

lookAHEAD**mathNEWS**

January 20	Issue 1 of Volume 133 is released
January 30	Production Night for Issue 2

MathSoc

Jan 26	Board Games Day
Feb 2	Board Games Day

University

Jan 20	Game Jam
Jan 24	First round of job postings closes
Jan 27	Second round of job postings opens
Jan 31	Second round of job postings closes
Feb 1	Job Fair at RIM Park
Feb 3	Distinguished Teacher Awards Noms close
Feb 4	Game Dev in a Day

Misc

Jan 20	A Brief Tour of Science Comedy Seminar Geometry & Topology Seminar Analysis Seminar Friday Night Magic (MTG)
Jan 24	WICI talk on Economic Forecasts
Jan 25	Velocity Presents: Find Your Kick Ass Idea
Jan 26	Study Strategies Workshop for STEM Perimeter: How Do Pulsars Shine? Australia Day
Jan 27	Detecting and Resolving Software Errors Friday Night Magic (MTG)
Jan 28	WatSFic Board Games Day Waterloo By Night Chinese New Year National Opposite Day
Feb 1	Perimeter: The Physics of Wall Street
Feb 2	Groundhog Day
Feb 4	Create A Vacuum Day

ISSN 0705—0410*Founded 1973*

mathNEWS is normally a fortnightly publication funded by and responsible to the undergraduate math students of the University of Waterloo, as represented by the Mathematics Society of the University of Waterloo, hereafter referred to as MathSoc. *mathNEWS* is editorially independent of MathSoc. Content is the responsibility of the *mathNEWS* editors; however, any opinions expressed herein are those of the authors and not necessarily those of MathSoc or *mathNEWS*. Current and back issues of *mathNEWS* are available electronically via the World Wide Web at <http://www.mathnews.uwaterloo.ca/>. Send your correspondence to: *mathNEWS*, MC3030, University of Waterloo, 200 University Ave. W., Waterloo, Ontario, Canada, N2L 3G1, or to [userid mathnews@gmail.com](mailto:user:mathnews@gmail.com) on the Internet.

This work is licensed under the Creative Commons Attribution-NonCommercial-No Derivative Works 2.5 Canada License. To view a copy of this license, visit <http://creativecommons.org/licenses/by-nc-nd/2.5/ca/> or send a letter to Creative Commons, 559 Nathan Abbott Way, Stanford, California 94305, USA. Terms may be renegotiated by contacting the editor(s).

George Lambrou
Angela Le
Heather Stonehouse

mastHEAD

I'd like to begin this term's volume of *mathNEWS* with a small, but powerful, piece of advice:

No matter what you do, you can *never* escape.

Your past *will* come back to haunt you. What you leave unfinished *will* leave you incomplete. And when you think you've finally escaped the academic disaster that is your degree, you *will* find yourself right back at school, typing up a **mastHEAD** as a freshly-appointed editor of this paper, a pennance cosmic for years of stealing its pizza.

And of course, *you*, my dear reader, can *never* escape *mathNEWS*. Whether it be its omnipresence in the buildings of the Math Faculty; the forgotten issues you'll be finding decades from now, when you finally have the money to move out of your parents' house; or a sudden, unexpected promotion to Editor, waiting in your inbox as you board an airplane bound for YYZ, *mathNEWS* will *always* find you.

Speaking of, that brings us to the topic of this issue's **mastHEAD** — namely, the promotion of three brand new, unseasoned editors to oversee the production of UWaterloo's Bastion of Erudite Thought. Yes, that's correct: the gods of old have left, leaving a new and nearly *clueless* Pantheon to take its place, and as such, we thought it prudent to ~~crowdsource our entire plan~~ seek advice from our ever diligent army of ~~worshippers~~ writers, thus bringing us to this week's **mastHEAD** question:

"What advice do you ~~offer as a tribute to~~ have for the new editors?"

me("It's okay to write in terrible English because the editor will fix it! And by writing terribly, you acknowledge their hard work! Therefore I encourage you to make lots mistake!" [Editor's note: I would strongly advise *against* employing this philosophy on a regular basis.]); Zethar("Try not to get killed. Meddle not with the affairs of dragons."); Stubbs("Insist that the MEF give you money in coins. Then carry it around in a money bag with a '\$' on it. Enjoy the weight and the jingle."); Diminutive Rex ("You guys are the best. <3"); HatOfChocolate("More chocolate milk."); Octopodes("It's okay to have tentacles, as long as you are respectful of people who don't have tentacles."); Beyond Meta("Start looking for new editors in order to alleviate your workload. An important criterion for any good successor is the ability to choose a good successor."); OwO("Do not throw souls!"); anon("Spend extravagantly!"); twmpotte("Moar online!"); waldo@<3.LE-GASP.ca("Pace yourselves, don't panic, and remember to print everything double-sided (including the cover)."); Kelsey("Spoil us!"); Soviet Canadian("Leave readability as an exercise for the readers"); Scythe Marshall(" Don't listen to people who haven't thought enough about what they're telling you. Also, try not to change the layout?") THE OLD GODS("RESPECT THE OLD GODS"); THE NEW GODS("REJECT THE OLD GODS"); toBeDeterminED("Any god, help me!"); ExtrovertED("No.").

George Lambrou ("Check your emails for sudden promotions *sooner* than four days after classes have started.")

