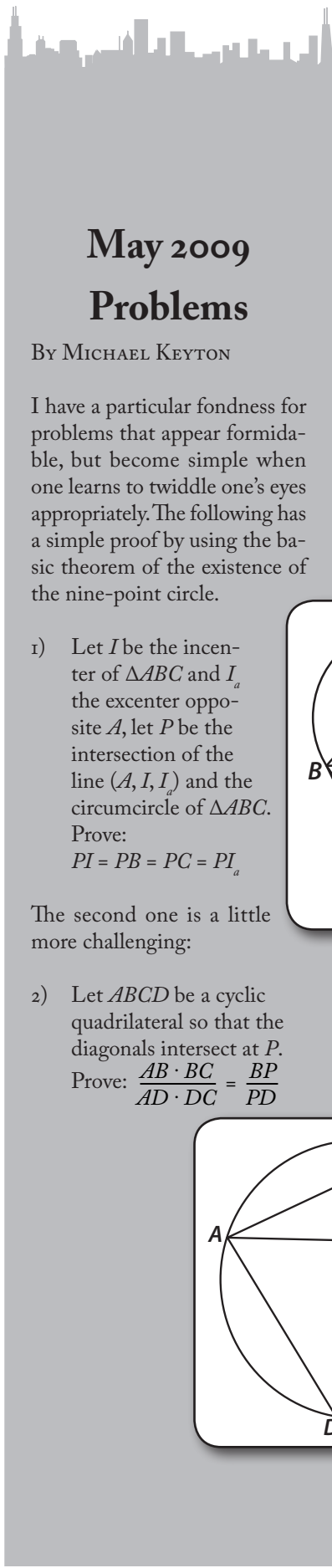
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Points & Angles, published nine times per school year, is the official publication of the Metropolitan Mathematics Club of Chicago. Founded in 1913, the Metropolitan Mathematics Club is the National Council of Teachers of Mathematics' first affiliate. The official club website: <http://mmchicago.org/>

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at first but by 1972 the two clubs merged and the name changed to what we use today.

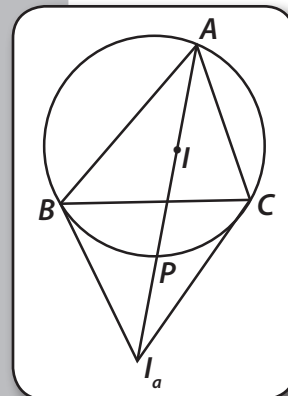
I would like to thank George Pryjma, MMC Historian and Board Member, for going into the vault and finding many interesting facts about MMC. He has unearthed much more than the silly things mentioned in this column. Look for much more of his findings to come in future *Points and Angles* under a separate heading. George makes a fantastic historian because he has personally witnessed much of this history over the past decades. There are great stories out there. Indeed, MMC has a rich history, a history that we will be honoring more than we have been as our Centennial Anniversary approaches. By the way, NCTM's 100<sup>th</sup> Anniversary isn't until 2020 (seven years after ours!). Yet somehow we are their affiliate...

## May 2009 Problems

BY MICHAEL KEYTON

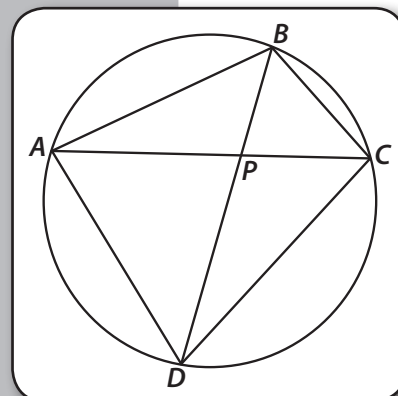
I have a particular fondness for problems that appear formidable, but become simple when one learns to twiddle one's eyes appropriately. The following has a simple proof by using the basic theorem of the existence of the nine-point circle.

