

math NEWS

Volume 126, Issue 2

Friday, October 3rd, 2014

Mathbending



EXCLUSIVE:
Interview and
Dating Advice
from the Dean!

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lookAHEAD**mathNEWS**

October 13	Writers gathered for stuffed pizza and cheesy turkey
October 17	Issue 3 is given belated thanks

CECA

October 4	Workshops: All About the PCAT (Kaplan) DAT Strategy Session (Princeton Review) All About the OAT (Kaplan) GMAT (Quantum Test Prep) MCAT Strategy Session (Princeton Review) CASPer (Computer-Based Assessment for Sampling Personal Characteristics) LSAT (Quantum Test Prep) Volunteer for Your Career General Application Perspectives of a Waterloo Grad
October 6	Faculty of Education talks Business Etiquette and Professionalism
October 7	Project Management as a Career Option
October 8	Exploring Your Personality Type (Myers-Briggs Type Indicator) Part II Work Search Strategies
October 9	It's All About Your Skills Rock the Technial Interview (Presented by Square Inc.)
October 10	Interview Skills: Preparing for Questions Interview Skills: Proving Your Skills

Miscellaneous

October 5	International World Teachers Day
October 11	National Coming Out Day
October 14	Thanksgiving
October 18	Alaska Day
October 31	Hallowe'en

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Amy Li (Green Mario), Elizabeth Liu (Goggles Pikachu), Katherine Tu (Kyary Pamyu Pamyu Kirby), Jose-Miguel Velasco (Lucina), Rachel Wiens (Toon Link)

mastHEAD

The first edition of this *mastHEAD* was so full of typos and awkward sentences that I decided to burn it and write a new one. We editors are spiteful entities; our frustrations from mornings of proof-reading and afternoons of layout are passively manifested through things like the burning of poorly-written articles and the creation of Production Night advertisements. Unfortunately, not everyone is happy with posters of a pistol being pointed at a kitten, so now we have a leftover gun and cat at our disposal. Since we can no longer have them model for posters, we asked our writers what possible use they could serve.

SketchED ("NOT make *mathNEWS* posters threatening a kitten"); arabesque ("Do math with them!"); xoxo ("Acquire more kittens"); hasproblems ("Make smoothies and then shoot myself" [*Please do not shoot yourself with a cat. :(—bunniED.*]); speep ("question all life choices that led to this point"); TubesJr. ("Keep the kitten, ditch the gun"); Beyond Meta ("Train kitten to be assassin, murder with cuteness"); quiz ("Hire the kitten, fire the gun"); lp0onfire ("Get an override for Quantum II: Schrödinger's Revenge"); IceNine ("Give the kitten to the humane society, dismantle the gun and take picture"); Zethar ("Fuse them"); Xujhan ("Train the kitten in firearms and espionage, then have it hack the government records to replace instances of 'terrorist' with 'unicorn.'"); edogawa ("gun-catonate them!"); MuffinED ("Pretend to hold the kitten hostage and use it to rob a bank. Proceed to buy my own weight in cat food. Bring the kitten to the ocean, and throw the cat food in the ocean while the kitten watches. Dolphins come to eat the cat food, and I catch the dolphins. Teach the kitten to ride the dolphins. Open my own circus"); theSMURF ("Kill gun, marry kitten, masterbate"); wibbled ("keep the kitten forever and bring the gun to America");

bunniED ("run away from both").

DISCLAIMER: No animals or humans were harmed in the making of any advertisement posters. Unless, of course, you count the embarrassment of seeing posters of kawaii dickbutts. Never again.

What's Your Idea Week

Come checkout the final event of "What's Your Idea Week" hosted by the Entrepreneurship Society at UWaterloo, Mentor Networking on Friday, October 3rd (today!) from 7:00-10:00PM in the Don Craig Hagey Hall Atrium.

Want to talk to an expert about your company? Want to meet some of the top mentors in the Kitchener-Waterloo area? This is the event for you. Mix and mingle with other students and seasoned startup professionals to get advice on idea generation and development. We'll also showcase all of the ideas that came out of What's Your Idea Week! Appetizers will be provided and bar service will be available.

Register free at

<http://www.eventbrite.ca/e/whats-your-idea-week-mentor-networking-event-tickets-13034070255>

Brett Michael Young

Office Gossip: F14 #2

Candy

Do you like candy? Who doesn't like candy? Candy is sweet and delicious and the perfect pick-me-up after a long or difficult class. Did you know that the MathSoc office has free candy available for all of its members to come and enjoy? We have a wide selection of high quality candy that changes every day, and is distributed in a 100% clean and sanitary way*. Don't believe me? Check out these compelling testimonials, from students just like you.

"Uhhh... okay."

– Definitely not a fellow office worker, when I insisted on a testimonial.

[*Choking on candy.*] "Blarg glrang... and stuff."

– Sean Hunt, Honourary MathSoc Member

"So, what do you mean by a testimonial?"

– Beyond Meta

"Hello candy... I mean, MathSoc people."

– Overheard during Orientation Week

"Y u no have coke bottles?"

– Nadia the Zombie

"Will it be any work?"

– Shell of a CS student, on the logistics of giving testimonials

"Ohh, so exciting!"

– Some random guy who came into the office earlier today

"I believe that MathSoc's service of providing candy to its members is a wonderful initiative; it increases foot traffic to the office, it provides much-needed sugar to students during lulls in the day, and it gives visitors a good impression when they come to the office. One may question the high price of such an initiative but I believe it is worth it."

– Definitely not a counselor, who also did not realize the point of the article

"Uh, uhm, I mean, I come here daily I guess, uhm, for the candy, hmmm, I guess that isn't great."

– The Most High and Honourable WatSFic President

"Can I get my calculator approved please?"

– Essentially everyone else

Make sure to stop by the MathSoc office (MC 3038) and get yourself some free candy, before MathSoc Council realizes how ridiculous this all is on paper and slashes my candy budget.

Darcy Alemany
MathSoc Office Services Member

*NOTE: Candy is in no way guaranteed to be, nor should any member expect it to be, sanitary. It's a jar that everyone shares, for Pete's sake.

Municipal Election: October 27th, 2014

Vote! If you live in the region either as an owner or a tenant, are a Canadian citizen, at least 18 years of age, and not currently serving a sentence at a penal or correctional facility, then you are entitled to vote in the municipal election. (You must also not be a corporation and/or currently dead). Check if you are on the voter registration list and find out more information about voting at <http://app.kitchener.ca/election/> if you live in Kitchener, or <http://www.waterloo.ca/elections/> if you live in Waterloo. You can vote by proxy if you won't be in town at the time and you can also find the information and documents you will need to vote. Remember to vote!

dbro

Construction is Coming

Fall colours signal an end to summer, but there is no end to construction. Work on the ION light rail project is beginning at several sites around the region this fall.

The work most visible to campus will be along the CN railway running from Northfield Drive to Uptown Waterloo. The tracks parallel the Laurel trail and pass through the east edge of campus across ring road from the Davis Center. Chances are you've crossed the tracks on the way to the plaza. The region promises very little impact from construction, but what the effect will be on campus is unknown, nor is when construction will reach campus.

Work is beginning this week on Caroline Ave. Those in the area can expect road closures and traffic detours. Given that this road is part of the Iron Horse Trail, the construction consortium will provide pedestrian directions, and cyclists will be rerouted on Park and Euclid.

The groundbreaking for the project was held at Dutton Drive in August. Construction of the layover and maintenance facility is now underway. In Kitchener, work will be starting on Borden Ave. between Courtland Ave. and the CN rail tracks in mid October. More information and updates can be found at the website www.rideion.com.

dbro

Letter to the Editors

Any questions or comments for us? Let us know! We will respond next issue any concerns you may have. Or if you want, come to our office MC 3030 to ask us in person. Also, don't hesitate if you want to drop by to say "good job". We're people too, most of the time, so we like compliments.

Although I'm starting to question what my co-editors are exactly. At the very least, I can guarantee that as of writing this, that at least 20% of the editors are human, and not exoskeletons stuffed into human costumes. I like to think the smell is due to poor hygiene, and not the smell of rotting flesh.

SketchED

Get On The Air

Somewhere in an overlooked corner of the engineering buildings, behind an unmapped secret door and up a blind flight of stairs, an “extra floor” that shouldn’t officially exist can be found. On this landing lies the portal to a mysterious club room, left in disuse for over a decade but recently resurrected to open its doors to a new generation. This is no ordinary club room; it is a nexus to the whole world, with arcane devices that provide instant, real-time wireless communication with similar rooms located all across the globe. Serpentine cables are strung across the walls and ceiling, and powerful machines sleep quietly, dreaming of ages past when their might was unleashed on the ether. Most people who find this room mistake it for a warehouse or a museum, but those who have come to understand its capabilities know it as The Shack of the UW Amateur Radio Club.

