

"WHAT SHOULD BE THE NEW DOMAIN NAME FOR THE mathNEWS WEBSITE?"

...
...
...
...

Oh, you came back? What excellent ~~math~~NEWS!

Honestly, a lot of people tend to drop off the readership around this point. Midterms, assignments, geese, the crushing despair that accompanies fulfilling your academic ambitions: all reasons that people forget that issue 2 was just released. Newbs graduate to seasoned veterans who just flip through for the **profQUOTES** and then toss away countless¹ pages of quality content!

But not **you**. **You** came back. **You** picked up the second issue. And **you** are going to read through the whole issue, right? **You** wouldn't hurt our feelings like that.

This time, we have Troy Vasiga answering some hard-hitting questions in **mathASKS** (see the next page) and then offering his **profTHOUGHTS** about UWaterloo memories, solving the *P versus NP problem*, and everything in between.²

You adore this issue already. **You** are walking towards the **mathNEWS** office right now to offer us **your** praise.

Be sure to stick around until the end for the **gridWORD** and **haltingPROBLEM**. Our fantastic puzzle-masters have been at it again, hoping to ~~warp your perceptions of reality with torturous mind games~~ give you a fair challenge that lets you test your skills.

We know **you** will love it.

confusED
Editor, mathNEWS

1. The number of pages is easily countable, but hyperbole is the best thing ever.
2. Go read his article and then try telling me I'm wrong.

SIGSEGV | mrgoose.sexy
LOQUATIUS | mathNEWS.quebec
ICENINE | math.mathnews.news
FRUITBOY | uwaterloo.ca/home
CC | mathnews.utoronto.ca
ME | give.me/mathnews
XAVIENTOIS | www.usa.gov/join-military/math/news.php
CHALISSA | i-wish-i-wasnt.bornhub
SILLYCONE | math.io
TOTALLY_NOT_A_TRATOR | imprint.com
WHYOS | okcupid.com
OWLBEDAMNED | math.is
CHIEN.BEARS | shitpost.irl
Xx420DABLORD69_XX | reddit.com/r/uwaterloo
VARIOUS PSEUDONYMS | mathnews.gc.ca
SWINDLED | localhost:3000
OVER-ENGINEERED | imprint.but.much.better.seriously
CONFUSED | mathnews.pizza
STAPLED | mathne.ws
YCLEPED | The domain of natural numbers

ARTICLE OF THE ISSUE

Congratulations to CC for your piece of investigative journalism, A Review of Vertical Transportation Mechanisms in MC! Both for your informative review and for the amount of exercise (reportedly) endured to make this possible, you have earned this issue's highest honour.

Drop by our office (MC 3030) to collect your prize! If we're not here, just ~~break down the door~~ fire off an email to us at mathnews@gmail.com.

If you're a first year who still doesn't quite know their way around MC, or if you're someone who just likes having options when changing altitude, then this article is for you! Check it out, along with the rest of our great content!

confusED

CS 135 is officially the bane of Production Night

JAMIE ANDERSON, mathNEWS EDITOR FOR FALL 2018
ALONG WITH NOSHERWAN AHMED, ESTHER AHN, CLYDE BROWN AND ANUJ OPAL

mathASKS 138.2

FEATURING PROFESSOR TROY VASIGA

LAYTH: WHAT IS THE FACIAL EXPRESSION THAT CONVEYS THE MOST EMOTION, AND WHY?

The facial expression a student makes when they were presented a proof or algorithm that entire eludes them. It is sort of mixture of emptiness, sadness, fear, hopelessness, with a sprinkle of regret and a dash of nausea. I have seen inside the souls of many students this way, and lo, are they dark.

FRUITBOY: DO YOU HAVE A WARM-UP FOR MATH?

A walk in the woods. A quick jog. Do jumping jacks (4 sets of 25 reps). Doodle on paper. Write down all the trigonometric identities. Recite the multiplication table up to 13×13 . Factor the current year or determine it is prime (hint: 2018 is not prime). Then, you are ready to math.

CC: WHAT IS YOUR FAVOURITE CLASSROOM?

I do like the new STC 00x0 rooms: two projectors to do two separate things (i.e., an algorithm on one slide and the analysis or discussion on the other). Not too steep, lots of room for me to walk around the front. By way of comparison, my least favourite room is Phys 235: it is way too long and narrow of a room, and nearly impossible to see or hear the instructor at the front. I hope some particle experiment goes awry in that wing of the Physics building and that room just disappears.

XAVIENTOIS: IF YOU DIDN'T HAVE CS, WHAT WOULD YOU DEVOTE YOUR LIFE TO?

Probably philosophy. Or being some sort of translator at the UN, if I knew more languages. Or a drummer.

ANTONY: WHAT WAS YOUR FIRST TEACHING EXPERIENCE LIKE?

Just looking at teaching at Waterloo, my first teaching experience was great. I taught a relatively small class of students at St. Jerome's in CS 134 (a pre-pre-cursor to CS 135). The students were keen, asked great questions, were attentive and it felt like a small community.

HAN: WHAT'S YOUR OPINION ON THE MOVIE "TROY"?

I, and all other Troys, get a small royalty, so it is all good. See my **profTHOUGHTS** for more reflection on this movie and its connection with **mathNEWS**.

SILLYCONE: WHAT'S YOUR IDEAL PIZZA?

Thick crust, red sauce, mozzarella, pancetta, pepperoni, hot peppers (both banana and jalapeño), onions, green peppers. Plus, take all the pineapple in the world and fire it into deep space.

NOMORESUBGOALS: WHAT'S YOUR IDEAL mathASKS QUESTION?

That one: it makes a nice fixed point/base case.

HD: WHERE WOULD YOU HIDE DURING A GOOSE TAKEOVER?

Hide? I would lead the rebellion, probably using the goose droppings against them somehow.

WHYOS: HOW OFTEN DO YOU HEAR PEOPLE MISPRONOUNCE YOUR LAST NAME? (AND FOR THAT MATTER, WHAT IS THE CORRECT WAY TO PRONOUNCE IT?)

Probably 15\% of the time. It mostly comes down to emphasis: I tell people that it is pronounced va-SEE-ga

TOTALLY-NOT-A-TRAITOR: WHAT IS YOUR FAVOURITE PROOF THAT THERE IS AN INFINITE NUMBER OF PRIME NUMBERS?

