

POINTS AND ANGLES

Newsletter of the Metropolitan
Mathematics Club of Chicago

NCTM
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Metropolitan
Mathematics
Club of
Chicago



Volume XXXVII

November 2002

No. 3

Making Sense of Mathematics

Randall Charles, San Jose State University

BY SIMONETTE URBAIN

Randy Charles uses humor to deliver an important message. He suggests that we take the Standards one step further—that we practice “teaching for understanding.” Randy will present research-based instructional practices that promote “sense-making.” He will then dazzle us with classic Abbott & Costello video clips. These clips will be used to introduce principles for focusing mathematical instruction on “sense making.” Randy suggests that we create a classroom environment where explanation and justification are valued and then, like our own John Benson, look for that teachable moment.

Randy Charles has teaching experience at all levels—as a secondary mathematics teacher, a K-12 supervisor, and a professor emeritus at San Jose State University. He has been a member of several NCTM committees and is a former vice-president of the National Council of Supervisors of Mathematics. Randy has authored more than one hundred books, is an author with Prentice Hall and Scott Foresman Publishing Company, and is currently serving as the editor of the new NCTM two-book series on teaching mathematics through problem solving.

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

Date: Friday, November 22, 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 &
Convention Center
2300 Mannheim Rd.
Des Plaines, IL
(847) 298-3636
Cost: Members \$29
Nonmembers \$35

RESERVATION DEADLINE
Friday, Nov. 15, by noon, please!
TO RESERVE:
Call 847-295-1068 or
email bowlerjp1234@msn.com
(Pat Bowler-Johnson)
Day or night, leave a message on machine.



**From Southbound I-294 &
Eastbound I-290:**

Exit at I-190 East 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.

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Future Meetings: December 13, January 17,
February 7, March 14 (π day), May 9

Mathematical Modeling in the Movies

Evan Glazer, University of Georgia

BY CONRAD WAYNE

October 25 brought a large crowd to the Fountain Blue to welcome back MMC alumnus and former Glenbrook South Mathematics teacher Evan Glazer. Evan is in the process of finishing his doctorate at the University of Georgia in Instructional Technology. His very entertaining and visual presentation combined mathematics, technology, and watching movies (a personal hobby) with his desire to hook students on mathematics in an active way. He let the audience know up front that he was putting aside his personal preference for the Star Wars series (they only played a small part in his talk) and that his focus would not be movies about mathematics (A Beautiful Mind, Good Will Hunting, etc.). Instead, he showed MMC members how to use mathematics to analyze various aspects of movies.

Why movies? Evan gave three reasons: They can be used to teach lessons about culture, they reach students' interests, and they serve as an anchor for learning. He also forewarned us that multiple solutions are often possible and that usually some estimating is necessary.

Evan posed seven different problems from five different

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Bill Roloff Scholarship	Lake Park High School, Roselle	2002-2005
Conrad Wayne Scholarship	Rich South High School, Richton Park	2002-2003
George Pryjma Historian	Niles North High School (<i>Retired</i>), Skokie	2002-2003

movies, as well as a movie data web site. He began with the Academy Award®-winning animated short For the Birds (from Pixar, appears with Monsters, Inc.), which focuses on a flock of birds sitting on a wire between two utility poles. A large bird lands on the wire with enough force to use the wire as a slingshot. How far into the air were the birds launched and what kept them in the air so long?

Evan then suggested using a CBL to analyze Darth Vader's breathing patterns in any of the Star Wars films. Using estimation, ratio, and proportion, he approximated the height of Mr. Stay Puft in Ghostbusters. He posed the Jurassic Park-related question, approximately how far did the T-Rex travel by the time it caught up to the jeep in the famous chase scene? He worked out an estimate, using Sketchpad® over movie stills, of the number of seats in the Senate chamber in Star Wars Episode I: The Phantom Menace. Using exponential models from data supplied in the movie, he estimated the time of the Chief of Staff meeting in Outbreak, when the virus had spread from 3 cases to 250 million cases. Finally, he led us through an exploration of the top 100 movies of all time (box office receipts), examining which realized the most profit (with and without taking into account inflation)?

He gave the audience a few minutes to think about each question and then randomly called on a table for the correct answer (which was rewarded with a movie-related prize). He then showed a method for solving the problem. MMC thanks Evan for a very informative and entertaining talk. Once again, it has been shown that we need to look no further than MMC members and alumni for some of the top mathematics teachers in the United States!

Evan's full presentation is available at <http://www.arches.uga.edu/~eglazer/mmc.html>; the movie data site he suggested is <http://www.the-movie-times.com/>; you can contact Evan at evanglazer@yahoo.com.

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Volume XXXVII, Number 3, November 2002

Points and Angles 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.

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Correction

In the October, 2002 issue (Vol. XXXVII No. 2), the URL for the web site for the Dynamical Systems and Technology Project at Boston University, referenced in the summary of Robert Devaney's talk, should have read as follows: <http://math.bu.edu/DYSYS/>

Do you use e-mail?