Founded in 1959, the UW Amateur Radio Club is quite possibly the oldest club on campus, and we would like to state for the record that rumours of our downfall have been somewhat exaggerated. Although a lot of our equipment turned up broken when we excavated the club room last year, operations are still continuing and we have a new complement of hardware to help new “hams” operate with modern radio techniques of the 21st century.

The process of getting started with amateur radio has changed significantly since the “old days”. The availability of radios and accessories from online stores has made it possible for almost anyone to get equipped. For about \$100 and a quick visit to a Toronto supplier’s website, it’s possible to get a handheld radio that can operate anywhere on battery power and communicate with other users farther than with any hand-held “walkie-talkie”. It includes features that allow access to local repeaters that will rebroadcast your signals over an even longer range (one local repeater covers all of Kitchener, Waterloo, Cambridge, and Stratford, and most of the surrounding countryside). You don’t have to build everything from scratch (but you can if you want to) and you absolutely don’t have to learn any Morse code to get started!

What’s required to get an amateur radio licence in Canada is a 100-question multiple choice test whose question bank is in the public domain. The questions cover amateur radio regulations, standard operating procedure, basic electronics, antenna construction, and the basics of radio transmitters and

receivers. Getting 70% or better on this exam earns you a Basic Qualification, which is enough to start operating on any amateur radio frequency above 30 MHz—this opens up a huge part of the spectrum to whatever experiments or contacts you want to make. These frequencies include the popular “two-metre band”, which can be used for local communication with other amateur stations. (But for the best long-distance communications capabilities, you’ll need privileges below 30 MHz. Try for 80% or better to earn a Basic with Honours, and you’ll be able to make contacts all over the world.)

There are many different things to do with a radio licence. If you’re interested in global communications, you can participate in contests and exchange “QSL cards” to provide a record of contacts you’ve made in countries around the world. If you’re into electronics, you can put your skills to work in building receivers, filters, and antennas, or get your Advanced Qualification and get licenced to build transmitters and high-power amplifiers. For those interested in digital signal processing, software-defined radios make it possible to implement radio transceivers entirely in software, and the open source revolution has made programs available for high-speed digital communication using existing radio hardware. Finally, radio amateurs are often called upon to provide emergency communications, especially when traditional channels cannot be used. You could be the operator that gets through to the hospital when no one else can.

Even without an amateur radio licence, there are no laws against receiving most radio signals, so if you’re interested in scanning the airwaves, the “RTL-SDR” family of devices is a quick and inexpensive way to start listening in with just a computer and some free controller software—find them online from a variety of suppliers. But if you’re interested in getting licenced and making transmissions of your own, whether you’re interested in talking “around the block or around the world”, there are a few places to start, and the biggest one on campus is right here with the UW Amateur Radio Club. Visit us online at <http://uwarc.uwaterloo.ca/> to take a look at some of our resources and what’s happening with the club. We’re always accepting new members and we’d love to help you get your licence, so come out, talk to us, and get on the air!

lp0onfire

Open Letter to Calculus

You are an integral part of my life.

Dear Calculus,

Recently, I have been seeing you attempt to hide your negativity with absolute value signs. I just wanted to say: it’s okay Calc, you can show your true feelings. Just please—stop artificially making things positive. Your dependency on absolute values has been making it a whole lot harder to solve your problems. I want to help, I really do, but the first step to a solution is admitting you have a problem.

Beyond Meta

People Sez

People say shit all. There has been no Sez or anything from anyone recently. Not like they need to keep us informed or anything. Here we are, just sitting in the corner waiting for something like VP Sez, or Prez Sez, or Someone or Anyone Sez. I guess the current people don’t like talking. But maybe if I write about it I can expect a future Sez from them. If not, well, screw them! [Note: *The opinions expressed by SketchED do not necessarily reflect the opinions of other editors or mathNEWS as a whole. If you have a complaint, feel free to email us at mathnews@gmail.com or by mail via the **BLACK BOX** on the third floor of the MC.—bunniED*]

SketchED

Penrose Tiling

I'm sure you've heard of Penrose tiles, invented by the English mathematician with the namesake. They have the amusing property of being aperiodic, that is, this pattern can tile the plane, but the resulting tiling cannot be translated onto itself with two non-parallel translations. Maybe I should include a picture.

Anyway, I was think of renovating the bathroom floor at my mum's house with these tiles. (At some point Penrose took out a patent on his invention, but it expired a few years ago.) Unfortunately Penrose tiles aren't available at Home Depot or any other online retailer—and the only blogs where people have done this renovation, they purportedly got the tiles custom-made. Universities are another place that tends to have aperiodic tiles as murals and interesting floor patterns.

On a completely unrelated note, the other day I was watching a video of George Hart (Vi Hart's dad, the geometric sculptor) cutting a bagel in to two interlocking halves, with a cut similar to the band of a Möbius strip. The result was interesting, to say the least, and I think at some point I imagined starting my own business that manufactured and sold these whimsical bagels—bagel cutting appliances that can sit on your kitchen counter next to your popcorn maker and panini press. I'd generalise the cutting mechanism to create multiple loops or n -linked bagels. Hell, if I had my own house I'd build one of these bagel cutters just so I can wake up to a mathematically correct breakfast, and I don't even like bagels.

For a while I contemplated applying for Velocity funding to create a startup that manufactured these mathematically interesting and functional things so we could fill our lives with more math, but then I realised the extent of my customer base would probably not be enough to fill the Comfy Lounge. Oh phooey.

arabesque

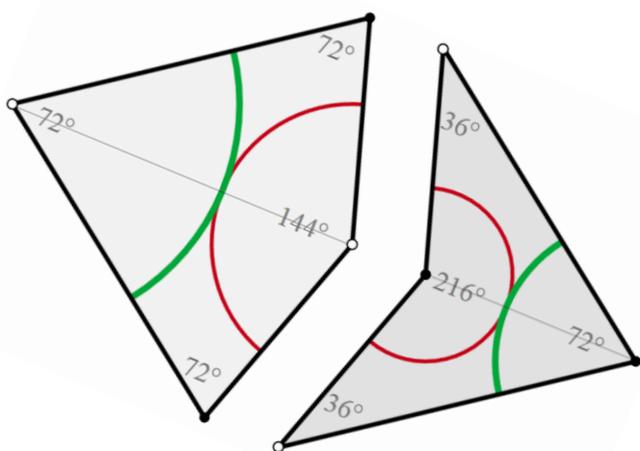


Fig. (Above.) Example of a viable Penrose tiling, called the Kite Dart. (Credit: Toon Verstraelen, Wikipedia.)

The Omniproof

In preparation for the inevitable TA work I'll be doing in grad school, I recently adopted a gaggle of Math 135 students. Among other things, this has reminded me of the great difficulty that some new students have in coming to grips with the variety of proof techniques they are presented with. There's direct proof, proof by cases, proof by contradiction, proof by induction, proof by strong induction, proof by really strong induction, proof by seduction, proof by "It's on your next assignment," and so on. This can be understandably hard to follow.

Fortunately for us mere mortals, there are heroes like my CO 250 prof. So great was his wisdom and so wise was his greatness that he imparted to us an arcane and terrible secret. It is known only to the greatest of mathematicians: a single technique that allows the proof of any provable statement. You doubt me, I know. I doubted him too, until he showed me the truth. Now I pass it on to you.

To prove any provable statement P :

1. Assume that P is false.
2. Prove that P is true.
3. This contradicts the assumption that P is false.
4. Therefore P is true.

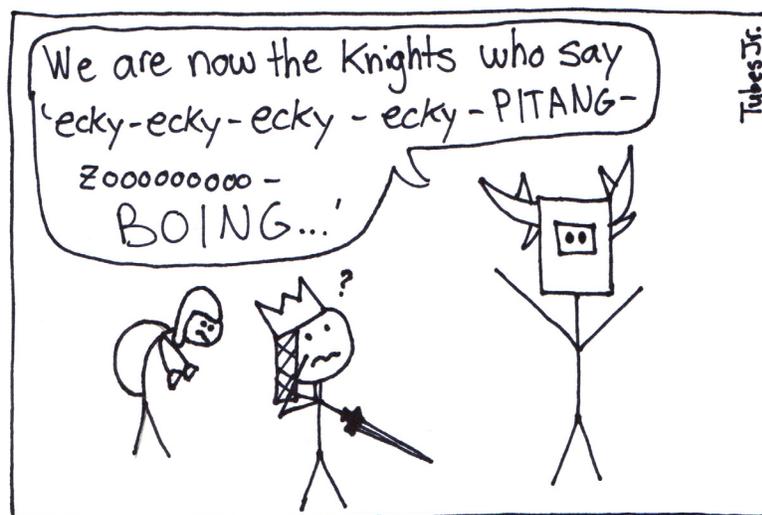
Use it well, for with great power comes great responsibility.

Xujhan

Monty Python in Python:

Fetch Another Shrubbery!

```
def meetingWithKnights (spokenWords):
    if spokenWords.find(" it") != -1:
        print "KofN: 'Aaaaaugh! Don't say that
        word.'" \n KA: 'What word?' \n KofN: 'I cannot
        tell, suffice to say is one of the words the
        Knights of Nee cannot hear!"
```



A Date With The Dean

Hello, plebians of math! We recently had the honour of interviewing the grand overlord of all that is math in Waterloo, Ian Goulden.