Assume the twin prime conjecture is true. Since $2^\infty = \infty$, there are an infinite number of primes.

HTN REJECT: WHAT IS YOUR FAVOURITE MEMORY FROM THE 2018 IOI?

Being awoken at 3:34am by an earthquake, eclipsed only by the team coming home with 4 medals!

SWINDLED: IF YOU HAD TO TEACH A COURSE OUTSIDE THE FACULTY OF MATH, WHAT WOULD YOU TEACH?

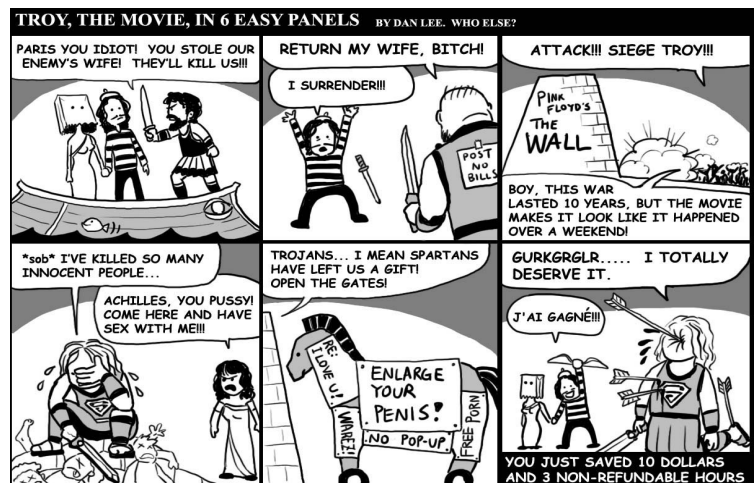
Any film course. I took two electives in Film Studies as an undergrad, and I loved them.

OVER-ENGINEERED: CS OR SE? PROOF BY INDUCTION MAYBE?

Hands down, CS. Hands up, SE.

YCLEPED: ARE YOU READY TO SEE THE FACE OF EVIL? (EDITOR'S NOTE: YOU APPARENTLY ASKED THIS QUESTION 'VERY DRAMATICALLY' WHEN TEACHING YCLEPED CS 135)

Yes, always.



WATERLOO THROUGH AND THROUGH

profTHOUGHTS 138.2

EARLIEST UW MEMORY

My first memory of UW was when I was probably 10 years old. My dad brought me to an Open House, and I remember seeing weird floating animals in formaldehyde, some dangerous physics experiments, and the Red Room. The Red Room was where the mainframes were stored, and it was a two-storey room where MC 1085 now sits. All computing happened through there, with tape drives, strange keyboards connected to systems and massive dot-matrix printers about 3 feet wide. Perhaps not surprisingly, it didn't look too scary, dangerous or life-threatening which is probably influenced my decision, at least subliminally, to go into computer science.

WHY I PICKED CS

I thought I was going to be a Math major (I ended up as a Double Major, in CS and C\&O, so that was partially true). In my first class CS (CS 131 M2), I had Prabhakar Ragde. Perhaps by stating the obvious, having a great teacher makes you think about life choices. I chose CS since Prabhakar made it alive, dynamic, interesting and challenging.

WATERLOO BOUND

I started as an undergraduate student in the 20th century, and since I did well on the Descartes math competition, I ended up in the advanced sections. Here is my first interaction with one of my classmates, named Alan Ling (now a professor at University of Vermont).

AL: How did you do on Descartes?

TV: I got 72 [out of 100, which was a good score back then]

AL: Oh, you very smart!

TV: Thanks. How did you do?

AL: I get 100. I very lucky.

At this point, I realized I was the little fish in a big pond. But, I learned to swim. I figured that if I was good enough to get into the program, I was good enough to graduate. That is also true for you.

TROY'S DISAPPOINTMENT

Back in 2004, the movie *Troy* came out. Shortly thereafter, one of the editors of **mathNEWS**, let's call him Dino Lemasi, came into my office. That conversation went something like this, modulo some fictional embellishments:

DL: You know that the movie *Troy* came out.

TV: Yes, I am aware of that fact.

DL: Do you mind if we put you on the cover of **mathNEWS**?

TV: Sure. You don't really need to ask.

DL: But as *Troy*.

TV: Uh, yeah. I am me.

DL: No, like the movie.

TV: Okay. Sure. I don't have to be naked, do I?

DL: No. Please no.

I tried to find a copy of the issue on the **mathNEWS** website, but it appears to be lost to the dark ages. Or **darkAGES**. In words, I was photoshopped into every actor in one of the main posters. [*Editor's note: we managed to find the original image on the mathNEWS computer, and have used it as the cover of this issue so all can see its glory*]

Brad Pitt, of course, due to the natural resemblance.

Eric Bana, same same.

Orlando Bloom, three for three.

Diane Kruger, just cuz.

Now, here is the part I find disappointing: the fact that I was asked if it was okay to be made fun of.

This is not a deep disappointment, but one that does stick with me still.

In many senses of how the university works, I, as a faculty member and instructor, have power over students. I have the power to pass them, to fail them, to make their studies enjoyable, or to make them horrifyingly painful.

In that power dynamic, the power holder should be made fun of. And questioned. And held to account. Without asking if it is okay.

I worked on my high school student newspaper shortly after the printing press was invented. I made fun of all sorts of authority figures all the time. Did I get called into an administrator's office? Sure. Did it stop me? No.

If there is one urging I would have for all Waterloo students, and Faculty of Math students in particular, is to be citizens. You are all highly motivated, intelligent, and can solve hard problems. Those are all good things.

But, what the world needs are people to be citizens of their city, their province, their country and their world: to work for the greater good, for each other, for what you believe in. Political engagement at Waterloo, generally, is pretty lacking. Simple acts, whether in support of something or defiance of something, do speak a lot. Your action may grow into action of others.

Q.E.D

Also, $P \neq NP$. I have a proof, but I have probably hit my word maximum for **mathNEWS**. If that cop-out was good enough for Fermat, it is good enough for me.

