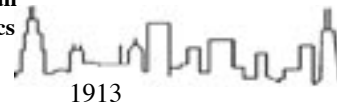


POINTS AND ANGLES

Newsletter of the Metropolitan
Mathematics Club of Chicago

NCTM
Chapter
1
Metropolitan
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Chicago



Volume XXXVII

December 2002

No. 4

The TI-89 Algebra System

Ray Klein and Paul Kertay, Glenbard West High School

BY SIMONETTE URBAIN

The advent of the Computer Algebra System (CAS) has led to much discussion and some significant change in the field of secondary mathematics education. When it was limited to computers, the CAS was of limited use and limited availability for most mathematics educators. Today the CAS makes the graphing calculator a very powerful tool. Now the discussion is centered around how to use this machine to teach mathematics without replacing the teaching of mathematics. Ray Klein and Paul Kertay have been doing exactly that in their Algebra classrooms.

Ray Klein has been teaching mathematics in the Chicago area for the past 31 years, the last 28 at Glenbard West High School in Glen Ellyn. A native of downstate Illinois, he has an undergraduate degree in Mathematics from the University of Notre Dame and an MAT in Mathematics from the University of Chicago. Ray is a national T³ instructor, the recipient of the 1998 Presidential Award for Excellence in Mathematics and Science Teaching at the secondary level for the state of Illinois, and has received the National Radio Shack Teacher Award in 2001.

Paul Kertay began his career teaching junior high before making the change to high school at Driscoll High School in 1982 and then Glenbard West in 1988. Paul has also been an adjunct faculty member at both Harper College and at DePaul University, where he majored in German and Philosophy as an undergraduate and earned a Master of Arts in Mathematics Education. Paul is no stranger to the mathematics community having presented at several ICTM and T³ conferences. He was also selected to be a mentor teacher for an Elmhurst College NSF Project to strengthen technology use in the classroom.

Come join us as Ray Klein and Paul Kertay show us how the CAS portion of the TI-89 is being used to enhance the teaching of mathematics at Glenbard West High School.

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

Date: Friday, December 13, 2002

Time: 5:30 p.m. Doors Open

6:00 p.m. Social Hour

7:00 p.m. Dinner and Talk

Place: Fountain Blue Banquets &

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Future Meetings: January 17, February 7, March 14 (π day), May 9

Making Sense of Mathematics

Randall Charles, San Jose State University

BY HARLAN GOLDBERG

The pre-dessert conversation at our table was strange. It went something like this:

“Who’s talking tonight?”

“Randy Charles. Can you please pass the sugar?”

“Who?”

“Randy Charles. He’s a major league player in the problem-solving field. Cream, please.”

“What’s his topic?”

“I don’t know! Is there any decaf left?”

“He’s big into Abbott and Costello.”

“Why?”

While I was trying to make sense out of this conversation, Randy began to speak, and immediately answered the previous question: Abbott and Costello can help drive home the point of how important it is to “keep the compass focused on sense making...”

“Because?”

He continued, “...if math can make sense to our students (and teachers!), then everything else, i.e., understanding, will fall in place.”

What followed was a presentation that could help

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contribute to the elimination of the “I don’t give a darn” attitude that some people have towards math.

Randy’s message about how to make sense of math comes with three basic recommendations:

- **Emphasize representation and connections.**

Certainly Bud Abbott and Lou Costello have different ideas of what borrowing, loaning and owing means (from the “Buck Privates” video). The connections were short-circuited—maybe Lou should have drawn a picture to help him see why he was out \$40!

Randy elaborated that if a picture or diagram is what makes sense to students, then why not present concepts in that fashion if it will facilitate understanding. He followed with an example involving the formation of an equation that expresses the relation between feet and yards, a concept confusing to students and some teachers alike. A simple diagram (representation) allowing for the formulation of a pattern can ultimately lead to an algebraic connection. Algebra does not have to be, as one student claimed, “the intense study of the last three letters of the alphabet!”

- **Start with what makes sense to kids.**

In another video, it certainly was obvious that Lou’s concept of dividing 28 by 7 didn’t match Bud’s idea of

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If you’ve lost your program booklet or registration form, you can find both on the MMC website at:

[HTTP://WWW.MMCCHICAGO.ORG/](http://www.mmcchicago.org/)

Naturally, CPDUs are available!

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division, even though Lou was not only able to show why $28 \div 7 = 13$, but also check it by showing $13 \times 7 = 28$. Maybe, if Bud had just drawn a picture... What makes sense can help develop the idea, and the understanding of the concept will follow.

- **Each day, articulate the skills and understanding you want the kids to have.**

Bud poses a situation: Lou is 40 years old and in love with a 10 year old girl—he’s four times her age. In 5 years he’d be only three times her age and in 20 years he’d be only twice her age! Lou is worried—“If I wait much longer she’ll pass me up!” Clearly, there’s an “age-old” skill missing here.

Whether a primary student needs to divide with fractions or an algebra student needs to interpret slope, if a diagram

helps make sense and paves the way to understanding, then use it! The math must be taught for understanding, so it is not enough to just teach the skills.

We cannot teach math for understanding unless we understand the math we are teaching!

Randy’s hope for us today is that we catch on to his message and that we can start pitching it in our classrooms tomorrow.

Overhead at the table:

“So, what’s Randy’s message?”

“That all kids can make sense of mathematics, naturally.”

“Naturally?”

“Naturally!”

“ALL kids can make sense of mathematics.”

“Now, you’re making sense!”



MMC would like to thank Prentice Hall for their sponsorship of the November speaker, Randy Charles

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Points from the Interior

BY PAT BOWLER-JOHNSON

As the holiday season approaches, each of us is thinking about the giving of a gift—whether it be the giving of a material object or the volunteering of time. As we all know, this time of the year is busy for all of us. Many of us are assessing our accomplishments in the classroom and looking ahead to what we still need to complete to meet our goals for the end of the calendar year. Quite often, one views these goals in terms of curriculum—we are also deciding upon the goals that need to be accomplished before the school year ends.

During this busy time of the year, we should ask ourselves, “How does one continue to effectively complete these goals?” One answer is collaboration. Effective collaboration can assist us in accomplishing our goals. Collaboration may mean sharing activity sheets and lesson plans or it may mean the mutual exchange of ideas. Whatever the form, when we

participate in a collaborative effort, we are building a working relationship—a network. We are sharing ideas, methods, materials, and tasks as we complete our goals together. We are giving assistance to each other, something we all need during these busy holiday times.

MMC has built a strong working network of individuals with many talents all holding a common bond—an interest in enriching the field of mathematics. As the end of the calendar year approaches we can look back on the friendships that we have found through MMC, the guidance we have been given by its members and speakers, and the desire to enrich the field of mathematics that the organization has instilled within all of us.

As the holiday season approaches, let me say happy holidays to all of you and I look forward to seeing you in the new year!

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