- 1) Let  $I$  be the incenter of  $\triangle ABC$  and  $I_a$  the excenter opposite  $A$ , let  $P$  be the intersection of the line  $(A, I, I_a)$  and the circumcircle of  $\triangle ABC$ .  
Prove:  
 $PI = PB = PC = PI_a$



The second one is a little more challenging:

- 2) Let  $ABCD$  be a cyclic quadrilateral so that the diagonals intersect at  $P$ .  
Prove:  $\frac{AB \cdot BC}{AD \cdot DC} = \frac{BP}{PD}$





## Sixth U.S.A. Conference on CAS

**June 26–27, 2010**

More information available  
soon at [MEECAS.ORG](http://MEECAS.ORG)

# A Math Cursed Life?

BY BOB RUZICH

Whether it was the hint of spring in the air, all the student teachers plying their resumes, or just the opportunity to catch up with colleagues after the long winter, a large crowd of over 120 came out on this eve of  $\pi$  Day to spend the evening with Claran Einfeldt and A Math Cursed Life.

She began her talk with the public relations problem we have in the mathematics community. From parents who still believe there is a math gene and wear their ignorance of mathematics as a badge of honor, to the State Senator (who is involved with setting the state standards) that boasted of his success in life without having much success in mathematics, to the receptionist who shuddered when she saw that Claran worked at a company that had math in its name, people are intimidated by mathematics. If that wasn't enough to make the point, she added one last tale of a police officer that let her off a speeding ticket when he found out that she had just spent the day in-servicing a group of math teachers.

Claran then described how students have changed over the years. She told the crowd that she had been in teaching long enough to remember when students came into school knowing their basic facts. Now we are faced with ADD, high absenteeism, the mobility of families and the phenomenon of motivating the group known as the *Millennials* whose focus is on them and away from the strong work ethic. The bottom line was the need to vary our instructional strategies. There is no way to please (or appease) all of the students all the time.

We next explored how the curriculum has changed and the context of many things we used to do is no longer there. As an example, Claran told of a grade schoolteacher trying to do a unit with round clocks only to find out that 60% of her students had only digital clocks at home. We were left with many questions due to the changes in technology. What

constitutes a must know “basic fact” in a world where people can Google anything on their iPhone in a matter of seconds? We are faced with the need to infuse more reading and less naked math in order to prepare our students for the standardized testing that is here to stay.

She shared an example of an ACT test where the first question had 72 words as compared to an Algebra 2 final that didn’t have 72 words on the entire test. Kids need to be able to read several sentences and then make a decision on what to do. We looked at a question that stated “Seven students brought enough pencils to class to share equally amongst themselves. What could be the number of pencils they brought?” When a student was asked why they answered 27 instead of the correct choice 56, they responded “there can’t be 56 kids in a class.” Our students have to be used to this type of assessment. Whether we agree with it or not it is the reality that we must come to

terms with. Our students need practice on when to use technology the skill to judge the appropriateness of the answer.

Claran then described the need to be consistent in the vocabulary we use across the courses we teach. She embellished this with examples of how corner points in one class became vertices the next. “Dolly Parton” fractions one year became improper fractions the next. We need to bring more data into the class and ask the question “What story do the numbers tell us?”

Claran then closed the evening with two of her favorite quotes. What would you dream for if you knew you couldn’t fail? Whether you think you can or not—you’re probably right! And she left us with the question: Where do we go from here?

A grade schoolteacher tried to do a unit with round clocks only to find out that 60% of her students had only digital clocks at home.

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# Upcoming Events

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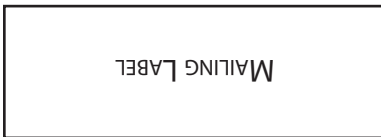
Fri., May 8

Nick Jackiw

Using the Newest (Yet-to-be-Released!) Version of Geometer's Sketchpad to Improve Learning

Send upcoming event items to [ilg@chicagomath.org](mailto:ilg@chicagomath.org) no later than the date of the MMC dinner meeting preceding the issue in which the item should appear. All items are subject to editing.

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



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