MEF Sez

Hello all! This hasn't happened in a while so most of you probably don't know what MEF is (although hopefully you know what a "Sez" is). MEF is the Math Endowment Fund, a student run fund with a principle portion that is currently over \$6 million. The purpose of this fund is to provide resources to improve the Math student experience. Improvements to your courses, buildings, classrooms, student spaces, and various student resources have been funded by MEF (including students going to conferences). My job, as the MEF Endowment Director, is to manage the fund for this term.

However, funding isn't allocated by me (for the most part). Instead, it is approved by a Funding Council made of representatives. This council will meet once (sometime mid-March) and review all of the proposals that come in to decide who deserves funding. We have a lot of funding to give out this term (over \$100k), so this is a position that will have a lot of impact. Nominations for this council will happen later in the term; watch *mathNEWS*, your email, or like us on Facebook to stay updated!

If you have an idea for a project that could help improve the Math student experience, or want to go to a conference, please submit a proposal by March 10th, 2017.

The forms to submit a proposal or run for Funding Council are available on the MEF website at <https://www.student.math.uwaterloo.ca/~mefcom/forms/> and need to be dropped off at the MEF mailbox in the MathSoc Office (MC 3038). You can also scan and email them.



If you have any questions or want to get involved, send me an email to mefcom@uwaterloo.ca.

Have a great term!

Tristan Potter
MEF Endowment Director

Games Sez

Hey Mathies!

Come join us in the Math C&D at 6:30 on Thursdays for evenings of board games! As usual, you can come and leave at any time until everyone leaves, which is usually until after midnight. Feel free to drop by and play those games you've wanted to try but never had the numbers for!

Your Games Director,
a crafty player

VPA Sez

Hey Mathies!

Hope your first month back from the Winter break has been great. Just a few updates for everyone:

1. MathSoc will be hosting mock interview sessions by end of January, check out the events page at <https://www.facebook.com/events/1735014353483546/> or stay tuned on MathSoc's Facebook page!
2. Fill out this survey on what aspect of finding co-op jobs you are most worried about, and which MathSoc co-op services you want to see more of: <https://goo.gl/forms/BcAWh-d8tNYmbQpt92>



MathSoc VPA

WatSFic Sez

WatSFic has a bunch of cool events lined up this term, including but not limited to...

Intro to DMing! Have you ever wanted to learn how to play DnD, or DM for the first time? It'll be tonight at 6:30 PM in MC 2054.

Board Games Day! Come out every other Saturday to play board games with us in the Math C&D. The next one is on the 28th.

WatSFic Short Story Contest is due this term at midnight on 25 March. Word limit is 7500 words, prizes are a poorly-kept secret.

Our DnD Tournament, #SPIDERFIGHT, will be held this April 1. If you would like to book a spot for a team of 5, email watsfic@gmail.com.

Humans vs. Zombies will be happening this term from March 6-10. The theme will be Ancient Rome!

Hope to see you!

Heather Stonehouse
WatSFic President

Article of the Issue

This issue's Article of the Issue is "Trolley Problem Variations". Q. Coatl, come by the *mathNEWS* office some time, or email us at mathNEWS@gmail.com. We'll figure out how prizes work, and hopefully get one to you by 2018!

The Editors

Follow us on Twitter (@UWmathNEWS),
on Facebook (look up MathNEWS), or in person (MC 3030)!

AGDQ 2017 Summary

This year's AGDQ was held last week, January 8th through 14th. For those not yet in the loop, AGDQ stands for "Awesome Games Done Quick"; it is a speedrunning charity marathon, raising funds for the (US-based) PCF, or Prevent Cancer Foundation. It has a cousin, Summer Games Done Quick, which raises funds for Médecins Sans Frontières (Doctors Without Borders). These events showcase the speedrunning community, while also putting money towards a good cause.

The main theme of AGDQ this year was head-to-head races: the event featured many races this time around, with everything from Shovel Knight to Super Metroid to Mega Man I to Tetris with Cardcaptor Sakura. No, really, that was a thing. (No Tetris: The Grandmaster block this year, but this fit in very well instead.) Though speedrunning can often be a solitary thing, the fact that one competes against a clock means that one can just as easily compete against someone else, and often these races end up extremely close, thus creating a great show.

There were many highlights, spread over the week. On Tuesday, there were three consecutive NES/Famicom Super Mario Bros. races, followed by the four-way Super Mario Sunshine race, followed by a marathon-safe Final Fantasy I run (!?). On Thursday, there was the ending of a Mystery Games Tournament, and a four-way Link to the Past race, sandwiching a co-op run of Kirby's Dream Land 3, and followed by a not-marathon-safe Paper Mario: The Thousand-Year Door run. On Friday, there was a Kirby Super Star 100% race, with two participants all the way from Japan (two of the best Japanese runners of the game), followed closely by a three-way Donkey Kong Country Trilogy race! Yes, all three DKC games back-to-back-to-back, run by three teams! It was pretty hype. Finally, Saturday featured TASblock, Wind Waker HD, Super Metroid, and the finale game, Undertale! It was a great week of gaming; this paragraph doesn't even mention the NES block, the Awful block, and many others.

[Disclaimer: You should probably play Undertale before watching the full speedrun. I didn't, and I kind of regret it, because the middle of the run is terrifying enough that it's worth it to experience it first, before watching someone else play it. Then again, I don't have time, so...]

If you are interested in (re)watching any of the runs, you can find a summary post on Reddit by searching for AGDQ 2017 VODs (Videos on Demand); they are still up on Twitch, and will probably be posted to Youtube sometime soon as well.

