Distinction in Comps

The highest academic honor that the department faculty have the ability to award is distinction in comps. We reserve that honor only for those students who work on comps rises to a level of professionalism, commitment, and achievement well beyond our high expectations. This year the department has voted to honor the following seniors:

Francis Adams, Matt Cordes, Alex Fisher, Ben Haynor, Ernest Liu, Becky Patrias, Rosemary Phelps, Zack Starer-Stor, Danny Wells, and Beatrice White

Please join us in congratulating these students for their hard work and accomplishment.

Senior Snapshots

We would like to congratulate all the seniors for their successes over these past four years, and we encourage them to keep it up. Here are the plans and words of wisdom from [most of the math majors of] the class of 2010.

Francis Adams
Short Term Plans: Move to Iowa City to take a year off.
Long Term Plans: Go to math graduate school to get a PhD and then teach.
Words of Wisdom: Don’t let your entire math education be in classes. There’s so much more to know.
Favorite/Memorable CMC Experience: Watching Obama’s inaugural address on the Math Skills Center computer after Russ left for a “meeting” at the same time.
Favorite/Memorable Math (Stats) Problem: Find all the integers that are both squares and triangles.
Favorite/Memorable Quote by a Math Prof: Something about orthonormal bases and puppies by Steve in Linear Algebra...

Madhav Ajjampur
Short Term Plans: Right after graduation, I’d like to travel around the US for a while. After that, the plan is to go back to India and look for some sort of work there (like a volunteer position perhaps).
Long Term Plans: I haven’t any yet. If I do go to graduate school, it won’t be until next year at least. If I decide not to, I’ll take things as they come.
Words of Wisdom: The spring sun in Minnesota delights in deception. It is aided ably by the mischievous wind.
Favorite/Memorable Math Problem: I can’t think right now of any one problem, but I did like the “pigeonhole” problems in Structures.
Favorite/Memorable Quote by a Math Prof: Nothing comes to mind! But I have chuckled many times at something one or another professor said.

Robert Carlton
Short Term Plans: I am going to work at an economic consulting firm called The Brattle Group in Cambridge, MA. I hope to be doing interesting things in the energy sector of the company, basically helping out startups if they need help entering certain energy markets in California.
Long Term Plans: Probably return to school in some capacity, but I have no idea in which.
Words of Wisdom: Grade homework for a year – it is nice to remember some of the stuff you did way back in Calculus 1, 2 or 3.

Erica Chesley
Short Term Plans: I will be a math teaching fellow for two years at a boarding school in New Jersey.
Long Term Plans: Teach math and ancient Greek (and maybe even Latin), inspire my students to engage actively and positively with their world, engage in deep and insightful philosophical conversations, engineer effective and lasting curriculum reform, and dance.
Words of Wisdom: Be able to articulate why you love math and want to be a math major. It will help you fo-
cus and shape your learning experience around your personal goals and expectations, and will give you something to reach out to when you feel frustrated or disconnected.
Favorite/Memorable Quote by a Math Prof: "... and then we do a little happy dance." – Eric Egge

Matthew Cordes
Short Term Plans: Have fun at home this summer.
Long Term Plans: PhD in math
Favorite/Memorable Math (Stats) problem: The sock matching problem in Combinatorics.
Favorite/Memorable quote by a Math Professor: “Happy Leap Year!” – Mark Krusemeyer

Grace Elwell
Short Term Plans: This summer I will either be out in Seattle working on a sailboat, or working in a bio engineering lab at the U of Minnesota.
Long Term Plans: Move to Chicago, sail around the world, and find my bliss (in some order).
Words of Wisdom: Take all the free food they offer you.
Favorite/Memorable CMC Experience: Turning the area under the stairs into the Abstract Algebra Cave.
Favorite/Memorable Math (Stats) Problem: Proving that there are infinitely many prime numbers--when I learned that proofs are beautiful.
Favorite/Memorable Quote by a Math Prof: "Now, remember that this is five factorial, and not 'FIVE!' (jumps 3ft in the air and flails arms about wildly)"
– Mark Krusemeyer