The amount we were able to extract from his words and wisdom could not fit in this one issue, so we've decided to split up his words of awesome awesomeness into multiple issues. For now, we will let you have a taste of the dean, and leave you wanting more. Look forward to future issues for further insight from the Dean.

If you have any questions you want us to ask the Dean in the future, be sure to let us know!

The Editors

Q: Is there a name you want us to use, Ian Goulden, Dean of Mathematics, overlord of the grand scheme of things?

Ian: Ian. I like Ian. I got my buddy Elvis here. [*Walks over to Elvis bust on top of cabinet.*] He's going to listen in and see if you guys misbehave or not. He's lookin', gonna check you guys out. He sits up here during certain meetings.

SketchED: Very specific meetings?

Ian: No, quite random ones. Sometimes we have people here in three-piece suits, and you see them all of a sudden looking over there and seeing if I seriously intended him to be there or not. I try not to show any smile or anything like that.

SketchED: Alright, Ian, are you ready for the questions we'll be embarking on from here?

Ian: No, I'm trying to distract you.

Q: What is the best pun that anyone has ever made with your name or title?

Ian: My title! I can't repeat it, but it does involve the adjectival form for Dean, which is decanal, and tan, but I can't repeat it for a family publication.

Q: Do you have a favourite math joke?

Ian: I like: "There are only 10 types of people in the world: those who understand binary and those who don't." It's good; kinda inclusive of our CS colleagues.

Q: Is this your last year as Dean of Mathematics?

Ian: It is my first and last term; lasts five years and it ends June 30th, 2015.

SketchED: That's still quite a long way to go, in terms of months left.

Ian: Less than 300 days but more than 256.

MuffinED: Are you counting down?

Ian: No, but I do have a colleague, a long time Chair, who sends me email periodically when we reach the next power of two. So on day minus 512, he sent me an email, so I hope to get in my email for day minus 256 before he does. Quite juvenile, isn't it?

Q: What do you hope to do after your last term as Dean?

Ian: I have been a professor here since 1980, and my position is a professor of combinatorics and optimisation, and my role as Dean is an extra, separate, administrative appointment for five years only, and throughout I'm a tenured professor. The moment I stop being Dean, I revert back to being a professor of combinatorics and optimization.

By the time I stop being Dean, I'll be 60—that's in base ten—and I guess I'll sleep, try to do some mathematics. I have a year's sabbatical, and I promised my wife and myself that I wouldn't make any decisions until six months in about what I'll do next. But after a few months of my sabbatical, I might even prove a theorem again, doing some math. I might just retire, but more likely, I'll come back and do some regular teaching and graduate supervisions and research as a faculty member and retire in a few years.

SketchED: I just wanted a moment to say that I'm happy it's not necessarily your end as Dean here. You are—well, technically you are my only Dean, but you have shown a positive light, and I hope that the next Dean is as good as you, and I'm happy that you're staying, because that means you'll be able to still be here and still contribute.

Maybe *mathNEWS* will want to do another interview again, just next time as a professor instead.

Ian: Maybe I'll inflict my teaching upon you.



Fig. (Right.) Cutest members of the Smash Bros roster.

Q: Do you have anything on your bucket list, anything you really want to do before you finish as Dean?

MuffinED: Like you being carried onto a chariot during Orientation, you being carried on a boat, those sorts of things.

Ian: Ah, I don't have a head for heights. I've got one single-most important task for this year, between 256 and 300 days, and that's the university setting up changing how we do our budget system, how money is distributed into faculties. That's very important for the future stability of everything that we do, so I'm gonna make sure it gets my full attention.

We're changing the budget system from what's substantially historically-based, where you get the money plus or minus some small proportion, to what's called Activity-Based Budgeting. And, at the same time, to a multiple-year window. It only makes sense that you want to plan what the heck you're going to be doing for future years, and you can never do some kind of greedy algorithm out the next year. So that's going to get my full attention. It's not like I get to set the budget scheme, but I'm a full participant as one of sixteen in the discussions with the Provost. The new Provost came from the University of Toronto, where about seven years ago they introduced the same budget system, so he's a proponent of it, and he's told us quite eloquently to the collection of Deans and the President the benefits of planning and being able to collaborate with others. When I and the Dean of another Faculty each know the amount of money each enrolment brings to the table, we can combine forces to more knowledgeably create new and better programs.

bunniED: Academic programs?

Ian: Yeah, academic programs—so, for instance, software engineering is actually quite well managed on the existing budget system, because it's a glue-on. The historical budget system has some tweaks over time, and software engineering was started relatively recently, after the University decided it could have special arrangements, so software engineering is run with a half ownership state between the Faculty of Engineering and the Faculty of Mathematics. We don't quibble about 48-52 percent or anything stupid like that; it's 50-50, so both have a huge scheme in the game of making it work for the students and for us. Here's a program for which it'd be absurd for a new unit to be created, and we really should just use the existing ECE and Computer Science, enhanced with new hires to create the Software Engineering program, and that's what was done. [There's no] overhead of staff members in a new unit, who simply copy the function of people in Computer Science and ECE, so I think it's really quite efficient and a really good way to go ahead. I hope we'll be able to get more of the same arrangements between faculties.



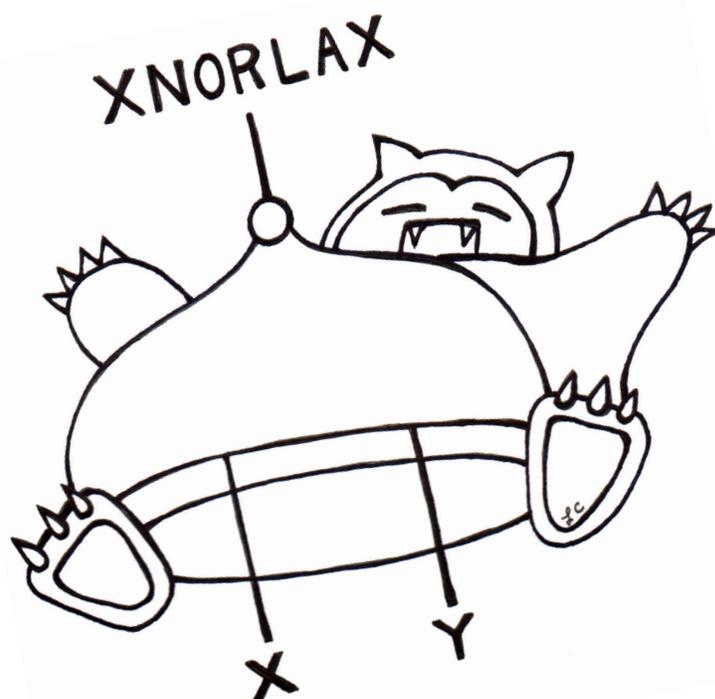
So that has to be very high priority. There's no, you know, skull-duggery involved. Literally, we have meetings every two weeks early Wednesday morning, and I've planned a whole year ahead of travel so I will never be away for those meetings.

I look forward to having another great year of hiring and recruiting and outreach. I really, really believe in having the best people around—and treating them well, of course, once they get here. But in terms of the-chicken-and-the-egg, I really think that the main lever one can push on is just to try to get the very best people, with no BS about it, to try to attract the best students. We've been working very hard at it, and treat people well when they get here, but I feel like our basic job is to get really smart people part of our community and challenge 'em. The best trick is to challenge people to do something they never quite thought they could do or a little harder than they thought they could do and have them accept it as something they *can* do.

I guess one of my other tasks is, as a Faculty with only five units—the School of Computer Science and four departments—this year I have to lead a Department Chair Committee to appoint the next Chair of Combinatorics and Optimisation. That's a very, very important job for the Dean, to make sure we appoint the very best person there. I think the department chairs and the new director of the school are really good people. They're nice people—but they're also smart, very good leaders, they have the attributes of causing people to want to work together—they don't just give orders like in the army.

And, I guess in a general sense, I would like to leave a house that's in order for whoever is the next Dean—I would never want to have a short-term gain for someone else's long-term pain. And I'd like to have a house that's in order, but make sure that we go ahead on all or some of these issues.

I can give infinite answers to almost everything.



Cooking In and Out of Spite

For all the angry (or just misunderstood (or sober)) people out there

Once upon a time, there was a restaurant called the Grad House. No, not the one at UW (which is a fabulous dining establishment). This is a story about the Grad House at another university. Anyways, *il y a longtemps*, one could go to the Burger & Beer special night, where for eight dollars, one could get a good burger, fries, and a beverage (beer, pop, or whatever).

Actually, this is still the case. The problem is that there seems to be some sort of sponsorship going on, or maybe beer is being supplied at a marked down price, because a paying customer may not substitute a craft root beer or ginger ale for a beer, even though the company which supplies the craft non-alcoholic beverage also supplies beer for the restaurant, and even though the non-alcoholic drink is normally priced much cheaper than a regular beer. Needless to say, the current author felt silly drinking cranberry juice.