All donation incentives were met; Save or Kill the Animals ended up raising almost eight hundred thousand USD, which is insane. More insane is the fact the event raised over a million USD on the final day. Absolutely ridiculous. All-in-all, they raised \$2,218,335.30 for PCF, which completely annihilated the previous event record of about \$1.56 million, at AGDQ 2015. Whether or not this type of charity will continue into the future is unclear, but people sure emptied their wallets this time.

Finally, a note about personnel: Bonesaw was not "banned" after his Jak and Daxter run at SGDQ 2016, he was simply pre-

vented from submitting games for the next two GDQs. So he could've attended, if he'd wanted. Also, for whatever reason, it seemed (as per usual, sadly) that there were fewer non-male runners this event than at the last couple events. This statement is purely gut feeling and is backed by no data, but seeing as it's still a plausible statement, that means the situation is still not getting any better, in terms of gender equality. Which is annoying, because gaming is something everyone can do, and because the hosts were often female. Hopefully we can just keep encouraging gamers of all walks of life to keep doing what they enjoy doing.

Aaaaaaaaaand time.

Scythe Marshall

N Worst Types of mathNEWS Articles! (You Won't Believe #i is Real!)

- The list article. Can you be more unoriginal?
- The meta article. What kind of writer writes those?
- The self-deprecating article. Low self esteem, much?
- The only-writing-this-article-for-pizza article. (It was quite delicious.)
- Articles with a blatant clickbait headline.
- The null article.
- The just-bitching-about-an-assignment article. Ugh, why is MatLAB a thing?
- [Censored]
- This article.
- The incomplete article.
- etc...

Beyond Meta

Trolley Problem Variations

1. A trolley is heading towards a track with one person on it. You can pull a lever to divert the train to another track that has a 25% chance of killing five people, and a 75% chance of killing nobody. Do you pull the lever or not?
2. A trolley is heading towards one of three tunnels, two of which have five people in them and one of which has just one. The tunnels are too dark, so you can't see which. You select one of the tracks for the train to go onto, and immediately one of the tunnels you didn't select lights up, revealing five people. Do you pull the lever to switch the trolley to the other tunnel you didn't choose, or not?
3. A trolley is heading towards a track with one person on it. You can pull a lever to divert the train to a track with no people on it, but five people nearby will be forced to listen to a remix of Justin Bieber's "Baby" and Rebecca Black's "Friday" for 8,760 hours (one year) straight. Do you pull the lever or not?

Q. Coatl

The Quirky Coach

What should you put on your resume?

You're lacking work experience related to your chosen area of study, so you think you have little to put on your resume. Not true! Unless you've lived under a rock for the last few years, you've clearly done something with your time, and that something means you have skills and experience.

My first job was as a teaching assistant at a weekend computer course for younger students. I learned how rewarding it is to help others and how people learn at different paces. For my second job, I worked as a cashier in a department store, where I learned how to interact with customers. I was also a stock girl in a department store, and I learned how important presentation is to the successful sale of products.

I was a member of the school yearbook committee... and learned how to manage my time to meet deadlines. I was a member of the school band... and I learned the importance of practising.

Did you wait tables at a restaurant? You learned the value of providing excellent customer service (it was directly related to the size of tip you received). Did you close up the restaurant at night? You are dependable. Did you plant trees for the summer? You learned the importance of preserving the environment. Did you show up for work on time and do a good job? You have a good work ethic.

Did you volunteer as a math tutor for high school kids? You learned how to communicate complex ideas in a simple manner, and that you enjoy mentoring.

Did you build yourself a website, or play around building a mobile app? You learned new technologies and tools.

Did you attend a coding competition or hackathon? You learned how to work in a team and appreciate other people's ideas. Did you write code to interface with a wearable device? Did you program an Arduino? You gained technical skills.

Did you organize a local sports team? You have organizational and leadership skills.

Take a look at your class assignments and projects. They're designed to reinforce something that you learned in class. What did you learn?

If you were to list what you've done for the last few years, and extract the relevant technical and non-technical skills you gained, you'd have plenty of new material to transform your resume from something that's so empty it echoes to something that fully represents what you have to offer.

Debbie Smith, UW Alumna

President Trump to Deport Superman

NEW YORK — President Trump reiterated his campaign pledge today to deport all illegal aliens now that he has been sworn in, including Superman. When questioned at his Trump Tower penthouse as to how he would carry out the task of ensuring Superman be safely removed from the country without incurring American casualties, he demurred. He indicated that his plan is "super secret" and that he would not wish to telegraph his "beautiful plan" to our adversaries, but he did let slip that he would like to see a golden mist applied to Superman's face in order to disorient him. When this reporter brought up the allegations regarding President Trump's peculiar paraphilia, Trump thundered: "Mathnews is fake news!"

Experts speculated that Kryptonite of some sort would have to be utilized. As extant Kryptonite deposits are almost entirely found in foreign countries, particularly on the African continent, the United States would have difficulty in acquiring sufficient material. This will be exacerbated by the expected deterioration in foreign relations with the new administration.

Right-wing commentators at Breitbart News gave their own opinions on the deportation. They speculated that other pending deportees could be placed in harm's way in order to lure in Superman. A Kryptonite mist could be devised to neutralize Superman, and then Kryptonite handcuffs used to secure him.

