



# Goodsell Gazette

Carleton College  
Northfield, MN 55057

The newsletter for the Carleton mathematics and statistics community

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## Welcome Back!

Welcome to The Goodsell Gazette, your anachronistically named access to all the doings of the Carleton Math and Stats Department! Published every other week during the term this newsletter will keep you informed of social and scholarly activities, visiting speakers, comings and goings in the department, your colleagues' comps talks and summer internships and research opportunities. To subscribe send an e-mail to sjandro.

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## Meet Your New Professors!



### Andy Poppick

Andy, originally from the suburbs of New York City, comes to us from Chicago where he has spent over ten years working and attending college. He attended the University of Chicago, where he obtained both his BA and PhD in Statistics. He also spent time working at a consulting firm in Chicago. Andy is excited to be teaching at Carleton where he is surrounded by equally passionate students. Statistics is a growing major accompanied by a growing number of course offerings, and he is excited to be a part of this progression. The different aspects of applied math are of great interest to him. Andy does research on the statistical applications to climate science. He analyzes data which focuses on the spatial

and temporal relation in climate processes. When he's not teaching, Andy enjoys cooking, hiking, biking, and simply being outside. He also appreciates jazz music and even plays a little piano! Andy is teaching two sections of MATH 215 this fall and a few other statistics courses later in the year.

**Coming Next Week:** Meet our new Professor Liz Sattler!

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## Ice Cream Social!

Come one, come all to the Department of Mathematics and Statistics ice cream social this Friday afternoon at 4:15, just outside the CMC. Help us celebrate the beginning of a new year by eating ice cream with lots of yummy toppings! Bring your friends! We hope to see you there.

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## **Math Subject GRE Practice**

Interested in going to math grad school? You'll probably need to take the Math Subject GRE exam (yikes!). I'm here to help and to organize preparation. I have training materials, test taking tips, practice exams, videos, and other resources to help you prepare. The subject test is given on 9/17 (this weekend!) and 10/29. Get in touch with me (rthompson) if you plan to take the exam!

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## **Problem Solving Group**

If you have always really enjoyed the problem-solving aspect to your classes, then the problem-solving group is just for you. Come join us in CMC 328 where we will work on solving some fun and challenging math problems together. All are welcome.

Peri Shereen will be hosting the session. You can contact her for more information at ([pshereen@carleton.edu](mailto:pshereen@carleton.edu)).

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## **Budapest Semester in Mathematics Education (BSME)**

BSME is a semester-long program in Budapest, Hungary designed for undergraduates and recent graduates interested in the learning and teaching of secondary mathematics. BSME participants engage in mathematical exploration to experience first hand learning in the Hungarian approach; then they connect these experiences to their own understanding of learning and teaching. BSME welcomes students whether they are currently pursuing a secondary mathematics teaching license or simply just curious about the learning and teaching of mathematics. More information can be found at [bsmeducation.com](http://bsmeducation.com) or by asking Deanna ([dhaunspe@carleton.edu](mailto:dhaunspe@carleton.edu)).

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## **Data Analytics Competition: Dive into Water**

MinneAnalytics is hosting a data analysis competition that will focus on Minnesota water quality data. Team of students from around the midwest will have all of October to analyze this data that is both temporal and spatial in nature. On Nov. 5 results and recommendations will be judged and students will have a chance to network with local analytics and water quality professionals. Prize money will be given to top performing teams! If you are interested in this competition please contact Katie St. Clair before October 1. More info is at <http://minneanalytics.org/minnemudac/>.

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## **Putnam Registration is Here!**

Fall Term is just getting underway, but it's already time to register for this year's William Lowell Putnam Mathematical Competition. As many of you know, the "Putnam" is a challenging exam focusing on mathematical insight and ingenuity; typically several thousand undergraduates across the United States and Canada participate, and the median score is usually less than 10 out of a possible 120.

Whether you've taken the exam before, or are considering taking it for the first time, you'll probably enjoy getting

experience with past Putnam problems at our weekly problem-solving group, which meets every week on Wednesday, from 4:30 pm to 5:30 pm in CMC 328. (For more information about the problem-solving group, contact Peri Shereen.)

This year the Putnam will be held on Saturday, December 3. That's during our winter break, but we'll gladly make arrangements for you to take the Putnam at another college or university. If you'd like to sign up, contact Eric Egge in person or via email (eegge). If you'd like more information, see the bulletin board outside Math Skills, where a brochure will soon be posted, or talk to Eric. Act now; although the Putnam is more than two months away, we have to submit a participant list soon, so your deadline for signing up is Monday, October 3.

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## **Student Research Celebration**

Students are encouraged to present at the Student Research Celebration which will be held in Weitz Commons on Friday October 21st, from 3:30 to 5:30 pm. The celebration includes a poster session where students from many disciplines share their scholarly work with the Carleton community. It is well attended and is a good opportunity for all of us to see the high quality and variety of the projects that Carleton students do over the summer months. The deadline for submitting an abstract to participate in this event is Friday October 7th at 5 pm. To sign up, students should use this link: [https://apps.carleton.edu/campus/lrc/Student\\_research/](https://apps.carleton.edu/campus/lrc/Student_research/).