In spite of his lack of time to really spend full nights cooking and doing the resulting dishes, the above situation has driven the author to replicate at home the usual dishes which he and his colleagues have ordered at the restaurant, out of spite towards the aforementioned restaurant. Yes, the author is occasionally petty. (Although, surprisingly, until the next sentence, not petty enough to resort to taking shots at fellow writers who happen to reside in a different city than he does. [*Cough* notbob *cough*.])

Regardless, the remainder of the article is devoted to describing the home-cooked meals which happen to very closely resemble menu items from the Grad House.

1. House Perogies

Born from the realization that bacon, cheddar cheese, barbecue sauce, and perogies inhabited the author's combined fridge/freezer appliance, this turned out about as well as one would expect. That is to say, fantastically. Note that 'house' refers to the addition of bacon, cheddar, and barbecue sauce to one's item, not the titular character of the medical drama.

INSTRUCTIONS: Cook the perogies however preferred (the author boiled them, but the Grad House probably pan-frys them), fry up the bacon separately to the desired crispiness, and grate the cheese. Once all the ingredients are prepared, combine in the bacon pan, and apply the barbecue sauce. Wait for the cheese to melt, and then it's good to go! It's best to serve this with some sort of vegetables, because, well, how healthy is this, really?

VERDICT: More than doable, although the Grad House version ends up with more refined perogie texture and less crazy bacon. Price-wise, it's hard to beat eight dollars for this plus a small salad, but the homemade version does pretty well, as long as the bacon was bought in bulk (or else rationed effectively).

Fig. (Right.) Fall Colours Are Out

2. Poutine with Pork and Mushroom Gravy

Once the perogies were made (twice!), the author, together with his wise and trusty housemate, decided that they might make poutine for dinner this very Production Night, this whole-iest of nights. It was determined that it was a qualified success, where the qualifier was, "not existential nor universal, because those are quantifiers!"

INSTRUCTIONS: Cut potatoes into fries, coat them in olive oil and spices and herbs, and bake at high heat for a while (preferably on a baking sheet on top of parchment paper). Make sure to turn about halfway through. Cook the pork in a frying pan with a bit of oil (e.g. of the extra virgin olive variety) until cooked through, and add chopped mushrooms. Once mushrooms have reached the desired cookedness*, add a water and flour paste (heavier on the water) and spices to make a gravy. If cheese curds are not available, chop up some mozzarella into small chunks. Combine the fries, cheese, and the pork-mushroom-gravy mixture in another oven-safe dish. Bake until the cheese is a bit past melted. Again, this is best served with vegetables, because health.

VERDICT: With a better gravy ('twas a bit bland, due to the author's gravy/sauce incompetence), this would be pretty amazing. Cost-wise, it actually worked out to less than half the price of the poutine from the Grad House, because the pork was on sale; even if the pork wasn't on sale, it would still be a pretty good deal, and possibly healthier.

Voilà, pub-style meals which are just as enjoyable, and don't require one to venture to an establishment which actively pushes away those who do not drink. Enjoy!

(The author is still petty. Also bitter.)

Scythe Marshall

* Distinct from 'crookedness', because mushrooms are (you guessed it!) fun guys with which to cook, and therefore certainly not evil. [*Groan.*—*bunniED*]



Undercover FBI Operative Infiltrates Crime Syndicate Only to Find It Comprised Entirely of Other Undercover Operatives

Chicago – In an embarrassing turn of events, the successful infiltration of the Solntsevskaya Bratva exposed the fact that the entire organization had been run by undercover law enforcement officers, not criminals.

As the largest and most powerful Russian mafia, the Solntsevskaya Bratva began operations in the United States in the 1990s. Their operations included drug trafficking, cyber crime, fraud, money laundering and assassination, which attracted the attention of the DEA, NSA, IRS and local police departments. Over the past twenty years, the various agencies initiated deep cover operations to place undercover officers within the ranks of the Bratva to collect information and bring down the crime syndicate from the inside.

Over the years, due to budget cuts, human error and operatives “going dark” to avoid being discovered, communication with the agents embedded in the organization were lost. Without any new orders, they continued to work within the mafia and rose within its ranks. As of the late 2000s, only four members of the 87 member organization were actual criminals.

With this new information, the Bratva chapter was disbanded, the four criminals were arrested, and the 83 officers were put on paid administrative leave. As of this week, crime in Chicago has dropped by 88%.

theSMURF

Hypotheses Regarding Pizza Pizza

If you haven't yet experienced the SLC's Pizza Pizza, you should. It's not good. Neither is it bad. It's not even mediocre. It's an experience I am unable to fully comprehend. It tastes like pure contradiction, both greasy and dry, with no identifiable flavour yet certainly tasting of something. Whatever it is, it cannot be food produced by ordinary human beings. I have, therefore, compiled a list of possible origins for this mysterious food-like substance. It could be:

- The accidental byproduct of a Chem club experiment regarding biofuels
- A physical manifestation of the dreams of the slumbering bovine overlords
- An avatar of the Nestene consciousness
- The end result of a secret government project to mass produce Stephen Harper's personality
- Aliens

Other hypotheses are welcome, as are test subjects for the effects of long-term exposure to the substance.

Xujhan

Police Investigation Over Bizarre Case

Police are currently investigating a string of robberies around the neighbourhood. Numerous antique stores have been attacked by these criminals, who stole and destroyed trinkets within the store. Oddly enough, nothing of value was actually stolen.

Local farmers have also been suffering from the same perpetrators. Cows in the area were mysteriously found bruised overnight, as if repeatedly hit with a blunt object. Baubles were found littered around the area, which have been linked to the same stolen goods from the antique stores.

“I can't believe they would do this,” one store owner said. “They didn't even take anything of value. Are they just going for the thrill of destruction?”

“My cow is currently recovering from the injuries,” claimed one local farmer. “But I'm afraid they won't stop and will kill the cows next time.”

The cows were meant to be sent to the slaughterhouses in a week, but their delivery may have to be delayed. When asked if these shenanigans would affect sales, the local farmer replied, “Nobody wants a bruised burger patty. Also, we gotta clean this stuff up.”

Police are warning farmers and store owners to be vigilant and keep an eye out for the perpetrators. This is the first ever report of a criminal knick-knack paddy-whack.

mathNEWS Reporter

N Ways You Know You've Been at UW Too Long

1. You carry an umbrella everywhere.
2. You automatically cover your head when birds fly above you.
3. You remember spending way too much money on DDR.
4. You remember when people cared enough to know what RIM was.
- 4a. You remember when people cared enough to know what Blackberry was.
5. Bus systems that run on grids seem strange.
6. You commonly refer to a city center as “uptown”.
7. You were here for all n “say goodbye to the B2 Green” parties, and were also here when QNC construction completed.
- 7a. You forgot the precise value of n but know it's somewhere between 2 and 4.
8. You remember when the WatSFic office was not an elongated table in the C&D.
9. You are more accustomed to hearing “hackathon” than “party”.
- n. You remember when the MC 6th floor was more feared than PAS.

ertai87

profQUOTES

“*ProfQUOTES*: [it's] why I always try to say nothing, or any thoughts, or else dirty little rats are gonna quote me.”

Goulden, Dean of Math

“The user will eventually say, ‘I wonder if I can do this?’ Then your computer explodes and you get fired.”

Roegiest, CS 246

“It was a long time ago, you know, 8:30.”

Roegiest, CS 246

“[Testing] is a lot of hand-waving. Don't tell the Software Engineers that.”

Roegiest, CS 246

“We do bad things [like setting traps in assignments] because it's good for you. I obviously sound like your parents right now, but you're paying us, so...”

Roegiest, CS 246

“...a billion kajillion—which is totally a real number of income tax...”

Roegiest, CS 246

“The main thing about faces is that a face of a face is a face.”

Davidson, PMATH 950

“What is surprising about this example is not that it is true, since it seems obvious, but that it is so hard!”

Davidson, PMATH 950

“Trust me. I copied it.”

Davidson, PMATH 950

“If I substitute C_0 into the right hand side I get C_1 , and that was so much fun I'm going to do it again, and then I get C_2 .”

Godsil, MATH 249

“This is something you don't want to do by hand. See, I just proved you don't want to do it by hand because I didn't do it.”

Godsil, MATH 249

“Why [reserved polynomials]? ...Well, the universe is not a pleasant place sometimes.”

Godsil, MATH 249

“You can argue it's ambiguous—but you now can't argue it anymore 'cause I've now told you.”

Godsil, MATH 249

“Now, I'm using + because I'm pretending I'm a language theorist.”

Godsil, MATH 249

“You'll do some calculations and they'll get more and more horrible, because the problem I chose for you to do will have a nice answer, but the problem you've chosen to do will have a not-so-nice answer.”

Godsil, MATH 249

“This is something that totally doesn't make sense.”

