

# MSCS



# Mess

Department of Mathematics, Statistics and Computer Science  
St. Olaf College  
Northfield, MN 55057

October 2, 2006  
Volume 35, No. 3

## Double Colloquium Special

### Tailgate Party and Baseball Extravaganza

Title: Campaign '06: Debating the REALLY meaty issues like clutch hitting, batting streaks, and the value of 'last-ups' in baseball  
Speakers: Matt Richey and Paul Roback  
Time: **5:45** - Brats, beans, chips, the works  
**6:30** - Main Event - Colloquium - Title (TBA)  
**7:30** - Supreme Sundae Desserts  
Place: Science Center Foyer

**Abstract:** We will debate some of the most compelling issues of our day: Are some baseball hitters naturally 'streaky'? How do you determine that a player is 'in a slump'? How can you determine if a player is truly a 'clutch hitter'? Is being down by one run always the same? How important are a home team's 'last-ups'? Are bunting and stealing always good strategies? Ketchup or mustard on a brat?

Our candidates will especially examine how one might use insights and techniques from mathematics

and statistics to address these significant issues. The debate promises to be "hard-hitting", and the candidates' stances on the issues may surprise you. This talk assumes no deep knowledge of baseball, mathematics, or statistics. However, we do require an interest in eating brats and ice cream, and hearing about how mathematics and statistics can inform opinions on some of the crucial questions facing baseball fans today.

Email Donna Brakke your caf card number if you are planning to attend.

### Special Colloquium

Title: A Little Probability and Operations Research Can Go a Long Way!  
Speaker: Vijay Mehrotra  
Time: 4:00 pm Thursday, October 5 (treats at 3:45)  
Place: SC 182

**Abstract:** In this light-hearted and easy-to-follow presentation, Vijay will describe two challenging problems that he has encountered in the "real

world" of customer service operations. After providing some background, he will explain how these problems can be tackled using mathematical methods that Vijay learned at St. Olaf more than 20 years ago. If time permits, he will share a few war stories from his previous life as a consultant, entrepreneur, and executive. His talk will be accessible to students of all levels. A chance to meet and converse informally with Dr. Mehrotra will immediately follow his talk.

**About the presenter:** Vijay Mehrotra (St. Olaf '86) is a faculty member in the Decision Sciences Department at San Francisco State University. He holds a Ph.D. in Operations Research from Stanford University and a B.A. in Mathematics, Economics and English from St. Olaf College. Prior to joining the faculty at SFSU, Vijay was an associate at Decision Focus and co-founder and CEO of Onward Inc., a consulting firm specializing in mathematical modeling of corporate activities.

## International Research for Undergraduates in Real Analysis and Dynamical Systems

With significant support from the National Science Foundation and St. Olaf College, the Department of Mathematics, Statistics and Computer Science will sponsor three undergraduate research scholars during each of the next two summers. These undergraduates will join professional research teams at one of two host institutions, Lodz University in Poland or Selesian University in the Czech Republic. See our website for additional info: [www.stolaf.edu/depts/math](http://www.stolaf.edu/depts/math).

Grant funding allows full support for three International Interns per summer for each of the next two years. This support includes:

- ??all travel expenses to/from the host sites
- ??all living expenses while in residence in Europe
- ??a \$4200 research stipend.

The grant also pays for travel and living expenses at one or perhaps two professional conferences upon return. This is a wonderful opportunity and available **only for St. Olaf students**.

Can you miss out on this opportunity? I DON'T THINK SO!!

Application is simple:

- ??Ask 3 professors to write a letter in support of your application. (Two references must be from mathematicians.)
- ??Complete a 9 question application form on the right hand column of the math website: [www.stolaf.edu/depts/math](http://www.stolaf.edu/depts/math) or directly at <http://www.stolaf.edu/people/humke/REU2005-2007/REUintro.html>

**The Deadline for all materials is  
November 10, 2006!!**

## Jokes for Geeks

A physicist and a mathematician are sitting in a faculty lounge. Suddenly, the coffee machine catches on fire. The physicist grabs a bucket and leap towards the sink, filled the bucket with water and puts out the fire. Second day, the same two sit in the same lounge. Again, the coffee machine catches on fire. This time, the mathematician stands up, got a bucket, hands the bucket to the physicist, thus reducing the problem to a previously solved one.

