
VITAL SINES

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A newsletter of the Plattsburgh State University Mathematics Department

Academic 2008 – the end is in sight!

This has been a busy semester for the mathematics department. We really enjoyed having Dr. Samangi Munasinghe and Dr. Robert Reams visiting the campus. Thanks to all the students who helped host our visitors, and who came to their presentations. Particular thanks to **Lucas Tooker, Liz Dukette, and Tricia Rabideau.**

We wish all of you success in your finals, and a safe and happy summer.

Kudos to our 2008 Award winners

Each year, at the Arts and Science awards ceremony at the end of the Spring semester, mathematics majors are honored for their achievements in mathematics. Kudos to this year's award winners!

Hudson scholarship: awarded to students majoring in any one of the sciences, based on academic excellence.
Sarah Taylor

Semmler awards: This scholarship is awarded to undergraduate students majoring in mathematics on the basis of academic excellence:
Todd Bailey, Kerry Krychear, Lucas Tooker, Allison Warner, Nicholas Warner

Kathleen T. Schaffer awards: Given to outstanding students majoring in Mathematics Education who will be student teaching in the upcoming year:

Joshua Hough, Kerry Krychear

Math Scholar awards: Awarded to students graduating either in May or December of this year who, in the opinion of the department, have achieved outstanding success in their study of mathematics:

Todd Bailey, James Firlik, Jason Gumaer, Kerry Krychear. Allison Warner. Zach Warner

Good wishes to **Megan Lickley**, of Acadia University in Nova Scotia, currently completing a semester at PSU. Megan received a prestigious Killam fellowship to do this. Megan is a math major, and is taking Core with Prof Bodenrader. Ask her about her research on the use of tidal power to generate electricity!

Kudos to... math major **Jordan Elliotthorpe** for her splendid performance as Marcy in the recent college theater association production of DogseesGod.

Math is like love; a simple idea, but it can get complicated.

HRUMC 2008

The fifteenth annual Hudson River Undergraduate Mathematics Conference was held at St. Lawrence University on Saturday, April 19. SUNY Plattsburgh was represented at this day-long event by students **Yeyao Xiao, Krystal Tremblay, Lucas Tooker, and Professor Gregory Quenell.**

Professor Quenell gave a talk entitled "Machin's Trick" during the first contributed talks session. Mathematics students and faculty from colleges throughout New York, Vermont, and Massachusetts gave contributed talks in the morning and afternoon sessions. The topics of the talks ranged widely: there were sessions on Statistics in Sports, Graph Theory, the History of Mathematics, Analysis, Game Theory, Knot Theory, Algebraic Geometry, and Mathematics Education, among other subjects.

The highlight of the day was the plenary talk by Jeff Weeks, a MacArthur fellow and the author of the popular topology book "The Shape of Space". In his talk, also titled "The Shape of Space", Dr. Weeks raised some deep questions about the size and shape of the universe, and illustrated the issues involved using computer programs that play chess, tic-tac-toe, and 4-ball (a simplified version of 8-ball) on tables shaped like tori and Klein bottles.

The sixteenth Hudson River Undergraduate Mathematics Conference (or "HRUMC", which is pronounced pretty much the way it looks) will take next place in April 2009 at Union College in Schenectady.
-Greg Quenell

The students speak:

Yeyao Xiao found Dr Week's talk very interesting. He commented "The model demonstrating the hypothesis of a boundless but limited universe was very cool." He also particularly enjoyed a talk on Number theory, specifically on Fermat's little theorem. He said "It opened a new window and let me see something that I have never seen before. From the talk I realize that there are definitely things not yet discovered in the field."

Krystal Tremblay said she particularly enjoyed presentations that showed practical applications of mathematics. One that really stood out for her was one on "Inverse problems in sono-elastography". Sono-elastography uses ultrasound to measure and image the elastic properties of body tissue, as a way of discovering tumors (tumors are stiffer than the surrounding tissue). The presentation focused on an algorithm which provides a way of measuring the "stiffness" in a person's body tissue using the shear wave speed of the tissue.

Krystal feels that more Plattsburgh students should take the opportunity to go to the conference. She said it was really nice to meet mathematics students from other schools, to talk with them about where they are in their programs, and about what they plan to do with their mathematics. She said that before the conference she had not realized that undergraduate students could explore mathematics independently, and give presentations on their work. She says the conference gave her a whole new perspective.