Liu, NE 352

“Now, this is a computational task, and in the end it's going to be carried out by a computer, so there's no reward for being a smartass.”

Godsil, MATH 249

[*About reversed polynomials.*]

Student: But how does that relate to the factors of the original polynomial?

Prof: The simplest answer is “I don't care.”

Student: But how do you know that procedure gives it to you?

Prof: Well, I did it.

Godsil, MATH 249

“The nagging problem in the number system now [is] the dirty word, Induction.”

Jao, MATH 145

Prof: We need to give a name to the least element.

Student: L.

Prof: That's a horrible name.

Jao, MATH 145

“Your [previous] instructor probably wasn't as enlightened as this class, and would not necessarily allow you to write it this way.”

Buhr, CS 343

“I like to think of concurrency as whitewater rafting without a raft, skydiving without a parachute.”

Buhr, CS 343

“It turns out I lied to you, and I lie to you a lot.”

Buhr, CS 343

“If I died of a heart attack from too much excitement teaching probability, one of you would have to take over.”

Hofert, STAT 240

“This inspired some pure mathematicians to come up with theorems that no one can understand.”

Sivaloganathan, AMATH 351

Prof: We can get this solution to the DE by inspection.

Student: What if you can't?

Prof: Then you break down and weep.

Sivaloganathan, AMATH 351

Student: What if no other thread signals your thread to wake up?

Prof: Then your thread becomes the sleeping beauty and sleeps forever.

Wong, CS 350

“So Prince Charming just kissed your sleeping beauty thread and it wakes up, but then another thread in the ready queue jumps right in front of you, grabs the lock and puts you back to sleep again.”

Wong, CS 350

“All graduates from prestigious universities know this [equation of motion]. Engineers use this all the time. I mean serious engineering, not coding for Suckerburg.”

Chang, AMATH 456

profQUOTES

- “But gravity is not a force. It’s a curved time and space, and it turns out to be totally awesome and cool.”
Epp, PHYS 121
- “My favourite colours are $\{0,0\}$, $\{1,0\}$, $\{0,1\}$, $\{1,1\}$.”
Geelen, CO 342
- “How did I know [to do that]? Well, I made the example.”
Geelen, CO 342
- “If we were allowed to burn things in class, I would suggest you to do so...”
Geelen, CO 342
- “I’ll give you a complex proof even though it’s trivial.”
Geelen, CO 342
- “If you drive down Glasgow Street, there’s this 2-meter large boulder with $P=NP \cap \text{coNP} \neq NP$ carved on it.”
Geelen, CO 342
- “Every time I teach this course I prove it a different way, because I think ‘Well, that turned out to be a disaster last time’.”
Geelen, CO 342
- “We’re going to use the well-known ‘Proof by Picture’ technique.”
Geelen, CO 342
- “You can ignore the phrase ‘algebraically independent commuting indeterminate’ and write ‘variable’.”
Geelen, CO 342
- “I say [there is an] even cleverer algorithm because it’s my algorithm.”
Geelen, CO 342
- “You shouldn’t have to look at me like I’m from outer space when I say $A = -A$ implies $A = 0$.”
Geelen, CO 342
- “That part is clear once you stare at it for a while.”
Geelen, CO 342
- “Hopefully, my logic makes sense. If my English makes no sense, that’s fine.”
Li, STAT 430
- “It’s 2:30 and you’re not ready for this kind of advanced humour.”
Shallit, CS 341
- “ARGH! Stupid Maple, says you can’t recurse 5000 times.”
Shallit, CS 341
- “Compute some numbers! Pretend we’re in the science faculty; it’s an experiment!”
Shallit, CS 341
- “My wife doesn’t like convex geometry.” [*Rubs stomach.*]
Reza Ramezan, STAT 443
- “First quiz you guys averaged 32%. Second quiz 74%. Following that trend I expect 180% on this quiz. You better get 180”
Dan, BU 405
- “Aw Crap she just took my notes. We have a problem, the previous instructor took my notes”
Purbhoo, CO 330
- “There’s a course outline. It would be all the things I would have talked about till all of you are bored.”
Purbhoo, CO 330
- “You do the thing where you pretend to look confused and I can pretend not to notice.”
Purbhoo, CO 330
- “I want you to remember these bijections. Hey, remember these bijections we did three weeks ago. You are going to say no and I’ll be disappointed.”
Purbhoo, CO 330
- “What’s my favourite string? It’s not a G-string.”
Pei, MATH 239
- “I am always mean, that means I am always just average.”
Pei, MATH239

Dear Iron Warrior

It is **profQUOTES** not “Prof Quote”. And the s is important: without a plethora of **profQUOTES**, real stinkers become much more obvious, like the one you picked. Students have bad opinions and profs say a lot of boring things. With a bunch of them, eventually you’ll hit upon some good ones and get some good ol’ cherry picking so people will say that they love **profQUOTES**.

Love,
Ice Nine

**Falcon.... PUNCH!
CAPTAIN FALCOOOON!**

On Journalistic Integrity

Recent investigation into **mathNEWS** journalistic integrity, has revealed that **mathNEWS** editors perform fact checking on articles published in **mathNEWS**. Several examples of articles which did not meet the bar for factual accuracy were given, complete with proof in form of a Google search history [*"Do dogs have 4 knees?" is now on my search history.—DictatED*]. **mathNEWS** editors pedantically verify the accuracy of the claims made about the natural world, to the absurd level. This demonstrates conclusively that **mathNEWS** has greater journalistic integrity than certain programs on Fox News or various Sun Media properties.

dbro

10 Reasons Why I Should Have a Toaster

1. My bread is moldy, and toasting it fixes it.
2. Bread is better crispy on the outside, soft on the inside.
3. The amount of bread consumed by quiz and company exceeds 4 loafs a week, which goes to a rate of $\frac{4}{7}$ loafs a day when you take the derivative. Much potential toast is wasted as bread.
4. Stick a fork in the toaster for some quiet study time in a hospital.
5. A toaster is a cheap, easy way to feed poor university students – just buy some cheap bread, and make enough toast for a family.
6. Toast to charcoal conversion is a possibility for later steel-making.
7. Disinfect utensils by placing them in the toaster and setting the timer for full, saving water and the environment.
8. The toaster provides light with a heating element. Position on a desk for a simple incandescent lamp.
9. The toaster is a quiet companion whom you can explain your mathematical brilliance to without end.
10. If you're in mechanical engineering, you can hit someone with the toaster, and write your master's thesis on it.

If you have a toaster to give away, drop it off in the *mathNEWS* office; I'll pick it up next Monday.

quiz

Many Reasons a Toaster Oven is the Best

Toaster ovens are better than either toasters or ovens.

- You can make 6 pieces of toast at once.
- It heats up faster than an oven
- It heats up less of the house than an oven, which is wonderful in the summer (No more fighting the AC)
- You can make grilled cheese sandwiches with it.
- Can your toaster make grilled cheese? NO! It'd leak the cheese all over the insides of the toaster, and you'd have a sad time.
- You can make fake pizza by putting some tomato sauce and cheese on your bread, and putting it into the toaster oven to cook. This is delicious.
- Pre-heating the oven is super fast. No more waiting around to put the food in.
- You can cook bread in the toaster-oven, and then toast it right after.
- You can cook chicken fingers and other lazy food in your toaster oven.
- The toaster oven is a great listener and will never, ever judge you.

If you have an unloved toaster oven, the *mathNEWS* office will find it a caring home.

SuperNova

My Bug Safari Adventure

“Bring sunscreen, wear a hat, and bring water.”

Those were the only instructions my guide gave me. I was apprehensive; this was my first bug safari and I had no idea what to expect. The instructions were sparse—incomplete, even. Is this everything? What should I expect? Am I going to regret this?

But the time to worry was long past. We had already started our journey, and there was no turning back. The only way I was going home was after this adventure was over.

“Right. We've arrived at Zone 1. These are the little bugs, the ticks. Careful—you'll want to stay out of the tall grass.”

Being curious, I tried to peek into the tall grass, but I couldn't see anything. The guide noticed, fearlessly walked toward the grass, and quickly captured a specimen in a glass jar.

“Ah, here we have a nice specimen from the integer overflow family. See how it's bright red? In a few moments, it'll overflow and suddenly turn black.”

Confused, I looked into the glass jar. As the guide said, there was a single red tick. It was skittering around the jar, moving faster and faster, when it suddenly stopped. Then, in the blink of an eye, its colour changed to black.

“Yeah, it's pretty cool, right? But over there, in that clearing, is something cooler.”

As we approached the clearing, it soon became apparent that there was actually a giant crater in the grass.

“Yeah, this was caused by a nasty little tick, if you'll believe it. Fortunately these guys—division by zeros—are incredibly rare in the Safari. And they're pretty easy to avoid.”

I was in awe. Such a tiny little critter, causing this much devastation?

“OK, I think we've seen everything in Zone 1, all the arithmetic bugs. Onto Zone 2!”