Troy Vasiga

SURVIVAL GUIDE TO COMMON INTERNET ABBREVIATIONS

Do you love math but have a hard time making friends? It could be because you aren't caught up with all the trendy lingo. It can be hard to survive in today's digital age without a working knowledge of popular internet slang terms. Here is a helpful guide, put into language that is easy for the layperson to understand.

1. AFK : AREA FORMULA FOR KITES

No one ever remembers that formula, so that's why there needs to be an acronym with which to refer to it.

2. AKA : ALL KITES ARE...

AKA dumb-looking. I hate kites.

3. BRB : BIG RED BUTTON

Hit it when someone tries to divide by zero.

4. BTW : BOLZANO THEOREM (& WEIERSTRAUSS)

It sucks being the second namesake of a theorem.

5. FAQ : FACTOR A QUADRATIC

Admit it, you're too lazy to write out the equation. Just hope it factors nicely.

6. FYI : FLOOR YIELDS INTEGERS

So does ceiling.

7. IDC : INSTITUTE OF DESIGN AND CONSTRUCTION

Where you go if you want job prospects somehow even lower than pure math.

8. IDK : I DESPISE KITES

Squashy on one end and narrow on the other. Reprehensible.

9. IRL : IN REAL LIFE

That exists, even though you might not have one. No, they aren't quite the same as Real Numbers.

10. L8R : LAW OF 8 RECIPROCAL

If you take the reciprocal of something 8 times, you will probably get the thing you started with.

11. LOL : LIMITS OF LOG

Grows asymptotically slower than polynomials!

12. NSFW : NON-SEQUENTIAL FINITE WHOLE

All the contest questions ask about consecutive whole numbers. Why not non-consecutive ones?

13. NVM : NEGATIVE VECTOR MAGNITUDES

Very slightly harder than Positive Vector Magnitudes.

14. OMG : OPT FOR ME, GOOGLE!

Used by CS students during co-op placement periods.

15. TMI : THERE ARE MANY INTEGERS

So many.

16. WTF : WHAT'S THE FORMULA?

How do you calculate the area of a kite again?

In a pinch, just pull out this handy reference guide! TTYL!

(That stands for Talk To Your Lecturer, by the way)

sillycone



BEST ACTIVITY TO PASS TIME BETWEEN CLASSES

Let us assume that you, currently sitting in MC, have nothing to do until your next class starts or your friends show up. You are filled with the feeling of boredom and nothing could help you alleviate it more than sharing it with others. The problem is, you don't want to annoy strangers, what a good person you are! But worry not my nice friend, I've got you covered and I can tell you about the best activity you can indulge in while making everyone else around you filled with joy: Playing **Bop it!**

But what is Bop it? How do I play it? And where do I find it?

Slow down my friend, so many questions, but I can give you all the answers.

Bop it! is a rhythm game where you will hear instructions telling you to either "bop it", "twist it", "pull it", "squeeze it", "flick it" or "pass it". and you will simply have to follow the instruction heard. [You can play solo to avoid the pass it command if no fellow **Bop it!** Enthusiast is in the room]

You can find **Bop it!** in the MathSOC office right across the CnD. Simply walk in there, and ask to sign out **Bop it!** Unless the game is currently broken, office staff will gladly hand you the game. Then you can immediately start playing it (unless the office is crowded, wait for it clear up, you can't properly play with multiple parties talking all over the place)

If office staff claims to never have heard of **Bop it!** then they probably have never seen it before, which is fair, not most people know about MathSOC actually owning **Bop it!** come back later when there's a different manager on shift, no use trying further, they simply don't know where it is.

If while you're playing **Bop it!** anyone asks you to stop "because it's annoying", you must understand that they are only saying that to keep their social facade up, and don't want to confess in front of acquaintances that they actually LOVE **Bop it!**, keep playing and trust me, they are enjoying it as much as you are. Among all the people that I know, 10% play

Bop it! in public, while the 90% is always asking them to stop, but every single person in this group has confessed to me privately that they don't hate the game and actually enjoy the beat.

I would also advise you to do this with a friend so you can play **Bop it!** with them instead of by yourself which is where **Bop it!** really comes to shine as the best game to ever have been created.

Also don't forget to say that this game was suggested to you by **Cris M**, when people in the MathSOC office ask you where you heard about this hidden treasure.

Cris M - Alter Ego

G³ REASONS WHY mathNEWS LISTICLES SUCK

- You never know how long they are based on the title
- Variable length arrays will result in a 0 on your assignment
- Related: you never know how much time you're gonna waste on it
- The variable can literally be whatever the author wants, yet it's always N "for the meme"
- It's literally just students imitating **profQUOTES**
- Much like students imitating professors, student output is much worse than the initial input
- It's for people who can't write paragraphs, and resort to bullet points due to their lack of article-writing talent
- It's basically glorified Buzzfeed just because it's taken out of the Buzzfeed context
- That combines with the worst of Reddit textposts to produce something I can get by scrolling through your average Twitter feed
- I typed this up in 3 minutes after a CS midterm and you'll still find it funny, just 'cause "it's a list now!"
- Lists probably tickle your lizard brain or something, and give you a dopamine rush like cocaine. These are basically cocaine.
- Don't do cocaine
- It always ends up with geese. Do we have any original punchline at this uni other than loneliness and geese?

[Editor's note: G is approximately 2.351. Also, you will pry N Things and goose memes from our cold, dead hands]

For the record, although I did once say "there is beauty in mathematics", I did not then add "and it is me".

STEPHEN NEW

Layth

A REVIEW OF VERTICAL TRANSPORTATION MECHANISMS IN MC

With MC already at eight floors and growing, (at a rate of 8 Floors / 50 Years since its inception = 0.16 Floors / Year) knowing how to getting from floor to floor in MC is vital to students' knees. To this end, this journalist has conducted an extensive survey of various methods of gaining both altitude and gravitation potential energy.

THE STAIRCASES

During its construction, five Self-Propelled Vertical Transportation Mechanisms installed within MC which turn allow humans to ascend vertically by making repeated motions with their legs. Despite the fact that staircases are energy efficient, silent and allow humans to essentially fly, these mechanisms have received criticism from students for "destroying my knees", being "too much work" and "oh [EXPLETIVE] aaaaahhh I'm fallllliing!"