Alex Fisher
Short Term Plans: I'm going to be spending the summer working with an Illinois state representative researching redistricting after the 2010 census.
Long Term Plans: Happiness.
Words of Wisdom: Your professors are really cool people. Stop by their offices and say hi sometime, even if you don't have any questions for them.
Favorite/Memorable CMC Experience: Going from office to office just chatting with profs and getting candy.
Favorite Math Problem: If you cut out opposite corners from a checker-board (8×8 grid of squares), and you have a bunch of dominoes, each of which covers a 2×1 section of the board, can you tile the board with dominoes?

Charlie Gamble
Short Term Plans: Taking a year off before going to graduate school, and doing a few more undergraduate math courses at another university.
Memorable CMC Experience: Seeing my roommate on the top branch of the pine tree out the window of the skills center. I was very surprised, it's a tall tree.

Sarah Halls
Short Term Plans: Go to Europe with my family, hang out at home for the summer
Long Term Plans: Still deciding
Favorite/Memorable CMC experience: Taking over the CS lab with Kiva and Chrisna
Favorite/Memorable Math (Stats) Problem: Otters!

Ben Haynor
Short Term Plans: More school (in physics).
Long Term Plans: Physics research
Words of Wisdom: I'll let you know as soon as I have some.
Favorite/Memorable CMC experience: Mark Kreitzer's resonant frequency demo.
Favorite/Memorable Math (Stats) Problem: Chess (still unsolved).
Favorite/Memorable Quote by a Math Prof: Take the partial derivative of the vecta ah with respect to ah.
– Stephen Kennedy

Henry Heitzer
Short Term Plans: Graduate School studying Theoretical Chemistry at Northwestern.
Long Term Plans: Doing something I enjoy
Favorite/Memorable CMC Experience: Working on comps in Sam's office and actually getting somewhere.
Favorite/Memorable Math (Stats) Problem: My first take home test at Carleton was a Steve Kennedy Calculus III exam in which we had to find the volume of a space formed by 3 intersecting planes, the only catch being we had to set up the integral six different ways. For the longest time I had six different answers to this problem which was probably a good indication I was doing something wrong.

Ernest Liu
Short Term Plans: Going to U of Chicago to do full time research in economics
Long Term Plans: Getting a PhD in economics and do research
Words of Wisdom: You can never work too hard
Favorite/Memorable CMC Experience: Getting chased
Mark Krusemeyer talking about factorials.

Favorite Project: Keeping up on current events is important.


Long Term Plans: Most likely in Statistics. After that, who knows?

Short Term Plans: I plan to pick up another masters or PhD, most likely in Statistics. After that, who knows?

Words of Wisdom: Spend at least a term working at the Skills Center. It helps your math skills, and it helps your ability to talk about math coherently.

Memorable Problem: Steve Kennedy's Fall Term Geometries take home. Specifically, the 12-hour integral he forgot to tell us to solve with Mathematica. Favorite Quote: "And if the constant was greater than that, the spring would go through the wall into the other classroom, and they'd probably call the cops." –Mark Krusemeyer

Dan Lojovich

Short Term Plans: I am playing as well as coaching baseball in Inver Grove Heights. I plan on going to Target Field before the summer ends too. I will be searching for other ways to work with kids through organizations like the YMCA or summer school.

Long Term Plans: I am looking into becoming a teacher, working with statistics, or both. I will also be thinking about going to graduate school.

Words of Wisdom: Be yourself and do what you love. Live every day like it was your last, and learn like you will live forever.

Favorite/Memorable CMC Experience: After working on homework for awhile in the afternoon, I decided to play a quick game of cribbage with a friend. Four games later, I went to dinner still not finished with my work.

Favorite/Memorable Math (Stats) Problem: I always liked the WWII Tank Problem. How can allied statisticians estimate the number of tanks Germany had based on a sample size of destroyed German tanks and their serial numbers?