Michael Moore and liberal activists were aghast at such a prospect. "Superman is an alien orphan who sought refuge in America. If not us, who would be the beacon to the world?" Comedian Dave Chappelle gave his thoughts thusly, "He oughtta to migrate to Canada, they're more tolerant up there. Plus their prime minister is hot!"

Some military experts thought the deportation of Superman would represent a loss to the United States. "Superman is an asset to America and part of our defense posture in taking on a resurgent Russia and a growing China," stated former Defense Secretary Robert Gates. "What if they acquired him?" He added.

Vice President Mike Pence was quoted suggesting so-called conversion therapy could be utilized to turn Superman back to the light. "He has to be brought back from the abyss of moral depravity," said Mr. Pence. Though repeatedly informed Superman was already a 'good guy', Mr. Pence was adamant in his belief, "Do you see what he's wearing? Those tights are certainly giving me sinful thoughts." Mr. Pence was quoted as saying.

Others believe a compromise could be reached. "Superman believes in truth, justice, and the American way. Surely he can be granted amnesty, especially considering all the good deeds he has done? Though I must admit Dawn of Justice was a terrible movie," stated former President Barack Obama.

Kelsey Fanning

snowdenQUOTES

(Note: these were taken down by hand during Edward Snowden's talk on January 9th. They may be not 100% accurate with respect to the exact wording that he used.)

"People who say 'I don't care about the right to privacy because I have nothing to hide' is like saying 'I don't care about freedom of speech because I have nothing to say.'"

"We all know the phrase that is a thought-terminating cliché: that is, national security."

"If you're defending rights, you're never going to be defending what's popular, because what's popular doesn't need defending."

"It's the vulnerable to whom rights matter the most."

"When freedom comes, when rights expand, in every case it's a challenge against the powers of the day."

"When you're silencing the [weird people who make change], you're saying we've gone far enough. The story of human progress can end here, because I'm comfortable."

"Letters on a page aren't going to jump up and defend your rights. What gives laws their power is our willingness to enforce these rights."

"Can we make offense easy and defense hard? If we don't, we're looking at a very dangerous future."

"On encryption: you can't intimidate a math problem."

"We need to not just protect the content of a communication, but protect that the communication occurs at all."

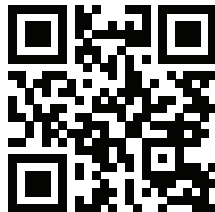
"This, today, right now, is the atomic moment of computer science. [As in, the field of computer science is in a similar state as nuclear physics around the time of the development of the first nuclear weapons.]"

"We're losing that private space that allows us to have bad opinions, make bad jokes, make mistakes and not be judged for it."

"Losing the ability to make mistakes removes the opportunity to take chances."

Edward Snowden
(*Transcribed*)

**Apparently, we have
Twitter! Follow us
for even *more* barely
passable mediocrity at
@UWmathNEWS!**



Tips and Tricks on How to Make Money From Yu-Gi-Oh! Cards

Do not:

- Rip off elementary school students. (Parents would tell their kids not to talk to you.)
- Take cards from Walmart. (People actually get arrested for theft of Yu-Gi-Oh! Cards.)
- Bet money on Yu-Gi-Oh! duels. (Might get hustled.)

Do:

1. Practice so you hit a win rate of 100%. Make sure you win every game of Yu-Gi-Oh! you play.
2. Win at tournaments. (That's 20 whole dollars of prize money that you could afford food with!)
3. Travel to more cities to participate in more Yu-Gi-Oh! tournaments.

There are 400 Yu-Gi-Oh! stores within 600 miles, with one tournament every week. $400 * 20 = 8000$ dollars/week. Since you don't get taxed on Yu-Gi-Oh! prize money, so this is 8000 dollars of tax-free income and fame.

Duelist JQRL

Pseudo-Breaking Triscuit News!

What, you thought I wasn't going to catch this?

Over the holiday season, there was released, in Canada, a new limited-edition Triscuit flavour: **Pumpkin and Spice**.

Yes, pumpkin and spice. No, not pumpkin spiced; these are not a result of a partnership between Christie and Starbucks. This seems to be similar to the Cranberry and Sage flavour that they tried out last winter; use a flavour that fits the holiday season to promote a new product.

About the flavour itself: it's a very subtle flavour, again similar to the Cranberry and Sage. The pumpkin flavour isn't like pumpkin pie, where it hits you in the face; instead, it's an earthy sort of taste. The spices are closer to savory than sweet. It's an enjoyable taste, but the juxtaposition of pumpkin and not-pie (rather, whole wheat crackers) takes a bit of getting used to. The cracker sometimes overpowers the pumpkin taste.

Amusingly, the suggested garnish shown on the box is some gouda, cranberry sauce, and sage, which mixes together the two newest flavours of Triscuits in Canada: Smoked Gouda most recently, and the aforementioned Cranberry and Sage last winter. I haven't tried this, but I can imagine that it would taste pretty good.

Lastly, similarly to the Cranberry and Sage flavour, I haven't seen these in stores in the new year, so it seems like it's another one-off flavour. At least they are trying new things! Now if only the price per box in Victoria would approach what you can get them for in Ontario...

Scythe Marshall

Rimworld: Colony Destroyer

Over Christmas I gave myself the gift of Rimworld on Steam thinking it would be a nice little colony builder game, and it is... at least, until things start going wrong. Set sometime in the future on a distant randomly generated world, you manage the lives of 3 stranded colonists as they fight for survival against the universe. You help the colony grow in numbers, grow food, build infrastructure, and fend off attackers; or you watch helplessly as it all falls apart and they all die in immense pain and suffering.