The staircase on the Northeast, M3/DC side of MC is, by far, the nicest staircase in MC. It spans the full eight floors and is lit with lighting that will actually allow you to see the stairs you're walking on. If one were to only walk in through this stairwell and not exit on the first or second floor, one might even think that MC was constructed this side of the millennium.

In contrast, the Southwest QNC-side staircase is the absolute opposite of what one would expect from Canada's Most Innovative University. This Vertical Transportation Mechanism may get the job done, but makes the Chemistry building seem new. Even when you climb up, it feels as if you're descending towards something dark. The lights are dim and yellow, and not all of them are on. There's a grizzly splatter on the wall near the top as well.

On the south face of MC, the only staircase that isn't hidden in a corner without windows moves students up and down. It's in the ideal location to reach central places, well lit and easy to access. The only problem is its size. Unlike its brethren seven-or-eight floor behemoths of Vertical Transportation Mechanisms in the corners of MC, the small south staircase is both short and thin, leading to high congestion and an inability to reach anything beyond the fourth floor.

The other two staircases are not too noteworthy. They're just average for MC, which is to say below average for UWaterloo.

As a whole, the staircases are a very utilitarian Vertical Transportation Mechanism. Use them if you don't mind the climbing.

Steps climbed for this review: $n > 1000$

Steps per landing: 11

Steps per landing leading up to the 6th floor: 10

Average steps per landing in MC: About 10.1

THE ELEVATORS

If flying up stairs isn't quite your taste (or if you don't like climbing over a hundred steps to get to your office hours), you can try the elevators. It's always quite a gamble riding one of these, as you never know what you'll encounter. Perhaps you'll see your professor, giving you a baleful look for using the elevator you're not actually sure students are allowed to use.

If you're planning on ascending four floors or more, consider the elevators. However, if time is a concern, don't, as the potential range for waiting times varies very dramatically. In addition, the elevators ascend very quickly for the first few floors, then only approach the height $L =$ the floor you're going to as time \rightarrow infinity.

Elevator rides taken for this review: 4

Average floors per ride: 3.5

THE BRIDGES

Perhaps you don't actually want to use any of MC's Vertical Transportation Mechanisms. In that case, this journalist presents: an alternative Horizontal Transportation Mechanism - Bridges! MC connects to three (soon to be four, which means that the number of bridges is growing at 0.08 bridges per year) other buildings via bridges. This way, you can utilize any adjacent building's Vertical Transportation Mechanisms and still end up in MC.

Bridge walks taken for this review: 12

Average bridges connecting to MC: 3

JUMPING

There's an entrance to the 6th floor from the roof. It's a nice one, too. If you can't jump that high, try the third floor balcony, which will put you right next to the C&D and MC Comfy. This Vertical Transportation Mechanism is the fastest way to get anywhere in MC.

Floors jumped for this review: 0

IN CONCLUSION:

There is little doubt that Vertical Transportation Mechanisms are critical to accessing the majority of MC. Hopefully, this article will help you make the incredibly important decision of how to Vertically Ascend to your destination.

RANKING THE FACULTIES BASED SOLELY ON GUT FEELING

Please keep in mind that this is a shitpost and that while all of these rankings are my heartfelt opinion, you only hate me because I'm telling you the truth.

MOST BUILDINGS

1. **Engineering:** I've lost count
2. **Science:** 7ish (I asked my friend in Science and will trust her approximation)
3. **Arts:** 4, though if you count the university colleges, then 7
4. **Environment:** 4: EV1-3 and EIT
5. **Math:** 2
6. **AHS:** Like 2 or something

MOST VARIETY OF SUBJECTS

1. **Arts:** There are so many different courses and subjects in Arts, I don't know how they do it with all their funding going to the Engineers. Did you know that there are Medieval Studies courses? Anthropology? Cultural Identity? Visual Culture? I don't even know what half of these are about, but I sure want to find out. If you're looking for interesting electives, definitely check out Arts.
2. **Environment:** Seeing as how Environment is the faculty where the random miscellaneous programs go when they don't fit into any other faculty, you end up with an interesting selection. There aren't nearly as many options as in Arts, but with Aviation, Planning, Knowledge Integration, and Social Venture Entrepreneur programs, you'd be surprised what the Environment faculty has to offer. KI is literally every other program squished into one. It's crazy! This is on top of the actual environment related subjects. What a diverse hodge-podge!
3. **Science:** I was surprised when I saw what programs Science had. In addition to the expected Biology, Physics, and Chemistry, they have a couple other programs that might be of interest. Pharmacy and optometry are great if you want to do drugs and see things. Science has a decent selection for those of you more empirically minded.
4. **Math:** Math might appear to be lagging behind in the diversity category. With all of Math falling into two categories, CS and Math, it might be hard to see the variety it contains, but lo. The field of mathematics is home to such a variety of sub-fields, like Combinatorics, Statistics, Graph Theory, Topology, Analysis, and Number Theory. There is also Computer Science related things, like encryption, programming languages, and still trying to figure out what happened to the braces in python. The Math faculty has enough to keep one entertained for a lifetime...

5. **AHS:** Sports, Doctors, and Old People, that's about it.
6. **Engineering:** Architecture and Engineering (a lot of different kinds of engineering, but I'm just gonna group them together into one for the sake of this list).

CRUNCHINESS

1. **Environment:** Have you ever tried to eat a tree?
2. **Engineering:** Engineering hard hats are made of plastic. That plastic is pretty hard and pretty chewy once you've been going at it for a while, but it's not the crunchiest thing I have ever put in my mouth. It tastes pretty sweaty, but in terms of crunchiness, it's not half bad.
3. **AHS:** This one is hard and really dependent on the specific program. Kinesiology and Rec 'n Leisure? Not terribly crunchy. The more your prey exercises, the less crunchy they become. If it were just these two programs, Health Sciences would be lower down on this list. Gerontology is where the fun begins. It's a little-known fact, but the key to a crunchy person is proper ageing. That's why, thanks to Gerontology, Health is third on the list.
4. **Science:** Science is also pretty hard because physics is not crunchy, chemistry is sorta crunchy, and biology has the potential to range from 0 Roaches to 12 Roaches on the Xavier deRoach scale of crunchiness. However, due to the fact that earth science is a science and that rocks are usually pretty crunchy, Science holds a solid fourth place.
5. **Arts:** Essays are not crunchy.
6. **Math:** You can't crunch a math.