Favorite Quote/Memorable Quote by a Math Prof: I had just handed in my geometries take-home test in a Minnesota Twins folder. Steve Kennedy collected it, and as he passed by, he muttered, "Should have used a Red Sox folder."

Daniel O'Connell

Short Term Plans: I plan to work part-time as a consultant and get a Masters in financial mathematics.

Long Term Plans: I plan to pick up another masters or PhD, most likely in Statistics. After that, who knows?

Words of Wisdom: Try to read the newspaper every day. Keeping up on current events is important.

Favorite/Memorable CMC experience: I always enjoyed working in the skills center. I found it was a less nap-prone place to study than the library.

Favorite/Memorable Math (Stats) Problem: My comps project.

Favorite/Memorable Quote by a Math Professor: Mark Krusemeyer talking about factorials.

Kiva Oken

Short Term Plans: I'm biking back to the west coast with a friend after graduation. After that, it's anyone's guess.

Long Term Plans: I want to use math and statistics to help solve environmental problems. Eventually I'll probably go to graduate school—maybe in statistics, maybe in something else.

Words o’ wisdom: I’m not sure I have much of my own wisdom to share, so I'll defer to Bill Nye the Science Guy: "The more you find out about the world, the more opportunities there are to laugh at it."

Favorite/Memorable Math (Stats) Problem: All the chaos problems where we got to look at pretty fractals.

Favorite/Memorable Quote by a Math Prof: "Ortho-normal bases are like candy bars, they spread only joy. Unlike puppies that spread poop." –Steve Kennedy

Becky Patrias

Short Term Plans: I'll be at Carleton this summer helping out with SMP.

Long Term Plans: I'm going to the University of Minnesota for a PhD in pure math.

Word of Advice: Go to Budapest! Do it.

Favorite/Memorable CMC Experience/Quote by a Math Prof: In the winter of 2008, our very lucky ODE’s class received an epic Leap Day greeting from Mark Krusemeyer. Undeniably the best thing ever.

Rosemary Phelps

One of my favorite experiences in the CMC was hanging out with Steve Kennedy and Jon Armel, preparing for the GREs and somehow finding ways to have fun while doing so. Next year I will be attending the University of Minnesota in the math PhD program.

Zack Starer-Stor

Short Term Plans: Find a job. Delay difficult life decisions.

Long Term Plans: Grad school? Something else?

Words of Wisdom: Spend at least a term working at the Skills Center. It helps your math skills, and it helps your ability to talk about math coherently.

Memorable Problem: Steve Kennedy's Fall Term Geometries take home. Specifically, the 12-hour integral he forgot to tell us to solve with Mathematica. Favorite Quote: "And if the constant was greater than that, the spring would go through the wall into the other classroom, and they'd probably call the cops." –Mark Krusemeyer
**Danny Wells**

*Short Term Plans:* Wiggle my toes in the periwinkle.

*Long Term Plans:* Science! (via math, of course)

*Words of wisdom:* Explore!

*Favorite CMC Experience:* Too many to count (in a combinatorial sense).

*Favorite Math Problem:* Banach Limits! Fat Cantor Sets! Nilpotent Matrices! Knots!

*Favorite quote by a math professor:* “Everyone likes a Schauder basis.” - Jon Armel

**Beatrice White**

*My short term plans* are to spend the next five years in New York, first completing my masters in Mathematics Education at Teachers College, Columbia University as a Math for America fellow, and then continuing with Math for America teaching in a New York City public school. *Eventually,* I plan on going back to graduate school to get my PhD either in Mathematics or Mathematics Education. *Words of advice?* Math is meant to be shared, so go out and share it with others, you’ll be glad you did.

**Erik Williams**

*Short Term Plans:* Medical School at The University of Virginia.

*Long Term Plans:* Enjoy moderate success in some fairly specialized area of medicine.

*Words of Wisdom:* Finish comps before spring term

*Favorite/Memorable CMC Experience:* The Proofs by Induction.