Would you like an e-mail reminder about each MMC meeting, as well as other MMC events? If so, send an email to wiltjerm@eths.k12.il.us and ask to be added to *the list*.

Mark the Date!

Saturday, February 1st

in your assignment notebook!

MMC Conference of Workshops at Argo Community High School

*in Summit just 2 miles from Midway

**No substitute needed

Points from the Interior

CONTINUED FROM PAGE 8

school teachers are currently approaching the college recommendations deadlines, and during these last few weeks teachers have spent hours composing and editing letters of recommendation for students applying to college. Why? Many times just to hear the words *thank you*, the two words that tell us that we have helped our students pursue their educational dreams, can mean so much. It is the little things that we do as educators that can bring new meaning to what our students will do everyday of their lives. Although the students may not verbalize it, they are saying *thank you* in their own way.

As we enter November, a month of giving thanks, let each and every one of us be reminded of the little words that can bring us happiness. *Thank you* for showing concern for your profession and for all those directly or indirectly involved in the field of education. It is because of your interest in and dedication to the field of mathematics that your students can explore new avenues of mathematics education. For this and much more I say *thank you*.

MMC Scholarship

The Metropolitan Mathematics Club of Chicago is offering \$1,000 in scholarships for high school students who plan a career in the teaching of mathematics. The selected students, their parents and their sponsoring teachers will also be invited to the May MMC meeting at which time the scholarship recipients will be honored.

The guidelines used for selection shall be:

- I. A. Demonstration of overall academic scholarship with an inclusion of at least eight semesters of college preparatory mathematics. (A minimum cumulative grade point average of 3.0, with A = 4.)
- B. A statement of the intention to pursue a career in mathematics teaching.
- C. Indication of participation in extra curricular activities, especially those that may have a positive influence on a teaching career.
- II. Applicants must have a letter of recommendation from a member of the Metropolitan Mathematics Club who is familiar with the applicants academic performance and his or her potential as a mathematics teacher.
- III. Applicants must submit a maximum of 400 word essay explaining why they would like to be a mathematics teacher.

The scholarship award or awards will be determined by a selection committee of MMC members appointed by the Executive Board. To be eligible, an applicant must submit the application, have an official transcript sent, and request a letter of recommendation from a member of the MMC such that all of the materials are received by the deadline on the application, March 17, 2003.

The committee will establish its own guidelines for evaluating applications, and will make a recommendation to the Executive Board as to the awarding of the scholarship. No member of the selection committee may nominate nor recommend a candidate.

The scholarship application form appears on page 6.

MMC Contest No. 18: Interlocking Bounded Figures

CARDIOID
ENNEAGON
LIMACON
PENTAGON
ROSE

CIRCLE
HEXAGON
OCTAGON
QUADRILATERAL
SQUARE

DECAGON
KITE
OVAL
RECTANGLE
TRAPEZOID

ELLIPSE
LEMNISCATE
PARALLELOGRAM
RHOMBUS
TRIANGLE

DIRECTIONS:

- The names of 20 bounded geometric figures are listed above. Consider each letter in each name to be on a unit square. Arrange all 20 names in a single interlocking scheme Scrabble® style. For instance, the three words SCALENE, EQUILATERAL, and EQUIANGULAR could be arranged in the two ways shown here (and in other ways as well).

S	S
C	C
EQUILATERAL	EQUILATERAL
Q	L
U	E
I	N
A	E
N	
G	
U	
L	OBTUSE
A	SINE
R	SET

Your **score** is the area of the smallest rectangle with horizontal and vertical sides that holds all the names. For instance, the arrangement at the left above can be surrounded by a rectangle with dimensions 11 x 13 for a score of 143. The arrangement at the right above can be surrounded by a 11 x 7 rectangle for a score of 77 (the best possible for these three words).

Words can be placed parallel to each other to form other words as long as those other words are legal Scrabble® words, that is, in the Official Scrabble Players Dictionary, 3rd edition. For instance, the arrangement of SINE, OBTUSE, and SET shown above is legal, because IS, ONE, and BET are legal Scrabble® words.

- Fill in the information on the entry form. Place your arrangement on graph paper or on a grid of squares, with one square for each letter. Draw or paste the arrangement on the entry form or on a separate sheet of paper. On any separate sheet, include your name and school.
- The person who fits all 20 names into a rectangle with smallest area wins. Prizes are as follows: 1st place, \$50; 2nd place, \$30; 3rd place, \$20. In case of ties, prizes will be shared. If there are more than 10 winning entries tied, then prizes will be distributed at random from the winning entries.
- Any person (student, teacher, or other individual) or class may enter. Address questions about the contest to z-usiskin@uchicago.edu or call 773-702-1560.
- Mail entries to Zalman Usiskin, University of Chicago, 5835 S. Kimbark Avenue, Chicago, IL 60637, or fax entries to 773 702-3114. Entries must be received by 5 PM, Wednesday, January 8, 2003.