My First Colony:

I was hopeful, as my little guys had crash landed on a flat and fertile piece of land which would make growing food easy. During the first day, they were able to build a roofed wooden room with beds in it, and plant some crops. Of course, I forgot to designate a sleeping spot for the pet dog so it slept outside where it was eaten by a bear. This made one of the colonists very upset; the grief she felt weighed heavily on her. Fast forward to the first raid on the colony by pirates. The colonists were able to fend them off but only just; all but two were bedridden until healed. Whilst one treated the wounded, the other began burying the bodies of the dead pirates. This was when she began having flashbacks to her poor dead dog which lead to her having a mental break and then murdering her fellow colonists. She succumbed to her wounds, and with that, the colony died.

My Second Colony:

Long story short, the colony's doctor got lung cancer and one of the other guys said he'd have a go at removing it. Somehow, he accidentally stabbed the doctor repeatedly in the head, killing him. Without a competent doctor, the colonists died one by one over the next few weeks as mild, basically untreated cuts became infected.

Third Colony:

The cooler used to keep a room cold so that the food stored in it wouldn't go off had a short and caused an electrical fire. All the walls were made of wood and so the entire colony caught fire. The colonists didn't actually burn to death exactly but died as a result of the inside temperature getting insanely fucking hot.

Fourth Colony:

It was built into the side of a mountain for defensive purposes. However, giant bugs nested in the caverns and ate all the colonists.

Fifth Colony:

A distant chemical fire rained down toxic fallout of the surrounding area killing all wildlife and vegetation. One colonist broke down from cabin fever and insisted on going outside only to die of a build up of toxins. The rest starved to death huddled inside.

xth Colony:

Raiders set up mortars out of range of the colony's defences and rained down death and destruction from afar. The colonists went out and tried to dislodge them but were unsuccessful. They died fighting, at least.

(x+1)th Colony:

Colonists developed the nudist trait and insisted that they would not wear clothes, no matter what. This was fine until winter rolled around and the temperature plummeted. But it's fine, they'll just spend all their time inside with the heaters. Then there was a solar flare which interfered with the heaters and they froze to death.

(x+2)th Colony:

Didn't really have doctor in the colony and knew that without one things wouldn't go very well. After capturing some raiders, the colonist who wanted to practice medicine got a chance to practice... by removing their organs. This made one of the other colonists angry (something about it being his long lost sister or something) and so a fight broke out, then a prison break, then a fire, and then death to all.

nth Colony:

I accidentally ordered the best miner/builder wall themselves into a room. They panicked, and decided that setting fire to the room was the best course of action. The effort to save her was futile and claimed the lives of all but one of the colonists. Somehow, though, the colony recovered as competent wanderers joined. They're still going... for now, at least.

Stubbs

Distinguished (.*) Awards

Three things:

One, if you know a professor that you feel deserves to be recognized, you should nominate them for a Distinguished Teacher Award, to help appreciate the good profs for the work they do! The form can be found at <http://uwaterloo.ca/centre-for-teaching-excellence/awards/dta>.



Two, if you know of a TA or other student teacher whose work you want recognized, you should nominate them for the Amit and Meena Chakma Awards for Exceptional Teaching by a Student. This will make them feel great and also help out their resume! The form can be found at <http://uwaterloo.ca/centre-for-teaching-excellence/chakma>.



Three, on the official UWaterloo events page, instead of providing you with the above URLs as a clickable URL, they provide you with a JPEG image of the URL that you have to type out yourself. It would seem they're just making sure you're sufficiently motivated to nominate someone. As such, we've removed our in-paper browser functionality.

Diminutive Rex

N Interview Tips; You Won't BELIEVE the Second!

A bunch of upper year students are doing interview prep sessions to give others a chance to experience a set of technical interviews, and a friend of mine is helping them out.

To save myself the effort of thinking of content, and desiring to be somewhat helpful in the first issue of the new year (!), I asked him for some interview tips:

1. Watch out for inclusivity/exclusivity anytime the question does anything at all with indices.
2. If your first thought is "*recursion will solve this!*", pause and think it over again. Recursion is not a magic solution for everything. As well, an iterative solution is generally easier to think about.
3. First years in particular: Ask about salary. ASK ABOUT SALARY. Why? This is the only contact you'll have (or at least supposed to have) with company people before you accept the offer. If you don't ask now, you never will. Those negotiating tips saying don't be the first to ask, make them want you first... save them for full time jobs.
4. If you're applying for a front-end position, you better (in order of importance) a) have a website, b) have a pretty website, c) have a pretty and functional website.
5. If you're applying for a backend position, have something online that shows you've done stuff. Story time: It doesn't have to be a project, my supervisor at \$Big4[n] said he chose me specifically because I wrote up a blog entry on some issues I had installing Linux on my laptop, and some of the stuff I mentioned was directly relevant to what they were doing.
6. In general, having something public is worthwhile. Something I read recently on the value of having a professional online presence: "There's a lot of information asymmetry when hiring, having a demonstrated ability to code in a place that is viewable to the people hiring is always going to be a positive because it reduces that asymmetry."
7. Don't panic, what's the absolute worst case if you bomb an interview? It's generally "You don't get the co-op now, apply 8 months from now for your next co-op". Companies know you're learning, and that you'll know a bunch more when your next co-op comes around.