RELATIVE QUANTITY OF SEXUAL INTERCOURSE

1. **Arts:** Without a doubt, Arts students have way more sex than anyone else. https://www.huffingtonpost.ca/entry/art-school-sex_n_7001798
2. **AHS:** There's no better way to study anatomy than with real-life examples.
3. **Science:** There's no better way to study biology than with real-life reproduction.
4. **Environment:**

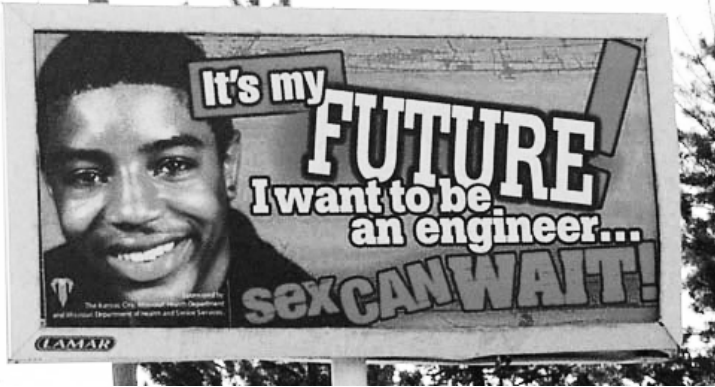
Treebeard: There have been no Entings for a terrible long count of years.

Merry: And why is that?

Treebeard: We lost the Entwives.

Pippin: I'm sorry. How did they die?

Treebeard: Die? No... We lost them and now we cannot find them...

5. **Engineering:**

6. **Math:** The proof is trivial. Q.E.D.

PUBLIC OPINION POLL (I.E. ME ASKING MY ROOMMATES AND A RANDOM COUPLE OTHER PEOPLE WHAT THEIR FAVOURITE FACULTY IS)

1. **Arts**
2. **Math**
3. **Environment**
4. **Science**
5. **Engineering**
6. **AHS**

LONGEST NAME OF DEAN (TIES BROKEN ALPHABETICALLY BY LAST NAME)

1. **Engineering:** Pearl Sullivan (13)
2. **Arts:** Douglas Peers (12)
3. **Math:** Stephen M. Watt (12)
4. **Environment:** Jean Andrey (10)
5. **Science:** Bob Lemieux (10)
6. **AHS:** James Rush (9)

FEWEST CHADS

1. **Math:** Everyone in Math is a Virgin, the polar opposite of a Chad.
2. **Science:** The program is full of nerds who tend not to be Chads as much as Math, but some of them actually have sex sometimes.
3. **AHS:** Studying old people means prime access to milfs, which leads to Chadiness for some, but not all.
4. **Environment:** The lumberjack archetype is far closer to the Chad than most others.
5. **Arts:** How else do you think they have that much sex?
6. **Engineering:** Engineering is the Chad counterpart to the Math Virgin.
7. Literally all of Laurier: Go Seahawks!

FUNDING

1. **Engineering:** How many buildings again?
2. **Science:** All those expensive pieces of equipment, chemicals and dead animals probably cost a lot. Also a lot of buildings.
3. **Environment:** Environmentally responsible policy means fiscally irresponsible
4. **Math:** Why are all our upper-year courses waitlisted? Can we not afford enough profs?
5. **AHS:** No data available
6. **Arts:** Which engineering building is our lecture in again?

CHEAPEST COFFEE AT C & D

1. **Arts:** None.
2. **AHS:** None.
3. **Science:** 50 cents.
4. **Math:** 85 cents.
5. **Environment:** You won't even be able to find it
6. **Engineering:** Why would you even go here?

MASCOTS

1. **Arts:** Is a boar. A powerful animal which would destroy all the other mascots.
2. **Math:** Is the most stylish article of clothing imaginable.
3. **AHS:** Kangaroos are pretty awesome.
4. **Science:** A fuckin Amiibo or some shit.
5. **Environment:** A dildo disguised as food.
6. **Engineering:** Is a literal tool (like the students in the faculty).

BEST FACULTY PUBLICATION

1. **Math - mathNEWS:** More at risk of being sued than any other publication
2. **Engineering - Iron Warrior:** At least it's not Imprint.
3. **Everything else - Imprint:** It's Imprint.

Xavientois

HAPPY BIRTHDAY, BERNARD BOLZANO!

Today, October 5th, is the birthday of Bernard Bolzano, the Bohemian mathematician who published the ϵ - δ definition of the limit, and tormentor of MATH 138 students for many years to come.

The limit of his age as the year approaches 2018 is 237.

Loquatus

THE DELICATE ART OF NAPPING ON-CAMPUS

We're getting to that point in the semester where things are finally settling in, and if you're anything like me, those 8:30 classes every other morning are really starting to get to you. You can feel your soul slowly exit your physical being during those lectures, yet you can't sleep in there because that quiz tomorrow is going to suck. There has to be some way to get your energy back, so you can survive the rest of the day. Taking a nap is the best way to do this, but getting all the way back to your room can be a hassle especially if you have another class coming up. If you manage to do this right, you could nap somewhere around campus between classes and be energized for your next lecture. But there are a few important points you should take note on before passing out on the nearest bench.

1. THE RIGHT MOMENT

Picking the perfect moment to take a quick nap is important, because even if you're tired it's sometimes still not a good idea. You should check your submission schedules to make sure you don't have anything important you need to submit in a few hours because those should be a priority. Yes it sucks, but the education system expects you to sacrifice a portion of your well-being to get these projects submitted on-time. You should also gauge if you're really tired enough to nap, because just lying there for an hour trying to sleep and not being able to could actually be detrimental to your mood.

2. THE RIGHT TIME

"BUT WAIT FRUITBOY!" I hear you not saying, "ISN'T TIME JUST A SERIES OF MOMENTS?" Why yes, it is. But that doesn't mean they can't both be factors. You also have to think about the specific time you have on hand to see if it's suitable for napping. For example, if you've got 10 mins to make it to your next class, maybe that's not the best time. If you're done class for the day, or have possibly a 3-hour gap between classes, it might be a better idea to take the trip back to your own bed (if possible) and crash there. But, what if you have an hour gap? Well, then you might be in business. The idea of your nap isn't to sleep for 10 seconds, or 3 hours. A nap should just be that quick, 45 minute snooze to give you that extra bit you need to make it through your lectures.