To be continued?

notbob

I know nothing about safaris or ticks. My natural habitat is a seat in front of a computer screen in a room without windows. I apologize for any factual errors.

This article may or may not be continued next issue. I started writing something which turned into a lame joke and couldn't figure out what to write next, so I ragequit. I apologize for the inconvenience.

Interview with Psychic Mathie

Q: Thanks for joining me today. I'll be asking you a few questions to test your abilities.

A: Of course, ask away!

Q: You seem very confident in your psychic powers.

A: Why wouldn't I be? I'm always right. Well, except when I'm wrong, but we'll ignore that.

Q: ...That statement is surprisingly logical, but I don't think it tells me anything I don't already know. Why don't you try predicting something in my future?

A: You seem to think that predictions just come out of the blue. Let me tell you, it's very difficult to predict the future. You need the perfect set of conditions in place, first.

Q: What sort of conditions?

A: The stars need to be aligned, the geese must all be silent and pacified, and an engineer should be drowning their sorrows in alcohol somewhere.

Q: The last one should be easy, but I'm not sure I can do anything about the stars or the geese.

A: In that case, you can just give me 20 bucks.

Q: Seriously? What happened to all those "conditions"?

A: Don't you "airquote" me. Psychics as powerful as I am have learned to make do with the resources at our disposal. Now, do you want a prediction or not? 30 bucks.

Q: You just said 20!

A: You need to factor in inflation and the fact that I just realized my sudden need for ice cream. Now pay up.

Q: Fine, here. Now what can you tell me about my future?

A: Let me see... Oh, something's coming to me... On your next midterm...

Q: Yes?

A: You have a 50% chance of guessing a true or false question correctly.

Q: ... How do you know I'll need to guess?

A: You're here interviewing me instead of studying, aren't you?

Q: ...Fair enough. Here's a tougher one. How many questions will I have to guess?

A: Judging from how long this interview is taking, probably all of them.

Q: I don't think that's the kind of prediction the readers will be satisfied with. Let's try something else. I've heard that psychics can sense things that normal people can't. Tell me, is there anything you sense about the university?

A: It's good that you asked. I've been sensing a dark, malevolent energy over campus lately. It's been slowly building in strength and will only continue to grow as the months grow colder. The spirits will be temporarily appeased at the end of December, but will return mid-January.

Q: Really? And what do you think is the cause of this energy?

A: The misery and desperation of students brought on by midterms and finals, of course.

Q: That one, I have no problem believing. Last question, then. Can you touch this hoodie and tell me what you sense about its owner?

A: That's easy. Male, short, colourblind, and studying CS. Oh, and he's annoyed at you.

Q: Male and short are easy guesses, but how did you know the rest?

A: Well, it's a god-awful shade of puce and has some tech company logo on the back. It's also still warm, so you probably wrestled it from your unsuspecting friend on your way to this interview. I'd give it back to him soon, if I were you. I can sense increasing negativity in his aura... Oh, and some anger management issues.

Q: You can sense his anger management issues because he's currently outside this broom closet, aggressively listing the things he'll do to me once he gets his hands on me.

A: Putting bugs into your next coding assignment doesn't sound very nice. There's a 100% chance you're going to be changing your passwords after this. Now can we get out of here? This place is messing with my aura and I have a pile of assignments waiting. There's a 97% chance I'll need to binge on ice cream before the night is over.

Q: And that prediction marks the end of this interview! Thank you for joining me and for sharing your...talents.

A: My pleasure.

XOXO

Submit your *prof*QUOTES, *grid*SOLUTIONS, Math Puzzle solutions, and questions to the Dean to the BLACK BOX on the third floor MC!

Zethar's Guide to Table-Top RPGs

Not just D&D

The gentle breeze offers relief to a pack of weary travelers, who are sweating under the midday sun. Disgruntled from fording a river, the party's pack mule lags behind with barrels and boxes of adventuring goods, including a package to be delivered. Where are these adventurers headed? How will their day unfold? Though an atypical scenario in an action-packed system such as D&D, other Table-Top RPGs (TRPGs) are available to explore such nuances.

These systems work on different flavours of story with new mechanics; for example, Traveller has a system which simulates character creation in a procedure, wherein the character's life before the story is played out in some detail. Did your character live a cushy life as a second son of a noble in a distant planet? Was your character a vagrant who was drafted into the military and subsequently made it big in merchanting? Traveller, despite being the space opera system to D&D's sword and sorcery, managed to inspire many other systems (e.g. Burning Wheel). Alternatively, a game could focus not on a story prepared by a game master, but on intrigue between players and conflicting agenda, such as Paranoia (although that's more well-known for something else entirely, more like its namesake).

Of course, there are generic systems independent of a setting or genre, of which the most famous is the 300-pound heavyweight GURPS (Generic Universal RolePlaying System) which tries very hard to adhere to the "Universal" part of its name; a common adage said about GURPS is if there's something you want to do, there are rules for it somewhere in a GURPS rulebook. Other generic systems exist, but tend to be on the more rules-light end of the spectrum such as FUDGE.

Speaking of rules light, there are a large variety of rules-light systems for players who do not want to be overwhelmed by the 300-paged volumes of core rules and the never-ending supply of

supplementary material. Systems such as Savage Worlds, Fate, Do (pronounced like "dough"), Fiasco etc. allow more focus on storytelling and not on the rules on how something could be done. There are many independent gaming systems which are very rules-light due to the ease of publication and distribution. At very close to the minimalist end, we have Everybody is John which is exactly as it sounds.

There are also systems focusing on a variety of other things, such as storytelling. As an example of a more gothic setting, we have World of Darkness which focuses on the characters and their interaction in storytelling, and the impact of the story and characters in such a world. There are others, such as Ryuutama – all of which are relatively rules light in terms of what one can do, and usually allow for things to happen as long as they fit the narrative. If one is interested in this style of TRPG, shop around and find the system that fits the story to be told.

As one can probably clearly see, there are a lot of TRPG systems out there, but the most important thing to remember about TRPGs is that what one gets from the experience is directly influenced by who you play with; it's sort of a what-you-put-into-it-is-what-you-get situation. I am confident that with the right group of people and system, the hobby is suitable for anyone. However, due to the paralysis that a large number of choices gives, finding the combination is very difficult. Playing many TRPGs is a significant time commitment, but it is usually an enjoyable one nevertheless. If one is interested in TRPGs, feel free to read up on the subject or go to Friday Night D&D, run by Watsfic every week. If you would like me to answer your questions, you can write your question (or comment, or hat mail) and place it in the **BLACK BOX** located between the Math Coffee and Doughnut Shop and the Comfy Lounge on the 3rd floor of MC.

Zethar

N Ways to Type N

Because you really needed to know

N - U+004E LATIN CAPITAL LETTER N
 n - U+006E LATIN SMALL LETTER N
 ⁱ - U+207F SUPERSCRIPT LATIN SMALL LETTER N
 ₪ - U+2099 LATIN SUBSCRIPT SMALL LETTER N
 N̄ - U+2115 DOUBLE-STRUCK CAPITAL N
 (n) - U+24A9 PARENTHESIZED LATIN SMALL LETTER N
 N̂ - U+FF2E FULLWIDTH LATIN CAPITAL LETTER N
 n̂ - U+FF4E FULLWIDTH LATIN SMALL LETTER N
 ℵ - U+1D4A9 MATHEMATICAL SCRIPT CAPITAL N
 𝔑 - U+1D511 MATHEMATICAL FRAKTUR CAPITAL N
 n̄ - U+1D52B MATHEMATICAL FRAKTUR SMALL N
 ™ - U+1D55F MATHEMATICAL DOUBLE-STRUCK SMALL N
 𝔑̄ - U+1D579 MATHEMATICAL BOLD FRAKTUR CAPITAL N
 n̄ - U+1D593 MATHEMATICAL BOLD FRAKTUR SMALL N

AltGr

How to Interact with Majors Different From Your Own

Here you are at university, ready to spend the next four or five years of your life studying a subject you love and spending thousands of dollars to fund this endeavor. Throughout the course of your adventure, you will occasionally meet people who decided to study different subjects.

You could start a conversation with this person, stating your disbelief that anyone would ever study another subject—or, depending on the case, how much you simply hate that subject. However, I would suggest that insulting what someone is passionate about is not the best way to make a first impression.

Sincerely,

A disgruntled stats student who has already collected sufficient data on the prevalent hatred of statistics and has no interest in surveying any additional people on the subject

Bad Math

Another Election!

In recent news, Toronto is having an election. Like most elections, it is using the first-past-the-post system (FPTP). There is also a push for Toronto to move to some sort of ranked ballot system. However, both are not truly fair.