*Favorite/Memorable Quote by a Math Prof:* "Topologize" – Jon Armel

**Emma Zhou**

*Short Term Plans:* I’m going to be a software developer in San Francisco next year, for an Internet startup called Rapleaf that does data mining on social networks.

*Long Term Plans:* Possibly grad school? I’m not really sure. Or maybe I’ll like the Bay Area too much to leave.

*Words of Wisdom:* If you are an undergrad and your math proof goes longer than a full page, something is wrong.

*Favorite/Memorable CMC Experience:* One time I had all three of my classes in CMC 206. That was a good term.

*Favorite/Memorable Math (Stats) Problem:* You have an 8×8 chessboard with one corner piece missing. Is it possible to fully tile the board using 3×1 trominoes? If so, show how. If not, prove it's impossible.

*Favorite/Memorable Quote by a Math Professor:* Steve Kennedy, in response to a student asking how he knew to choose a certain vector in a problem: "Because I'm a f***ing genius, that's how."

**Zheng Zhu**

*Short Term Plans:* Becoming one of the top-performing investment bankers at CICC/Morgan Stanley China

*Long Term Plans:* Living happily with my family members and the community

*Words of Wisdom:* Follow your passion, no matter how much of an outlier.

*Favorite/Memorable CMC experience:* Combined six chairs together and slept in there for a night in the skills center

*Favorite/Memorable Math (Stats) Problem:* How big is your epsilon? (I've seen this question floating around frequently last year but never been able to solve it)

*Favorite Quote by a Math Prof:* “There are other versions out there, but the shortest form of my e-mail address is mkruseme@carleton.edu.” – Mark Krusemeyer

Others graduating this spring: Chrisna Aing, Daniel Bernal, Gorkem Celebioglu, Tomoki Isogai, Sadaf Sultan, and Eric Tiede. Congratulations, all!

**PROBLEMS OF THE WEEK**

1. A two-player game is played as follows. The players take turns changing a positive integer to a smaller one and then passing that smaller integer back to their opponent. If the integer is even, the two legal moves are:

   i) subtracting 1 from the integer, and
   
   ii) halving the integer.

For example, from 28 the legal moves are to 27 and to 14. On the other hand, if the integer is odd, then the two legal moves are:

   i) subtracting 1 from the integer, and
   
   ii) subtracting 1 and then, still as part of the same move, halving the result.
For example, from 27 the legal moves are to 26 and to 13.

The game ends when the integer reaches 0, and the player making the last move wins. For example, if the starting integer is 15, the first player might move to 7, the second player to 6, the first player to 3, the second player to 2, the first player to 1 and now the second player moves to 0 and wins. However, in this sample game the first player could have played better! Now for the problem:

a) Given best play, if the starting integer is 1000, should the first or the second player win? How about if the starting integer is 2000?

b) As you might expect, for some starting integers the first player should win, and for others the second player should win. If we take a starting integer at random, say from all integers from 1 to $n$ inclusive, we can consider the probability that the second player should win. This probability should fluctuate as $n$ increases, but what is its limit as $n$ tends to infinity?

2. Show that there exist an integer $N$ and a rational number $r$ such that

$$\sum_{n=2010}^{\infty} \frac{(-1)^n}{n} = N \ln 2 + r,$$

and find the integer $N$.

Despite the delay in the appearance of this Gazette, no solutions to last week's problems have come in. Essentially correct solutions to the first problem posed May 14 came in from Amy Becker and from Frank Firke; Frank should stop by CMC 217 some time to collect a "C" block or other B.B.O.P. item.

The problems above are (obviously) the last one for this academic year. Any solutions from seniors that come in by a few days before graduation will still be returned (and a prize is possible). Solutions from others will be acknowledged in the first Gazette of fall term.

With luck, all my own solutions to the problems posed this term will be posted before graduation, and they should definitely still be in the hallway at the beginning of fall term. Have a great summer (and beyond, if you're graduating!)

- Mark Krusemeyer