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## **Google Tech Day**

Google Tech Day will be held on Thursday, September 22 in various locations around campus. The day will include resume review, an information session, open office hours with alumni and a google coding and interview prep session. RSVP via the tunnel. Google is also hiring for full-time and internship positions. More information about these positions can be found in the Tunnel under Google.

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## **Job & Internship Opportunities**

### **Analysis Group**

Harrison Reeder, a recent graduate, would like to share some information about working at Analysis Group, an economic consulting firm. Analysis Group does research and data analysis to support experts giving opinions in major lawsuits and performs health care-related research and data analysis. It is a place where people from the Math/Stats and Computer Science departments at Carleton are well positioned to grow and thrive. An information session will be held on Tuesday, September 20 from 12:00-1:00pm in Leighton 305. On-campus interviews at Macalester will be held on Wednesday, October 5. The deadline to apply for this is Sunday, September 25. If you have any questions feel free to reach out to Harrison Reeder at [Harrison.Reeder@analysisgroup.com](mailto:Harrison.Reeder@analysisgroup.com).

### **2016 Sports Internship and Career Fair**

The Minnesota Twins cordially invite you to be part of our 2016 Sports Internship & Career Fair at Target Field on Thursday, September 22nd from 12pm-3pm. The 2016 Sports Internship & Career Fair will offer job seekers the opportunity to learn about a variety of internship and employment opportunities with many teams and sports related organizations throughout the upper Midwest. The fair will be exclusive to participants who register for the event in

advance. The \$20.00 entry fee will include one reserved ticket to the 7:10 game that night against the Detroit Tigers and a food coupon that can be redeemed for a hot dog and soft drink at one of the Target Field concession stands. To allow the maximum number of job seekers access to this event we are limiting entrance to intern/employment seekers only. A special ticket voucher will be required for admission. For questions, email [jobs@twinsbaseball.com](mailto:jobs@twinsbaseball.com).

**National Security Agency: The Director's Summer Program**

Two dozen exceptional students are invited to collaborate with NSA mathematicians on problems critical to the intelligence gathering and information assurance missions of the agency. Students are presented with introductory lectures on modern cryptologic mathematics and current problems of interest. Each student chooses one or two as the focus of his or her research and documents their work in technical papers. A competitive salary is included. Admission to the 12-week program is highly competitive and applicants should demonstrate superior mathematical aptitude. Abstract algebra and analysis and some computer science experience, especially in C and C++ is strongly recommended. The application deadline is October 31st. To apply, students should send a resume, at least two letters or recommendation from faculty members familiar with their technical work, current transcripts, and a list of completed courses by the end of the academic year. Information should be sent to National Security Agency: 9800 Savage Road, Suite 6844, Fort George G. Meade, MD 20755-6844, ATTN: R1 (DSP). For more information, email [mathsummer@nsa.gov](mailto:mathsummer@nsa.gov) and for more career opportunities visit [www.nsa.gov](http://www.nsa.gov).

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## Problems of the Fortnight

Welcome, or welcome back, to a new academic year! Returning readers will know the “ropes”: There should be two problems in each issue of the *Gazette*; correct solutions are eligible for prizes from the B.B.O.P. (not the musical genre, but the Big Box O’ Prizes). Solutions can be submitted on paper (to my box in the CMC) or by e-mail (either in the body of an e-mail to me or as a pdf attachment; no other attachments, please). Solutions are due by noon on Tuesday of the next *Gazette* week - in this case, by noon on Tuesday, September 27. (Solutions that come in later but before my own solutions are posted will still be considered, but I probably won’t be able to acknowledge them in that Friday’s *Gazette*.) Although I tend to get behind on this, I’ll try to return all solutions with (supportive) comments. People submitting incorrect solutions will not be identified in public, so don’t hesitate to submit something even if you’re not sure whether it’s right. (On the other hand, to be eligible for a prize, a solution should show reasoning, not just an answer.) By the way, the problems are not necessarily in order of difficulty for you - for one thing, their difficulty may depend on what you happen to have seen!

Here are the first two problems of the term:

1. Consider the following two-player game. Starting with the number 0, the players take turns adding to the current sum; whenever it’s your turn, you can choose whether to add 4 or to add 7. For instance, the first eight turns might result in the numbers:

4, 11, 15, 19, 23, 20, 27, 41.

If on your turn you can make the new sum end in two zeros (in other words, if your turn leaves a multiple of 100), you win.

Assuming best play by both sides, is there a winning strategy for either player, or should the game go on indefinitely? If there is a winning strategy, should you move first or second to win, and what will be your strategy?

2. Let  $f$ ,  $g$ , and  $h$  be functions defined on the positive real numbers such that for all  $x > 0$ ,

$$f'(x) = \frac{g(x)}{x}, \quad g'(x) = \frac{h(x)}{x}, \quad h'(x) = \frac{f(x)}{x},$$

and we also have  $f(1) = 0, g(1) = 1, h(1) = 2$ . Find an explicit formula for  $f(x)$ .

- Mark Krusemeyer



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