First-Past-the-Post suffers from the rather obvious deficiencies of tactical voting and vote splitting. Tactical voting is where an individual is forced to vote for a candidate they do not prefer. Usually this is because the preferred candidate has little to no chance of winning, and as such a vote for them is all but wasted. Thus, an intelligent voter will vote for the candidate which is most preferred that has a chance at winning. Tying into this is the issue of vote splitting, where particular groups of people are courted by multiple parties. To use an analogy, say there are three parties: red, orange, and blue. The blue party is guaranteed to get the blue voters, and the orange party is guaranteed to get the yellow voters. However, the red and orange parties will fight over the red voters. If the number of red voters and the number of yellow voters are each less than the number of blue voters, but red+yellow is larger than blue, then particular ways of the red/yellow vote splitting between the red and orange parties will result in the blue party winning, despite not having a majority of the support. In fact, it is possible for blue to win with a minimum of 1/3 of the vote (plus one voter so they have a full majority). The addition of a yellow party could further split the vote, giving blue a large advantage in any election. Thus, increasing the number of distinct parties can impede proper representation of voters, rather than enhance it.

Ranked balloting systems do not suffer from the same kind of tactical voting and vote splitting as FPTP. In most systems, if no candidate has a majority, the candidate with the fewest votes is disqualified, and the result is recalculated. People can then rank the candidate who has no chance of winning at the top, and do a proper preference ranking. However, ranked balloting for at least 3 candidates can run into some issues itself. Say there are 3 candidates and 3 voters. Then it is possible to have a cycle of preferences, where person 1 says $A > B > C$, person 2 says $B > C > A$, and person 3 says $C > A > B$. Then nobody wins

the election. Removal of any one of the candidates will change the result so there is a clear winner. So, which candidate gets removed? In real life, ties in votes are highly uncommon, and appealing to the pathological cases seems petty, but if we want a “fair” voting system, we need to look for pathologies.

It would seem that, in voting, we just can't have nice things. This is exactly the case. Arrow's impossibility theorem states that no rank-order voting system can simultaneously satisfy:

1. If every voter prefers option A to option B, then the results will have A preferred to B.
2. If every voter's preference between A and B remains unchanged, the results between A and B should remain unchanged, even if additional options such as C or D are considered.
3. There is no single voter which determines the group's preference.

For most useful voting systems, 1 and 3 are satisfied, and 2 has to be weakened.

A similar theorem (with a much less interesting name), is the Gibbard-Satterthwaite theorem, which states that, for three or more candidates, every deterministic voting system which chooses a single winner, using only the preferences of the voters, will have one of the following true about each voting rule:

1. There is a dictator.
2. There is a candidate who cannot win under the rule.
3. There exists a situation in which a voter with perfect knowledge of the behaviour of the other voters and the rule will vote contrary to their own preference (i.e. tactical voting).

Thus, if we want to come up with a truly “fair” voting system, we are going to need to look further afield than ranked voting. Perhaps rated voting will work out? I, for one, would appreciate it if I could assign a candidate P_i votes, or perhaps $\sqrt{-1}$...

MeaninglessQuips

Tinder For a Straight Girl

- First things first: I'm sorry.
- This is a bad idea. Abort. Immediately.
- Your thumb will hurt from swiping left so often. It's not that they're unattractive, but they aren't really attractive either.
- Embrace your inner mean girl. This app was meant to be superficial.
- They all ski apparently. There is a very high probability that his name is Ryan.
- Once you do swipe right, let me tell you that it will be a disappointment. These boys cannot carry on a conversation.
- I'm sorry.
- They are thirsty as hell. It's cool if you're down for that, no judgment, but on the whole, these boys will be thinking almost exclusively with their penis.

- Your conversation will start with, “What's your major?” and end with you not responding to, “Wanna see my cock ;)”
- Their penis will not be as impressive as they like to brag.
- No, you did not misjudge how long seven inches actually is.
- Unwarranted dick pics are unfortunately a part of the experience. Not a good part of the experience, but a part of the experience.
- I'm sorry.
- One day though, maybe, you'll meet a nice boy. Who will be cute. And converse well. And treat you to a nice date. But that's very, very unlikely.
- I'm sorry.

speep

Dating Advice from the Dean

We here at *mathNEWS* decided that we should ask the Dean for any dating advice or wisdom he had. As you can see in the following, it was a huge mistake.

Dear Dean: recently there's been someone who's caught my eye. I can't stop thinking about her, from my 8:30 classes where I'm supposed to pay attention, all the way to when I'm lying in bed, staring at my ceiling. I hear whisperings of her name when I wander through the MC halls, and I keep seeing her out of the corner of my eye when I walk past classrooms. Dean, I think I'm in love with algebraic proofs. I met her a few times [in] before, but our interactions were always short, since I was a busy person with lots to do. Now, I want to get to know her better, solve her problems and make her a meaningful part of my life. How do I approach her and let her know that she's my axiom of choice?

Ian: I'm... just sorry to read this. I'm gobsmacked. I think you should go to Counselling Services without passing Go. You are in deep trouble. There's nothing I know less about than dating advice.

MuffinED: Why? Didn't you have to date your wife?

Ian: [Raises his left eyebrow.] I have a policy of strict denial.

What makes a successful first date?

Ian: I don't know. I had a couple that lasted at least fifteen minutes; I think that was pretty good.

SketchED: I would consider that a success. Can you describe them?

Ian: Uh, I can't remember.

MuffinED: Did they run away after?

Ian: You mean after fifteen minutes? No, I think they might have stayed for more than... twenty minutes! Possibly half an hour! That was a big success.

Have you ever studied math with your wife?

Ian: My wife is not math-phobic, but she's not a mathematician. She charmingly refers to my current job as Head Math Nerd.

SketchED: Well, technically you are the head of all the math nerds here.

Ian: I'm nerdiest of the nerds, so yeah! She pats me on the head a bit, and she's happy that I love math, and she's happy when I start writing something about a theorem and smiling, that sort of thing. It's good. But it doesn't work for herself. She thinks of taking statistics as an undergraduate or calculus as a grade 13 student and just really struggling through it. So did I avoid your question well?

How did you woo your wife?

Ian: I remember one early date with the wonderful woman who is now my wife, Susan. I had a terrible car at the time. It was called an Omni, and it was on its last legs. You know, the engine would go... [Makes dying engine noises.] She was living in Toronto at the time, and I was living in Waterloo. We went out for the day somewhere. But on the way home, its personality acted up and it developed a bit of a problem. On two occasions we pulled into a Canadian Tire parking lot—I knew where every single Canadian Tire in Ontario was at the time—and she agreed to sit in the parking lot with her foot on the gas to keep it going while I went in and got a part. I eventually nursed it home. It actually worked out okay, because thereafter she agreed to see me again, but she very kindly thought that maybe she should drive her car.

bunniED: Was the weather nice, at least?

Ian: You know what, it was a nice fall day, we'd gone for a walk in the Bruce Trail somewhere. It was all good except that maybe we weren't going to get home because the motor wasn't running very well. It was knocking and skipping. So, it was a nice day and we got home successfully. And I never drove that near her again. I always smelled the gas when I was driving that thing.

MuffinED: Ugh!

Ian: Yeah! I ride my bicycle to work in Waterloo, so you see, she still has the only vehicle in our family.

Help! I'm socially awkward! How do I overcome this and ask someone out?

Ian: Look, there's someone out there for all of us. If you want to find someone, you'll find someone. Take a pill; don't worry about it. Oh, sorry! I don't mean physically take a pill. Relax! Chill—that's what my daughter says, "chill", right? Oh, "chillax", that's what my 17-year-old says. Is that the great vernacular? Chillax! There's someone there for all of us. Don't worry about it.

SketchED: So you're saying that if you meet that person, you would know, in some sense? Do you believe in the destiny type thing, or the second you know it's the person, you'll immediately be able to get past the barrier?

Ian: I don't know about that "knowing they're the person". I just know that all of us, even if we look in the mirror, we don't see ourselves as other people do. I'm absolutely certain that almost everyone is more concerned about making a mistake or messing up or being awkward than other people see them as. Kind of like dancing, you know—I've got two left feet, but if I go out there and dance and pretend that I'm okay and smile, then no one will notice that my feet are munching all over themselves.

Have any questions for the king of nerds? Submit them to the **BLACK BOX** or email them to mathnews@gmail.com!

The Editors

How to Take Candid Photos

The subject: The most important part of taking candid photos is that they're candid. The subject being photographed cannot know that you are sneaking a photo until after the fact (or never).

The camera: If you only plan to sneak a single photo of someone you know or to take the photo from a distance, shutter noise and flash don't matter much. In fact you want your camera to be as obvious as possible so people think you're the artistic type of hipster and just let you be.

However, say you're sitting across from some celebrity look alike on a bus and you want to sneak a photo. It is extremely important that your camera doesn't yell "LOOK AT ME! I JUST TOOK UR PICTURE!". This means no noise, and no flash. You're betting on natural lighting being enough to snap a decent photo.

Execution: Again, if you're doing this from a distance, you have many more options, work with them.

Up close, you want to be discreet. Ideally you're facing the person and on your phone when you identify your subject. Don't make eye contact with the subject and keep your eye on your phone. Be on look out for other people around you that might see what you're up to. Then casually pretend you're trying to find the best angle to avoid glare and snap your pic.