3. THE RIGHT PLACE

An important accompaniment to the right time is the right place, which might not be as easy as it seems. The right place to nap is a difficult puzzle, with no perfect answer. There are 3 vital factors you're looking for here. First, you want to make sure the foot traffic is minimal, both to reduce noise and lower the chance you find yourself victim of theft (it hurts to admit, but there are some mean people out there). If you don't keep the blindfold from your "Stress First-Aid Kit" on-hand, you'll also be trying to find somewhere that isn't too bright as well. Lastly, you'll want to pick somewhere comfortable, so you can actually enjoy the time spent comatose.

I understand these qualities put together can be a challenge to complete, so the decision is really up to you if you weigh these qualities differently than I do. For example, napping in the comfy lounge in MC works for many people, as I can see while writing this article. If you don't mind the conditions in there, those chairs do seem like nap material. If you're so dead that even passing out in the Rock Garden's mulch is promising, I'm not going to stop you (although campus staff might). Personally, I spend my naptimes on the benches below the octagon stairwell in PAS, and I only share that information because I know many of you would probably get lost before you manage to steal all the good spots. But seriously, don't wander into PAS if you have somewhere else to be, because you WILL get lost. Take that as a promise; it's a rat's maze in there.

Architecture aside, I believe a proper amount of rest is obtainable for everyone, and until someone responds to my weekly staff email requests to turn the leftover geese feathers into student bedding, this article will have to suffice. Happy napping, and stay safe out there.

Fruitboy

ADVICE FROM THE EXPERTS (AKA HOROSCOPES BUT WITH A TWIST)

This week's theme will be: faculty introductions... ish

1. The "definitely not a cult" faculty: Look, I really hate to break this to you, but there is indeed a "cult" in *faculty*. Furthermore, your guys' mascot is a rigid 60 inch chrome dildo... but eng parties are the best parties, that is a fact.
2. The "we're not trash we're compost" faculty: What a joke amirite; no more needs to be said.
3. The "governed by entropy the laws of the universe" faculty: Chaos, chaos, and more chaos; every day another building gone, poof, vanished from the face of the known universe; it's still there, don't you fret, that thicc lil noggin of yours; everything falls apart just like thi...s...
4. The "miscellaneous" faculty: I suppose someone needs to man the counter at McDonalds; The business kids can be supervisors, I guess.
5. The "we're obviously the best faculty... uh huh, totally" faculty: If ya don't want the freshman 15, ya should probably lay off all that pi.
6. The "what, this faculty actually exists?" faculty: Otherwise known as the faculty that deals with rectal thermometers - you know the one.

Twinklegaze Astropants

WATERLOO'S NON-GEESE

If you are already (or planning on becoming) a regular here at **mathNEWS**, you should be familiar with the one thing everyone here is obsessed with. Ok, if you thought of **profQUOTES**, that's not what I meant but it's a close second. What I mean is the geese. Constantly being criticized, harassed and bullied in various ways, it's clear that the opinion held is quite negative. Especially after one of our editors was mobbed for writing an article on the benefits of geese. Luckily, I can say confusED has made a full recovery and hopefully won't be making that mistake again.

That aside, I would like to take this opportunity to bring up another issue, one that's currently facing an unfortunate media black-out. They're as rampant as the geese, but travel independently and lack the confidence of a goose. This infestation I would like to cover happens to be: Squirrels! They're everywhere, constantly darting around like it's life or death. In their defence, it likely is, because of how puny they are.

There are a few key reasons that the squirrels are just as bad (or worse) than the geese. The first being their populace on campus. Similar to the geese, it's more surprising NOT to find a squirrel than it is to find one. They give you that look and act scared, but I know they're truly planning evil schemes to inconvenience the university however possible. For example, in the past 3 days, I've almost run over two of them on campus because they dart into the middle of the path and stop dead in your tracks until the last possible moment.

Next, they act so tough to stroll around campus but couldn't even win a fight. Have you ever tried to approach one? They run. They're weak cowards and they know it. Geese are real chads, not backing down from a fight and even embracing the chance to rumble with a student. Not squirrels. No, they're busy running because they aren't primed for fighting.

Lastly, they forage on all the plants in the area. When you're in university, money (and consequently food) can get tight. So, my personal solution is to forage the trees at night for nuts to eat, but what do I find? Those rotten rodents taking them before I can! It's just unfair, because they climb trees at all hours of the day without getting told they're "weirdos" and they "need to come down and talk to security".

Personally, I believe we should be concerning ourselves with these nuisances much more than we currently do. They're inconvenient, annoying and just rude. My solution, then, is to bait them all into a big box, put a pretty bow on it and ship it over to Laurier. They have a few trees over there, and the few times I've been nearby, I haven't seen a single squirrel. It's time they did their fair share and carried some of the weight for us.

Fruitboy

THE GENDER NEUTRAL OF NUMBERS

I was having a debate with a friend where they wanted to prove that something was bounded between two numbers using the Squeeze Theorem. The problem I had with their proof, however, occurred in the second step. I saw the "rational" number that we avoid like the plague.

" $\frac{1}{0}$? Right in front of my proof?" I inquire.

They reply, "but that'll just go to infinity, so there's really no issue."

"You're playing with fire, bud."

So, we graphed $1/x$ on Desmos to see what was really going on (and you can too)!

I pointed out that, while it approaches positive infinity from the right, it approaches negative infinity from the left. They argued that, since it approaches infinity from either side, $\frac{1}{0}$ will still go to infinity. The truth is, while my solution is more correct (as $\frac{1}{0}$ doesn't work like that), $1/(x^2)$ would satisfy the demands that I set. So what is the truth? Turns out, when the denominator is 0, the entire thing just becomes undefined. $\frac{1}{0}$ leads to too many paradoxes and contradictions.