HatOfChocolate

Send us your articles, profQUOTES, Sezzes, gridSOLUTIONS, and cute mechatronic animals to mathnews@gmail.com or to the BLACK BOX outside the MC Comfy. We would love to publish them!

Manifesto of the Math Faculty

Within the math department, sickness lies,
Disquiet creeping through the open air.
A specter not, though it is on the rise;
The ideology, no longer rare

Of students tiring of the current state;
Rooms full, yet gazes tell us differently.
Will vacant stares, perhaps, someday abate?
Rekindled flames then burning ardently?

Perhaps a chance still lies for us today,
To salvage ancient passions once again.
Let mathematica transform dismay,
And somehow bring new hope for us within.

If you have not yet found your special muse,
Then take this chance to come and join *mathNEWS*.

xXx_HaikuLuvr69_xXx

Tensions Escalate in Advisor Queue

DC—The long lines for the CS advisor has always been a tense affair. Students fighting each other for space in the crowded hallway are a common sight, while other students hawk food and drink for the students whose number is supposedly imminent and thus cannot afford to leave the line lest they miss the spot.

Yesterday, there was a glitch in the number system, and it skipped past a number. This caused the two students to engage in fisticuffs to try and get into the advisor office, which soon turned into a brawl. There were five injured in the ensuing all-out melee, which campus police had to break up. Hopefully the tensions will be alleviated after the add class deadline, but in the meantime, caution is advised.

Reporting from the ring,
Zethar

Let's Ban Subtraction

Why do we need subtraction anymore? It's so negative! Positivity and good vibes are the way of the future, friends, and I just don't think subtraction has a place in our new positive paradigm.

Who wants to *subtract* money from their wallet? Try addition instead! It will make you happier, guaranteed.

Sometimes, though, we *need* to make quantities smaller in mathematics? Try adding the negative instead! Bringing negatives together will make them less lonely, and help mitigate the sadness you might have when you watch your numbers shrink.

Subtraction: completely unnecessary. And that's the final word.

Diminutive Rex

On Privacy and the Freedom to Change

On the ninth of January, the university arranged for Edward Snowden to speak live from Moscow. The atmosphere was serious — Snowden was broadcasting from a small room in front of a green screen, recording was prohibited (with ushers stalking about the balcony to enforce it) and Hagey Hall was absolutely crawling with police.

I asked an officer why they were there, and he said “Well, you would be surprised. We would think most people would agree with what he did, but you’d be surprised. We’re here just in case.” It was a reminder of what Snowden gave up to share his information, and it lent his words weight.

Snowden spoke about the lack of freedom that comes with a lack of privacy. He said that “we’re losing that private space that allows us to have bad opinions, make bad jokes, make mistakes and not be judged for it.”

That’s probably something we’ve all struggled with — at 22, I’ve had Facebook for almost a decade. Most weeks, the memories notification dredges up something painfully stupid that I said in late elementary school.

Sure, most of what I said was just embarrassing, not damaging. But what if it hadn’t been? What if, as a stupid thirteen year old, I had said something racist, or sexist, and then changed my mind when I grew up?

Or, more controversially, what if I *hadn’t* changed my mind? In 2014, Mozilla CEO and co-founder Brendan Eich was pressured to step down because one time he donated \$1000 to an anti-gay-marriage initiative. Did he deserve to be essentially forced out of the company he co-founded, all because of an opinion he may have kept completely separate from his work?

I don’t claim to know the answer, but I agree with Snowden that we should at least ask the question. I know that for me personally, there are people whom I couldn’t look in the eye and justify everything I’ve said about them in private Facebook messages to my friends. I have perfectly cordial relationships with these people that are partially maintained by my ability to vent about them in private. I am literally trusting the privacy of Facebook’s messaging systems to preserve my personal relationships.

None of us are perfect. I don’t think it’s valuable to live in a world where we’re all judged for the worst things we’ve ever done, and that is exactly what internet security is protecting us from.

Diminutive Rex

On the Next Leader of the 'Free' World

On January 20th, a new American President will be inaugurated into office as the outgoing president steps down. This marks the end of a drama filled election that resembles Shakespearean play — and this is only the beginning of the third act.

I spend most of my free time posting low quality memes. Because of this, I was too distracted from whatever has been happening down south to have substantial comments on the election. However, as America is a tremendously powerful country that has a large amount of influence on the entire world, especially Canada, I have to discuss what it means to me to be President of United States.

I think most people misunderstand the nature of the President's job. I find most people I speak to online believe that the President's job is to push their partisan agenda. Therefore, during the primary the candidate has to survive repeated purity tests from both party. Are you a "True Conservative"? Are you "Real Progressive"?

I have a slightly different view on the function of President. In my opinion, the office of the President shouldn't have that much power in policy making. That job should left to Congress. I think that the main role of the President is to be the face of the nation, and to some extent, to be the face of the western world.

People refer to the office of American President as "the Leader of the Free World". I think it's more like the top diplomat both between America and it's allies, and between the government and the people. The President represents America on the world stage. They are one of the most important figureheads in the world. Everything the President does reflects on the reputation of Americans and the west. Every time the president opens their mouth, the world listens.

Another big part of the role is that the President is in charge of the army, nuclear weapons, and agencies that are supposed to protect Americans. The means the President must be ready to deal with international crisis. They should be a calming voice of reason during times of chaos. They are somebody that needs to protect everybody, and they need to make hard decisions that might cost many lives.