Winners will be announced in the February 2003 Points and Angles.

MMC Math Contest No. 18: Interlocking Bounded Figures
Entry Form (*photocopy as needed*)

Entrant's name _____ School _____

Address _____

Phone (day) _____ Phone (night) _____

If student, year in school _____ If class, name of teacher _____

e-mail _____

Dimensions of surrounding rectangle: _____ X _____ **SCORE =** _____

Draw or paste your arrangement of the 20 words here or on an attached sheet with your name and school.

Application for the Metropolitan Mathematics Club Scholarship

Application Deadline: March 17, 2003

Name: _____ Date: _____

Address: _____

School: _____

School Address: _____

Home Phone: _____ School Phone: _____

Sponsoring Teacher (must be a member of MMC): _____

Please complete the following:

Overall Grade Point Average (A=4, B=3, C=2, D=1, F=0): _____

Mathematics Courses	Grade	Mathematics Course	Grade
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Extracurricular Activities: _____

In addition, applicants must send:

1. A letter of recommendation from the sponsoring teacher, who is a member of the Metropolitan Mathematics Club of Chicago.[†]
2. A current transcript for seven semesters of high school.[†]
3. An essay not to exceed 400 words on *Why I would like to teach mathematics.*

Please send all information to:
 Conrad Wayne
 Mathematics Department
 Rich South High School
 5000 Sauk Trail
 Richton Park, IL 60471
 Ph. 708-679-3150
 Fax 708-679-3168

[†]Letters of recommendation and transcripts may be sent by separate mail.

Please photocopy as needed.

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Now you can find POINTS AND ANGLES online! All you need is a web browser and Adobe® Acrobat®. You can find all the 2002-2003 issues in Acrobat® format in the POINTS AND ANGLES archive on the updated and improved MMC web site:

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

Proposed Mission Statement

The mission of the Metropolitan Mathematics Club of Chicago is to provide leadership and professional development for all mathematics educators and others interested in mathematics and mathematics education.

Above is a proposed draft of a mission statement for MMC. Please send any comments to:
ftribbey@d113.lake.k12.il.us.

THE 2003 CHICAGO AREA ALL-STAR MATH TEAM TRYOUTS

Thursday, February 27, 2003

4 – 10 pm at Evanston Township High School (with a break for dinner)

All interested high school students welcome.

The teams compete in the national ARML contest at the Iowa City site on May 31.

For more information about the tryouts, the team, or coaching opportunities, contact Coach Isaac Greenspan via email: greenspani@eths.k12.il.us

MMC Membership and Change of Address Form

Mail to: MMC
801 Elmwood Ave. #2
Evanston, IL 60202

Make check payable to MMC.

Please use a different form for each person.

Name _____

Address _____

Phone _____

School _____

Address _____

Phone _____

E-Mail _____

Membership: New Renewal

Choose one:

1 year (\$20) _____

2 year (\$35) _____

3 year (\$50) _____

1st year teacher } (\$10) _____
 retired
 student

Donations:

Scholarship Fund _____

Speaker Fund _____

Total amount of check: _____

Check preferred mailing address above.

Change of Address

If you have any questions, e-mail
wiltjerm@eths.k12.il.us

Points from the Interior

BY PAT BOWLER-JOHNSON

Thank you. Two little words...two little words that can change one's way of reacting to, or viewing, a situation. When the words *thank you* are spoken they can bring about many different reactions from an individual.

Consider the following situation: you are carrying two large bags of groceries, and you are confronted with the dilemma of opening a closed door. Suddenly an individual opens the door for you, and you respond with a *thank you*, expressing your gratitude. You could think of it as a way of expressing your sense of relief, because you did not have to put down the bags, open the door, and then gather the bags again. It was an act of kindness on the part of the other individual, and you were grateful for the assistance.

How do you react when a stranger says *thank you* to you? If the words are in response to an action as small as picking up a pen that you dropped, we usually smile or nod in response to acknowledge the action and then continue on with the task at hand. But once

again you are grateful for the assistance.

Meanwhile, when a colleague or friend says *thank you*, you react with a response that, as colleagues/or friends, you find acceptable. This may be a simple *thank you* for sharing a new strategy for teaching a concept or a worksheet with you, yet you are grateful for the assistance none the less.

But do you react the same way if it is a professor, an administrator, or an individual of authority who says *thank you* to you? Surely you do, but you also have a feeling—a sense of gratification. Something makes you feel good about yourself. This *thank you* appears to hold more meaning.

So how do you feel when a student says *thank you*? Whether students give thanks for the few extra moments spent assisting them in understanding a concept or advising a student on how to resolve a dilemma, we as teachers find that their words of thanks usually mean more than a simple expression of gratitude. High

SEE **POINTS FROM THE INTERIOR**, PAGE 3

METROPOLITAN MATHEMATICS CLUB OF CHICAGO
c/o MMC
801 Elmwood Avenue #2
Evanston, IL 60202

STAMP

MAILING LABEL

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