$1/-a$ will produce a negative number. $1/+a$ will produce a positive number. But 0 is different. $\frac{1}{0}$ has to produce a number that is neither negative nor positive, as 0 is neither negative nor positive. So $\frac{1}{0} = 0$. But $\frac{1}{0}$ also approaches two infinities at once (one if you take a function like $1/(x^2)$). Herein lies the contradiction, as required, QED, we win, checkmate atheists, #gamersriseup.

0 is pretty interesting. It's not really negative and it's not really positive. It escapes the dichotomy between positive and negative numbers. That's how the title was chosen. 0 is like the gender neutral of numbers: it intrinsically escapes the binary. Like "they" in English, it was mostly unintentionally (from my math experience thus far), yet that's how things turned out. It's useful if you want to describe something that doesn't fit the binary.

Layth

**Being a mathematician
requires imagination.**

PROF. BARBARA CSIMA

I'M WRITING THIS FIFTEEN MINUTES BEFORE THE ARTICLE DEADLINE SO I CAN SAY I DID SOMETHING USEFUL

AND OTHER DECISIONS I REGRET.

It's the middle of the 8:30am BIOL 130 lecture, and I am definitely not awake enough to understand what's going on. The professor is using a truck analogy to explain something called activated carrier molecules. I have no clue how trucks are relevant to biology, but everyone around me seems to get what he's saying, so I'll just play along and pretend I understand it too. I don't really care enough to, anyway.

The professor is talking about something called NADH and FADH. Hey, I remember these molecules from grade 12 biology! Electron carriers, I think they're called. Flashback to high school, when life was less complicated and when free time actually existed.

Free time. Oh man, do I ever regret not using it in high school. I thought I had no time, but looking back, that was never the case. If only I had more efficient time management, I would've been able to do so much more. More side projects, more extracurriculars, more socializing. I could've learned a new language, picked up a new instrument, started a few clubs. Maybe even hit up a few parties. All things that I definitely don't have the time to do now. But instead, I spent all my time "studying", because it was grade 12 and marks mattered.

I cast my mind to the anxiety of admissions. It doesn't feel that long ago, but then I remember it's been almost a year since I started my applications. I remember going to OUF, researching my top choices, then my backups, then the backups to my backups. I remember debating if I wanted to go to UofT over Carleton, if Western or McMaster should be higher on my list, and if I really did need to apply to so many universities. And then there was Waterloo.

If there's one thing I don't regret about applying to Waterloo, it was knowing that by completing the AIF, I was participating in an admissions process that valued applicants for both their academic skill and their well-roundedness. And yet, I remember the stress of trying to write the best possible profile in 900 characters, the process of asking person after person to offer their feedback, the ruthless application of character economy, the feeling of relief as I clicked to submit. Now that I'm here, I don't even bother to think about what I wrote, but I hate to imagine the guilt and regret I'd have burdened myself with had I been deferred or rejected. Guess I dodged a bullet there.

But if there's one thing I do regret, it's worrying as much as I did. God, the stress of wondering if I'd gotten in to each of the programs I'd applied to. There were times when I was super-confident that I would get into Waterloo, that I was the best of the best, that no one could beat me. And then there were the other times, when I experienced crippling self-doubt with the realization that there were so many people more qualified

than me, and I wondered if I'd ever get into university at all. It's easy to say that hindsight is 20/20, but worrying so much negatively impacted my social and academic life. 10/10 would not recommend.

Wait, since when did the slides change to burning glucose? Dammit. I'm as mentally separated from this lecture as a truck is biologically separated to a goose, and I'm going to regret it.

Or will I? It's been one week since I realized that I'd wasted an elective spot on a course whose post-requisites were no longer part of my plans. It started with a common enough mistake: misreading the undergraduate calendar, and believing that another course was offered in the next term. By the time I realized my error, it was too late, and ever since I've been blatantly ignoring the lecture content at the expense of my clicker mark (and my preparedness for the midterm). I already regret choosing this course; slacking off during a lecture isn't going to change that. Might as well just sit back and enjoy the ride.

The lecture ends. Right now, I don't feel any regret. But if history is worth anything, I probably will later.

whyOS

Note: I originally titled this article "I'm writing this one hour before my midterm", but then immediately regretted it.

N THINGS TO DO WHILE WAITING FOR LAUNDRY

- Re-prove Fermat's last theorem
- Complete the twin prime conjecture
- Solve the Riemann Hypothesis
- Prove that $P = NP$
- Invent a self-consistent theory of quantum gravity
- Square the circle successfully
- Beat a tortoise in a foot race
- Write down Graham's number on one piece of paper
- Create a funny and/or interesting **mathNEWS** Article

Totally_not_a_traitor

R = 4.46 * 10⁶

How can a whole class working on the same problem not know how to solve it? That's what I had to deal with before I started the rage-fueled submission for **mathNEWS**. Why is getting the answer riddled with so many potholes? It's just following a series of predefined steps. As Jeremy Clarkson mentions quite a lot, "How hard can it be?"

I spent 4 hours of my life locked in a room, arguing with half the people that I know in my batch over Slack why every new approach of solving the problem has a fundamental flaw. People next to me keep drawing the same diagram again and again like it was gonna somehow miraculously reveal the solution. Piazza was so dead that even graveyards seemed more lively with Spooktober. (BTW Happy Spooktober everyone). Profs apparently were not entertaining any questions at all. The sheet with the problem statement was so vaguely written such that it might have just been better if they hadn't bothered to write it at all.

I wasted so much time trying to figure out why everyone kept telling me that my approach to solve the problem is wrong. Time that I could have spent writing a proper **mathNEWS** feature article. I got so bored that I decided to just open up Reddit to check if it had the answer somewhere (one can always hope for a miracle). Alas, no such miracle appeared and I was left standing at the same exact spot that I was couple of hours ago.

It was time for some drastic action. I gathered the people around me and told them it was time to employ the ultimate weapon, "The Assumption". One such prof said these wise words in my first year: "Just close your eyes and make an assumption". Collectively, we all came up a set of assumptions that kind of made some sense (not all agreed with the set). I grinded out the math and followed the instruction set as closely as my coffee-addled brain could follow, to finally come up with $R = 4.46 * 10^6$. Everyone around me looked at my answer and scoffed that no way such a huge number is the correct answer but at that moment, I was content. I was happy that I kind of obtained the answer by following a path that my brain told me to follow. It might just be wrong but I couldn't care less. There will always be the saviour, "Part Marks".