Lastly, the President is a leader that should keep the public informed and focused. They are responsible for building bridges between different factions of the government, and help government as a whole function better.

History will use this President's legacy to define this generation. To the next president of United States: good luck, and have fun!

me

profQUOTES

- "I'm going to start pushing buttons here and see what happens."
Epp, PHYS 175
- "Lecture are optional. Exams are optional. The only thing that is mandatory is paying your fees."
Jayasundera, PHYS 122
- "We're just a big sac of seawater walking around."
Epp, PHYS 175
- "When I make a mistake, I do that to see if you are paying attention. If you do that, you're screwed!"
Jayasundera, PHYS 122
- Prof: Where in the [moon's orbit] is the moon exactly half-lit?
Student: Everywhere.
[class applauds]
Prof: Yeah, we don't need answers like that.
Epp, PHYS 175
- [about the projector] "Can I break this? You don't care, do you? Yes you do, because you need to pay for this."
Jayasundera, PHYS 122
- "If you were really in a security mindset, you'd attend both sections in case I tell different things and fail one section."
Kerschbaum, CS 458
- "How many say 'No clue'? Thank you; I love you; because of you I have a job."
Jayasundera, PHYS 122
- "Somebody might [do a certain security exploit on the university's servers]. Actually, don't do that; it might actually work."
Kerschbaum, CS 458
- "For some of you, it wasn't 'Will I go to university?' but it was 'Which university?' It wasn't like that for all of us. Some of us had to have the audacity to believe we belonged."
Romkey, SDS131R
- "What does 'security' mean? It means you have the blue box from IBM."
Kerschbaum, CS 458
- "I could sit up here and talk for hours and hours. I'm fascinating."
Romkey, SDS 131R
- "The '*man*' doesn't want that."
Wagner, CO 430
- "This is why I say, I date John Locke for a while, it's great, but then I don't like him and we break up."
Romkey, SDS 131R
- "We will stick it to the man."
Wagner, CO 430
- "Everything is set up so that you have these vicious four days every two weeks."
Buhr, CS 343
- "People argue about this, but I'm right."
Wagner, CO 430
- "Assignments are due on Mondays because nobody starts them until a few days before. So when you start on Friday, you actually do stuff over the weekend."
Buhr, CS 343
- [after filling one board] "There's the proof. I said it was one line, but somehow these expand."
Nelson, CO 331
- "Vim has eaten my assignment."
Buhr, CS 343
- Prof: "Can anyone think of a ring which is not a commutative ring? This may be trickier since there are no familiar ones."
Student: "Matrices?"
Prof: "Oh, those are familiar, yes."
Nelson, CO 331
- "You get lates because everyone has mini-crises in life. You get lates because I don't want to hear about them."
Buhr, CS 343
- "If you say 'one' it sounds fancier and people will believe you more than if you say 'you'."
Nelson, CO 331
- "There are Frequently Asked Questions here. Lots of them, like... [scrolls down], like... [scrolls down], lots!"
Buhr, CS 343
- "In CO, since we're in math, we minimise. So, someone suggested instead of 'combinatorics and optimisation', we should be called 'combinatorics and pessimisation'."
Wolkowicz, CO 353
- "There are research papers for all of you who have trouble sleeping at night."
Buhr, CS 343

profQUOTES

"How many people are still using Vim? [A number of students raise their hands.] Oh, God, use an editor! Switch to emacs!"

Buhr, CS 343

"I'm relatively entertaining. I can keep you awake for almost 75 minutes."

Buhr, CS 343

"I stay up nights thinking of devious ways to torture you with C++."

Buhr, CS 343

"I've had a digital watch since I was 10 and I've lost my ability to read clocks with sticks."

Buhr, CS 343

"Death. Taxes. goto."

Buhr, CS 343

"Even I create a flag variable 2 or 3 times a year."

Buhr, CS 343

"You might be thinking, 'I didn't realize I would be in a class with a madman telling me strange things.'"

Buhr, CS 343

"You take the thousand-line routine and you rub it on your stomach."

Buhr, CS 343

"I know this may be hard for you, but a computer is not a person."

Buhr, CS 343

"I hope I have confused you."

Buhr, CS 343

N Things That Are Not in the Set of Prime Numbers

- 4
- Five [Editor's Note: Nope, five is *definitely* a prime.]
- 5.03
- Vladimir Putin
- The Moon
- Cheese
- Cake
- Cheesecake
- Green
- A small rabbit
- The number of kids in the Breakfast Club [Ed: This is also five, not prime.]
- 1980s discotheque
- Even more cheese
- Verve
- Bears
- Any numbers whose divisors include one, themselves, and five [Ed: This *categorically* includes the number five.]
- Imprint
- Seriously, a ridiculous amount of cheese
- Feridun
- The Pacific Ocean
- A solar system whose planets are composed entirely of cheese
- The editors [Ed: while we appreciate the obvious filler, it's worth noting in this case that there are 3 of us...]
- The number of **BuhrQUOTES** in this issue [Ed: this checks out — it's a whopping 16.]
- A cheese singularity