## Teach for America Info Session: Do National Service and Get Paid

So what IS Teach for America (TFA)? In a nutshell, it's a national service program that seeks motivated and dedicated recent college graduates, most of whom have had no education experience whatsoever. If accepted you attend a five-week "teacher boot camp" at one of TFA's national training sites, and a few weeks later you welcome your students on the first day of school (public!) in an urban or rural low-income area. You are a full-fledged teacher with complete responsibility for your students' performance. You're not an aide. You're not a student teacher. You're it.

Clare Sanford, '01, who taught 3<sup>rd</sup> and 4<sup>th</sup> grade in Houston for 3 years, will be leading the informational sessions.

"While I had never taught, taken any courses in education, or even considered teaching as a career, I was drawn to the mission of TFA. I had been lucky enough to receive a fantastic education, yet there were countless children *in my own country* who, by virtue of the situations of their births, were denied the opportunities I'd had," Sanford said.

During the 2-year commitment required by TFA, you are employed by the school district and paid the same salary and benefits as any other new teacher. In addition to your salary, TFA awards Americorps education grants for each of your 2 years and puts your loans into forbearance for the entire 2 years you teach, and the government pays the interest!

All the benefits aside, the biggest one is facing the

challenge of teaching our nation's most deserving children, those forgotten by much of our society.

"It took every ounce of my energy, creativity, motivation, and emotional strength to make it through each day," Sanford said. "The children and families you serve face tremendous adversity, and you often fill many more roles than that of a teacher. While I had never felt such heartbreak and anger that I did so often over the course of my teaching, I also never felt the depth of love, wonder, and determination I had for my students."

TFA's next application deadline is in early November. If you're interested you may attend the info session:

\*Friday October 6, 2006 in Buntrock 222 from 12:00pm to 1:00pm\*

If you would like to meet with Sanford in small group sessions over coffee in the Cage on October 6 or 7, please email [tiffany.roufs@teachforamerica.org](mailto:tiffany.roufs@teachforamerica.org) and she will get you on the schedule.

## Solution to the Problem of the Week

**The Question:** A rectangular chocolate bar is marked with vertical and horizontal lines into  $m \times n$  squares,  $m$  wide and  $n$  long. You want to break it into individual squares. At each step, you pick up a piece of the bar and break it along one of the lines. Show that every breaking method requires the same number of breaks.

**Solution 1 (by Reid Price):** The chocolate bar starts in 1 piece, and finishes in  $mn$  pieces. Each break increases the number of pieces by 1, so all breaking methods take  $mn-1$  breaks.

**Solution 2 (by Paul Tveite):** Suppose we make our first break widthwise. We obtain two bars of size  $m \times c$  and  $m \times (n-c)$ . By induction, these require  $mc-1$  and  $m(n-c)-1$  breaks, respectively. So the total number of breaks required is  $mc-1+m(n-c)-1+1=mn-1$ . The case where our first break is lengthwise is analogous.

Congratulations to Reid Price, who solved the problem first and won a set of four colors of Play-Doh, and to Karin Gilje, Matthias Hunt, and Paul Tveite, who also submitted correct solutions.

### Problem of the Week (POW)

**A Cutting Congruence:** This problem is from an article by the great Martin Gardner. Cut each of the figures shown opposite with one (not necessarily straight-line) cut so that the resulting two pieces are congruent.

Submit all solutions before the appearance of the next problem to Josh Laison in person, by e-mail ([laison@stolaf.edu](mailto:laison@stolaf.edu)), or by singing telegram. The prize this week goes to the person who solves the most of the 12 puzzles; all correct solutions get fame and glory.

*If you would like to submit an article or math event to be published in the Math Mess, e-mail [meyerm@stolaf.edu](mailto:meyerm@stolaf.edu) or [dolank@stolaf.edu](mailto:dolank@stolaf.edu).*

Editor-in-Chief: Urmila Malvadkar

Associate Editors: Kelly Dolan  
Mikayla Meyer

MM Czar: Donna Brakke

Problems Editor: Josh Laison