Arithmecards

A suggestion from Joe Bodenrader

A Holy Cross college classmate and good friend of mine, Kevin Lawler, was stricken with multiple sclerosis just over 30 years ago. Although his physical condition has deteriorated, Kevin maintains a great sense of humor and an active mind. He also has an interest in mathematical games. A few years ago, he invented the game ARITHMECARDS. It is based on phone numbers and uses basic algebraic operations with the option to choose a level of difficulty. To play Kevin's game online go to www.razzlechallenge.com and click on ARITHMECARDS. Other games available at the site include SU-DO-KU and CRYPTOGRAMS, among others. Kevin's game is fun and can be quite challenging. Be sure to log in and click on ARITHMECARDS. Kevin gets one cent each time someone does this. It's not that Kevin will ever make any real money out of this, but he is thrilled to learn that his game was selected. - Thanks, Mr.B

Fun in fourth grade

What makes some students thrive in the field of mathematics while others struggle to simply get by? As an aspiring high school math teacher, I wanted to explore this question. I visited a local elementary school where I prepared a few problem-solving activities for the fourth and fifth grades. While the lesson proved to be valuable to the students, the lesson I learned was far greater in comparison.

At the beginning of each session, I introduced a problem for the class to work on. The students were encouraged to work individually as well as in small groups. As I walked around the room, I asked each student for an explanation of their strategies. I wanted to know how their strategies compared to my own in order to form clear translations between the different problem-solving techniques. Many times, I felt a sense of urgency to explain the logic and set them "on track". But, I resisted this tendency. I discovered an interesting pattern in the students' work. Most of them simply tried mimicking the strategies they had recently gone over in class. It seemed hard for them to break free from their routine in order to take on a new, creative approach.

I can sympathize with their struggle. To this day, I find it difficult to connect the lessons of the past with current material. However, my goal is to develop lessons that encourage students to develop their own methods of problem solving. Why does one method work well while others seem more complicated or ineffective? How do they compare? How do they contrast? I look forward to returning to the classrooms as I continue my search for new ways of accomplishing this discussion. In this way, I believe the students will become more active in the learning process.

- Todd Bailey

(Todd volunteered to work with fourth and fifth graders at Ausable Forks elementary school.)

A tragedy of mathematics is a beautiful conjecture ruined by an ugly fact.

Opportunity knocks...

MAA Seaway section Fall meeting: at Sienna college, October, 17-18, 2009. Unlike HRUMC, this is conference is not specifically for undergraduates. However there is opportunity to for undergraduates to give a presentation at this meeting. Two of our students have already said they are interested in doing this this year. If you are interested in doing this, talk to one of your professors.

Professors **Morrow**, **Northshield** and **Wampler** attended the Spring Seaway section meeting, April 11-12, in Syracuse, NY. Professor **Justin Wampler** gave a presentation titled *Lights, Camera, Math! Video Quizzes for Entry-Level Mathematics*.

Students in MAT 133 (Math in Context) have been writing Fibonacci poems – (often referred to as Fibs). The rule is that the lines have number of syllables equal to the Fibonacci numbers (1,1, 2, 3, 5, 8, 13, 21 ...) Here is **Amanda Fio Rito's** Fib,

An Ode? To Math

Oh
Math
Wondrous...
Confusing...
Makes me want to smash
My head against this here math text.
However I suck up my math-y angst and open
My eyes to the amazing things it brings to nature and the
running election polls.

Advice worth repeating ☺

For some excellent advice on how to study for mathematics exams: <http://euler.slu.edu/Dept/SuccessinMath.html#studyttest>

Cat theorem: A cat has nine tails.

Proof: No cat has eight tails. A cat has one tail more than no cat. Therefore, a cat has nine tails.

Problems, problems, problems

Here are two new challenge problems. Submit solutions (in writing) to Professor Quenell. A prize will be awarded for the first complete and correct solution to each problem.

1. Find a set of consecutive positive integers that can be rearranged into a row so that each integer has a common factor (greater than 1) with each of its neighbors.
2. Here's a simple game of chance: You toss a fair coin repeatedly until it comes up heads. Then you stop. If the number of tosses you made is divisible by 3, then you win; if not, you lose. What's the probability of winning?

Closing Credits

Editor: Margaret Morrow

The math jokes in this edition come from <http://www.math.utah.edu/~cherk/mathjokes.html#topic0>

Thanks to the contributors to this issue!