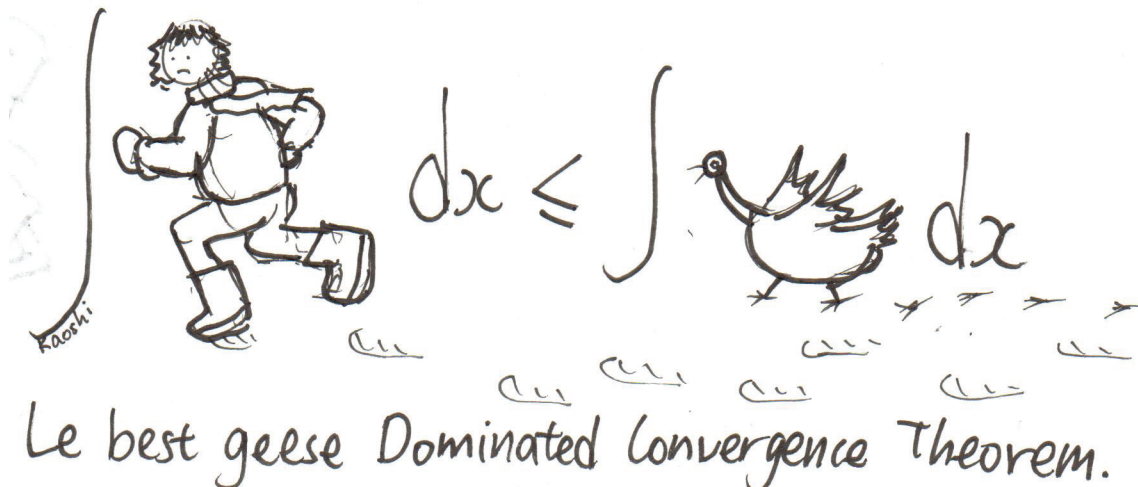
x % 0

Secret Message Corner

What does 177482381774995107925828013 ÷ 286511799958070431838109695 mean?

(Hint: try converting it to base 36 using ~~your favourite online supercomputer~~ who are we kidding, it's Wolfram|Alpha!)

WhatsYourSine



Artwork submitted by bluecat.



gridCLUES

Across

1. Halfway between an edge and a solid
5. This key sounds happy
10. ___ Shady
14. Left of cobalt
15. Solitary
16. Cable
17. You do this to an email
18. Dumbledore wears them
19. Voldemort is this
20. 55 Across, but third person singular
21. Canada does this in hockey
22. Bill Weasley is this
24. An object whose name you can't remember
26. More arid
27. Just a bunch of words
29. An established fact
30. Nein!
32. A device helps your modem do this
33. A square has four
34. Netherlands and Belgium are the ___ countries
35. They use these in the US
36. Nobody uses one of these on their laptop
37. I bet you think this clue is

Down

38. This can have union and intersection
39. You hire your doppelganger to do these
40. Sounds like scents
41. La mienne
42. If someone is very direct you would call them this
43. Waterloo is _____ than Laurier
44. Neville Longbottom has one
45. Books, not _____
46. This is on a candy cane!
48. Boolean value
49. A lame hammock
52. You insert your toothbrush _____ly.
53. If you're on the cutting edge, you want your stuff to be _____
55. 20 Across, but third person plural
56. Do this to your shoe
57. Ace Attorney has these
58. These sets don't contain their boundaries
59. I did this to my hair recently
60. A Spongebob character
61. Ink tubes

Down

1. A pike is one
2. Base times height
3. "We now _____ an example..."
4. On the last page: The ___.
5. Watery
6. It's the friends you made _____ the way
7. You need side projects to get one of these
8. x^0
9. Open spots in classes are always this
10. Country known for their metal bands
11. Not a tasty body part
12. "Pass into the..."
13. Tupperware does this on the stove
21. Dex, Cha, Int, Str, Con and...
23. Your laundry _____ on the floor
25. 55 Across, but you're Shakespeare
26. I _____ do it!
27. You'll find one on the Dark Side of the Moon
28. Don't eat a bee, eat this instead

29. Jack killed one of these
30. Your neighbours generate this
31. Your landlord is this
33. A taser does this
34. Not portrait
36. They're to the south
37. An action word!
39. "HOW CAN SHE _____?!"
40. 23 and sqrt(64) are this
42. Do this to herring and eggs
43. I bet you check /r/uwaterloo this often
44. The sum of the elements on the main diagonal
45. Pre-toasted toast
46. You did this to your old textbooks
47. They have these in V1 fac and they would make good sleds
48. George Weasley has one of these
50. You roommates don't clean this
51. Of this clue, it's 5
54. A distinct period of history
55. ___ scotch

gridCOMMENTS

Welcome back, everyone! Through an unfortunate mix-up we accidentally turned down all our usuals to write the *gridWORD*, so I put together this effort with significant assistance from puzzlexpress.com. Thanks, puzzlexpress. You saved my incompetent bacon.

Anyway, there's no previous *gridQUESTION* to respond to, so I'll get right to the new one: "What pointless major should UW start offering?"

As always, please submit your gridWORD solution, as well as your gridQUESTION answer either electronically (to mathnews@gmail.com) or physically (under the door to MC 3030) before 6:30 PM on Monday, January 29th. Your ability to provide me a good major to switch to will be the tiebreaker.

toBeDeterminED("Analytic goose analysis")

Submit your grids and *profQUOTE* submissions to the BLACK BOX (outside the Comfy Lounge) or mathnews@gmail.com.

This Week's Grid:

1	2	3	4	5	6	7	8	9	10	11	12	13
14				15					16			
17				18					19			
20			21				22	23				
		24	25				26					
27	28					29				30	31	
32					33					34		
35					36					37		
38			39					40				
41			42					43				
		44						45				
46	47					48				49	50	51
52					53	54				55		
56					57					58		
59					60					61		