Funnily enough, candid ass photos are the easiest to take. Just hold your phone in your natural phone viewing position when you walk behind someone and your camera should be pointed approximately where you want it to. Happy photo taking.

dickButt

Mathematical Puzzle

Dear readers, unfortunately I did not get a chance to read your entries from last issue. I had been informed that there was at least one entry (hooray!) for last week's submission, so there may be a winner yet! If you are participating in more than one puzzle challenge in *mathNEWS*, it would be kindly appreciated if you could submit your solution to each challenge on a separate sheet of paper, as that would facilitate separating the submissions.

This week's puzzle will be more imaginative. John Conway, Bill Gates, and David X. Cohen have all worked on this problem.

Suppose you are a waitress in a crummy diner where the cook always burns one side of every pancake, and no two of the pancakes are ever the same size. You, as a waitress, must sort the pancakes in ascending order of size and have all the burnt sides face down. The cook hands you a stack of n pancakes in any configuration and you can flip over the top k pancakes all at once, for any k you choose, and that action counts as a flip. What is the maximum number of flips required to have all n pancakes flipped right side up in ascending order, for an arbitrary n ?

Last Week's Solutions

O	L	S	O		L	E	P		P	O	L
E	I	K	I	B		N	W	S		A	M
S	A	C	O		U	A	E	R	E	R	B
	A	T	R	O	A		S	E	O	D	O
S	R	R		E	V	E		F	L	E	
N	V	T	S	I	N	A	H	G	F	A	D
A	C	A	E	C		T	A	O		M	E
E	L	C	R	I	C	I	C	L	R	A	N
L	W	B	A	I	R	A			A	M	L
C	O	R		Y	A	R	T	N	E	M	S
			N	D	E	S	E	Y		H	I
Y	D	A	E	R	L	A		D	E	E	
E	L	B	A	P	A	C	N	I		N	A
R	E	C		B	A	R	A		O	N	A
F	H	C			C	E	M		S	B	B

So Many Typos

Upon copy-editing v126i1 for grammar, I introduced so many new typos to articles that I might as well not have made any changes. To prevent this from happenign again, I have decided to write an article filled with typos to ward them of form other article. It's like pre-rolling dice so that you weed out all of the 1s and don't roll any during yout game. That's how probablitiy works, rihgt?

bunniED

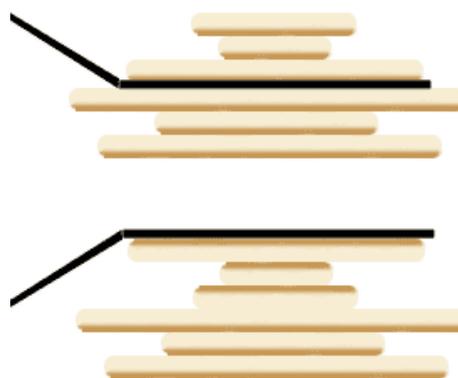
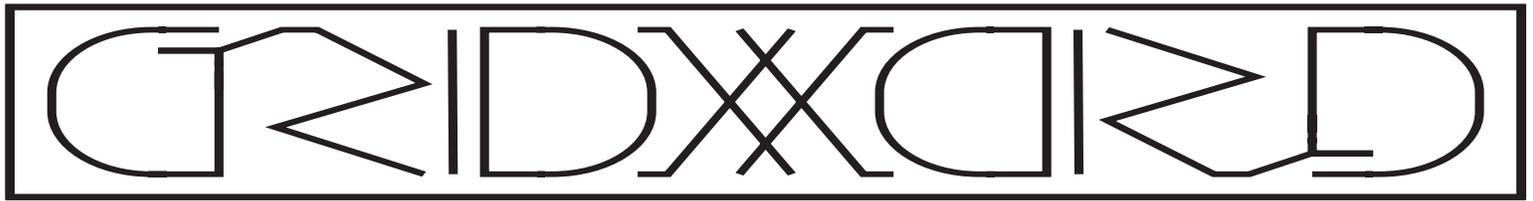


Fig. (Above.) The operation of flipping over the top 3 pancakes from the atack (from Wikipedia)

Please submit solutions to the **BLACK BOX**. A reader who submits a correct solution will receive a \$5 C&D gift card, and in the event of multiple correct submissions, the winner of the \$5 gift card will be determined by random draw.

edogawa



gridCOMMENTS

Gnarled Niefs

So much for New York Times style! And look at all those two-letter words! Disgusting.

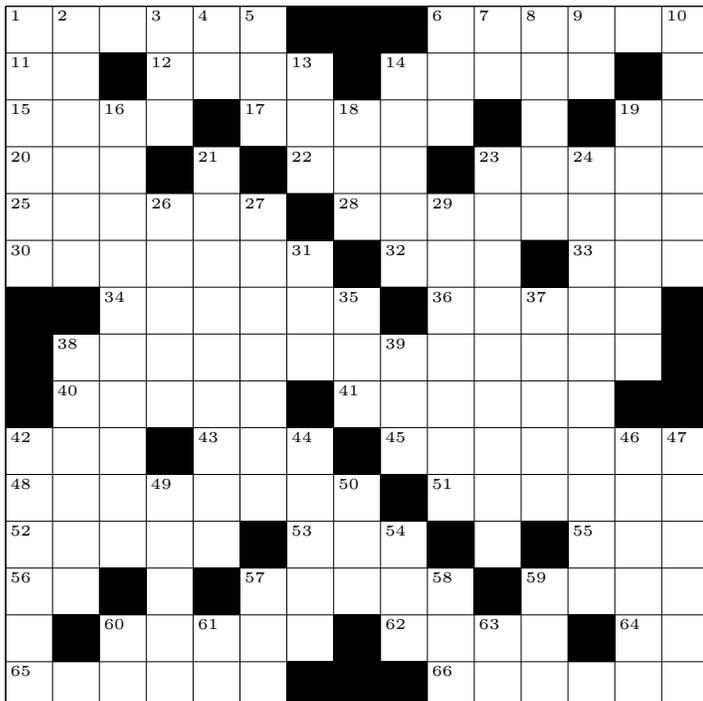
Eight out of twelve submissions were perfect—sorry Maria, Neivin (don't give me your student IDs!), Travis, and Jen. "32D. Late-night looper" was OWL CAR (referring to the GRT Late Night Loop). Last issue's **gridQUESTION** was "Why not?"—horrible question, I know. Abraham's "Waterloo, the spirit of" was precisely not what I wanted to hear. Adrian, Bridget, David, and Grant wrote answers that were a bit too long; better luck next time. Rob and Chrissy, in a fit of parrotry, both answered "Y₀". Kevin's answer of "¬Y" (with albeit an oversized descender), on the other hand, was a clever minimalist twist on my query. So congratulations, Kevin! You may pick up your prize at MathSoc.

Submit your solutions to the **BLACK BOX** (by the Comfy Lounge on floor 3 of MC) by 18:30 on Monday, October 13th, Thanksgiving. Include your name and your answer to this issue's **gridQUESTION**—the best one decides the winner (of a \$5 C&D gift card) in the event of a tie: "What does the fox say?"

Cheers,
unit

P.S. I hate making up **gridQUESTIONS**.

This Week's Grid:



gridCLUES

Across:

1. Record cover
6. Protective pendant
11. Cali city
12. Quaff
14. Accompaniment instrument
15. Eyes wide open
17. Slartibartfast's sculpture
19. Decinewton
20. Wub
22. Court or take to court
23. Demon of fornication
25. Tennessee Williams wrote many such plays
28. Steep shop
30. Some Cristeros
32. B-ball league
33. Popular peeper
34. Nice ice in Sicily
36. Ruto villager
38. Letting the grass grow
40. Taken out of someone's book
41. Forte foil
42. Arabic lute
43. Audio cable
45. *Candado*
48. Vireo
51. Département after a river
52. Rode badly?
53. Backhanded compliment
55. Moray, say
56. The World that Is
57. Stalked growth
59. Private school pupil
60. Swimming seductress
62. Carte du jour
64. Greek P
65. "On Every _____", a Dire Straits album
66. Beauty steak

Down:

1. ((Super) Giant) _____
2. Wet Renault?
3. Golden treasure inside is hid
4. *Déjà* _
5. Quenya quether
6. Help
7. Master of Arts
8. "A duet" in French
9. Oft with "behold"
10. Cycle type
13. Jammies
14. Smoothen feathers
16. Varnished or gold-plated
18. Not in
19. Organisational meeting, at least here
21. A rock and...
23. ...a hard place
24. Fool
26. "Spider monkey" in French
27. As much as a platter will hold
29. Named after that Norwegian, Niels
31. HPV or HIV
35. Fool
37. Lunar trench
38. Transbaikalia
39. Chop off
42. Fiona from Shrek
44. Supernovan noblesse?
46. 49D
47. Loch horse
49. 46D
50. ___ Aviv
54. Weight room
57. Stroke
58. Scandinavian Peter
59. Watering hole
60. Strontium
61. D to C
63. Nickel

