

L'Augarithms



vol. 25.07 Visit us at <augsborg.edu/math/> We're prettier in color

February 1, 2012

Mathematics Colloquium Spring Lineup

Colloquia are typically held Wednesdays 3:40—4:40 in Oren 113. Immensely appealing refreshments are served.

Jan.	18	Chandra Erdman, '02, Ph.D., US Census Bureau
Feb.	→ 1	Ken Kaminsky, Augsburg College ¹
	15	TBA
	22	TBA
Mar.	7	Karen Saxe, Macalester College
Apr.	4	Thomas Sibley, St. John's University
	18	Danrun Huang, St. Cloud State University

¹This week's speaker...

Some Interesting Estimation Problems

Ken Kaminsky, Augsburg College

The First Ace Problem: From a well-shuffled deck of 52 playing cards, turn up cards one-by-one until the first ace appears. On average, when does the first ace appear?

The German Tank Problem (aka The Taxi Problem): In World War II, the Allied Powers wanted to estimate the number of tanks the Germans had. There were competing estimates: estimates from military intelligence, and estimates obtained using statistical methods. German records made it possible to determine that the statistical methods generally proved to be much more accurate.

The Plane-Armor Problem: During World War II, statistical methods were applied to the problem of bombers lost to enemy fire. The counter-intuitive method used was to apply armor where returning planes showed no damage.

Refreshments will be served.

Ken Kaminsky came to Augsburg in 1987 following academic positions at Bucknell University, SUNY Oswego, Umeå University, and others.



Ken Kaminsky in an undated photo

Problem of the week...

Wileam McHickershire sent us a lovely solution of the POTW from vol. 25.06. He got a probability of $(4\sqrt{2} - 5)/3 \approx 0.219$. Here is the new POTW:

It's your birthday and you want to have a big birthday party. You invite 100 people to your fête. Each of them invites 99 people, each of whom invite 98 people, each of whom invite 97 people, and so on...

Assuming that no one is invited by more than one person, and that everyone who is invited attends your gala, how many people will be there to wish you a happy birthday? Your answer should be expressed in a simple closed form.

❖ Reprinted with permission from Bradley U's old 'POTW' page <<http://hilltop.bradley.edu/%7EEdelgado/potw/potw.html>>

Puzzle of the week...

We seem not to have had any solvers of the volleyball PZOTW from vol. 25.06. The answer is 324 if the champion does not lose a game; 325 otherwise.

Here is a new PZOTW:

Hal and Lois have five sons. The oldest is 5 years older than the second oldest; the second oldest is 1 year older than the third oldest; the third oldest is 1 year older than the fourth oldest, and the fourth oldest is 11 years older than the youngest. The ages of the sons add up to 59. How old are the 5 sons?

❖ Submit POTW & POZTW solutions to kaminsky@augsborg.edu, or under Ken's door at SCI 137E, or in the puzzles and problems box just outside of Su's office.

L'Augarithms
The approximately bi-weekly newsletter
of the
Department of Mathematics
at Augsburg College
Editor.....Kenneth Kaminsky
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Graduate School Roundtable

Come join alumna Gaby Hamerlinck and other University of Iowa STEM graduate students for a roundtable discussion about graduate school

WHAT IS GRAD SCHOOL, HOW TO GET IN, WHAT TO EXPECT AND EVERYTHING IN-BETWEEN!

When: Friday, February 10

2:30-3:30 p.m. or 4:30-5:30 p.m.*

*Repeat sessions – attend either!

Informal meet & greet from 3:30-4:30

No RSVP necessary – all interested students welcome

Where: Science 108

Alumna Gaby Hamerlinck graduated in 2010 with a double



major in biology and mathematics. While at Augsburg, she did research in mathematical biology with John Zobitz (along with current student Kayla Johnson). She also was a McNair Scholar, a North Star STEM Fellow, and a member of both the women's soccer and track teams. She is currently pursuing a doctorate in biology at the University of Iowa, where she is studying gene expression profiles

in hybrid *Drosophila*. On February 10, she will visit Augsburg with several other graduate students in STEM fields to discuss the graduate school experience.

Famous mathematics majors

Here is a brief list of famous people who majored in mathematics, but went on to something else:

Ralph Abernathy—Civil rights leader

Ernst Ansermet—Conductor

Isaach De Bankolé—Actor

Harry Blackmun—US Supreme Court Justice

Pierre Boulez—Composer and conductor

David Dinkins—Former Mayor of New York

Donald Fraser—Former Mayor of Minneapolis

Alberto Fujimori—Former President of Peru

Art Garfunkel—Singer

Phillip Glass—Composer

Davey Johnson—Baseball manager

John Maynard Keynes—Economist

Tom Lehrer—Songwriter and performer

J. Pierpont Morgan—Magnate

Larry Niven—Writer

Frank Ryan—Quarterback

Bram Stoker—Author

Laurence Tribe—Constitutional Law

Leon Trotsky—Russian revolutionary

Virginia Wade—Tennis champion

Ludwig Wittgenstein—Philosopher

Christopher Wren—Architect

Tidbits of the Week (TOTW)

We thank friend of L'Augarithms **Jacob Brandler** for pointing out that the answer we put for the question “What is the smallest integer greater than one that is equal to the sum of the cubes of its digits?” was wrong. It is not 371 as claimed, but 153.

Here are a couple of tidbits from number theory that you may or may not have known about.

Twin primes are pairs of numbers of the form $(2n - 1, 2n + 1)$, where n is a positive integer, and both $2n - 1$ and $2n + 1$ are primes. Some examples are $(3, 5)$ and $(29, 31)$. It is not known whether or not there infinitely many twin primes.

A number n is a *perfect number* if is equal to the sum of its divisors, including 1, but excluding n . Examples are $6 = 1 + 2 + 3$, and $28 = 1 + 2 + 4 + 7 + 14$. All known perfect numbers are even. It is not known whether or not there exist an odd perfect numbers, or if there are infinitely many perfect numbers.

Do we have problems?

The **Konhauser Problemfest XX** will be held at Macalester College on Saturday 25 February 2012. Students compete in teams of 3. The competition is 9:00-noon and the award ceremony follows a few hours later. Cash prizes for top scoring teams are awarded and the cherished pizza theorem traveling Konhauser Trophy is passed on the winning team's school. A picture of the trophy and a link to past problems and solutions can be found at <http://www.macalester.edu/academics/mscs/competitions/>. If you have interest in participating, please contact Prof. Matt Haines (haines@augsborg.edu) or Prof. Mike Weimerskirch (weimer@augsborg.edu)

3-D Puzzle*
3-D Puzzle*

Kaminsky

3-D Puzzle*
3-D Puzzle*

Kaminsky

***of the week**

Above is a little 3-D puzzle. Your job is to determine the order of closeness of the five numbers, farthest away first. To do this, you should hold the page about a foot to a foot and a half from your eyes and focus about five to eight feet behind it. (Don't cross your eyes. That will put the picture inside out.) Let the two images merge into one. Some people tell me this is hard. Let me know how you do. I'll publish the solvers' names as well as the answer. Write to me (Kaminsky) at the address of the masthead or kaminsky@augsborg.edu.