Tune in next time to find out if R was indeed $4.46 * 10^6$. Time to go and eat my free pizza for the night.

over-engineerED

A VERY IMPORTANT MESSAGE

I was kidding. They're all amazing and would recommend all to anyone.

NUMBER MANIA

A friend of mine commented on the striking resemblance between Sept-ember standing for 7, Octo-ber standing for 8 and how the pattern follows for November and December. Apparently Julius Caesar was responsible for adding 2 months: July for Julius and August for Augustus (his nephew) -- thus turning our calendar into something that no longer makes sense and ruins the pattern.

This got me thinking ... why did he do it? Did he do it to get the golden number 12? Why are we so obsessed with 12? 12 months, 12 inches to a foot, 12 zodiacs, 12 makes a dozen. So, I turned to the Internet for answers.

How did we start with 12? It's not like 10, which probably started with the number of fingers on our hands. 12 actually seems like the odd one out (pun unintended). Well, 12 might actually be related to our hands. If you count the 3 parts of all your fingers on one hand, excluding the thumb - voila, you have your 12. And that was how counting was done in some cultures in the past. Also, turns out mathematicians have always revered the number 12 since it has a larger number of factors. Conversely, 360 degrees contains a multiple of 12 and so on. But maybe our obsession with 12 goes a little further. I was pretty shocked to discover that some people actually want to shift to a base 12 system and that there are societies (dozenal societies) in place advocating for this.

What are the other numbers we're obsessed with? How about 3? Third time's the charm, three's a crowd, three little pigs, three musketeers, the Holy Trinity and how about something that hits closer to home, 3 terms a year. Why 3? I honestly don't know. My best guess would be because it's small enough to comprehend.

What about numbers that are ominous? In some cultures some numbers are ominous based on what they sound like or what they mean when rearranged. For the Chinese it's 4 (it sounds like death) and for the Italians it's 17 (when rearranged it means "my life is over"). But perhaps infamous of them all - the number 13. What's so ominous about 13? The fearful reaction to it sometimes feels like a paradox. 13 symbolizes coming of age, the start of your teens, but Friday the 13th? Oh, that's awful. What caused this fear? Some believe the sheer perfectness of 12 has overshadowed 13, causing the belief that it's evil. The Victorians too have a hand. Apparently 13 was considered to be unlucky by them because that's the number of witches it takes to make a coven (a meeting of witches).

But, do you want to know the one thing that I discovered that seals the deal? The Roman Emperor Pompilius added the 2 months. All that poor Julius did was help in renaming the months and readjusting the dates. So much for all my pondering!

So, I guess that's some time well spent by me, huh?

Pondersome

ON THE USE OF LINEAR ALGEBRA AS A COMPOSITION TOOL

Akin to mathematics, music is a language that speaks to the soul and renders the heart flutter. An individual who is unfamiliar with one from a technical standpoint but enjoys both may wish to find a tool that converts one to the other. In this article, I shall attempt to develop a system which uses the tenets of linear algebra to represent musical structures for the purposes of composition. A brief literature review (literally just Googling the title) to ensure originality revealed nothing, so it is this author's hope that the following will be original content.

We shall begin by first establishing a domain in which our musical algebra shall live. Let us use \mathbb{R}^{12} , and let our basis be the standard basis of \mathbb{R}^{12} . We shall render the twelve notes of the Western musical scale, starting with C, as each of the twelve unit vectors, i.e., C corresponds to $(1,0,0,0,0,0,0,0,0,0,0,0)$, C# to $(0,1,0,0,0,0,0,0,0,0,0,0)$, and so on. Octave shall not be regarded with this system, rather we shall allow the arranger to decide upon the voicings and registers to use. Additionally, we shall give a notion of a musical "origin." This origin will be the zero vector and corresponds to silence. We now have an ambiguous representation of notes, the remaining question being "now what?" We shall begin by developing representations of chords and harmonic changes.

Harmony is the sounding of two or more notes at the same time. Some musicians would have the dear reader believe that certain note choices are wrong, however there is no objective choice for whether a given set of notes can be played together.

Rather, it is up to the composer to decide whether a given harmony accurately conveys the emotion they wish to convey. In any case, we shall represent such a sounding via a linear combination of the corresponding unit vectors. We can also represent scales in the same way. These "tonal vectors" will form the playthings of this system, and shall attempt to apply the dot product and matrix-vector multiplication, with the possibility of further extension at a future point.

The dot product of two vectors yields only a scalar, which we must interpret. Notice that since we are working on mostly unit vectors, or at least vectors with exclusively ones and zeroes, the dot product will yield the number of notes shared by two given tonal vectors. This gives a sort of metric to relate any two tonal objects - their closeness is given by their dot product with twelve being the highest and zero being the lowest. With the notion of a dot product, we could also define the notion of the norm of these tonal vectors. This would give us a sense of distance from the origin, but this is a vapid notion, so we shall not trifle with it. Thus, if a composer had two tonal ideas and wanted to go from one to the other, they could use the dot product to determine the number of notes to be changed. The following section shall attempt to provide a system that inspires a device to enact such a change.

Suppose we now want to be able to transfer from one tonal object, be it a key or a chord, to another. The intuitive solution would be multiplication by some sort of matrix to get the desired output. These 12×12 matrices we shall label "transformations." One can solve for such matrices to obtain a transformation using outer products. Now we must assign meaning to these transformations. The more similar two tonal vectors are, the higher the rank of the matrix required to change from one to the other as more notes must be retained. The notion of rank, however, sometimes involves the switching of rows, which in our tonal vectors involves changing notes. One could Elementary matrices to find the RREF and use them in the following manner. The composer could then take the row vectors of a matrix and use them to create a transitional series of notes in the form of chords or melodies.

In conclusion, while the author acknowledges that his idea is half-baked at best, he shall attempt to use it over the coming break. Should anything interesting result, he shall let the dear reader know. Perhaps the reader finds use in the system or is able to extend it into usability. If that is the case, the author would thoroughly enjoy reading about it in **mathNEWS**. Music and math are intimately related, and perhaps music can be generalized and abstracted as mathematics can.

THE EYEBROW GOOSE

BY CIX



Chalissa

N COOL FACTS ABOUT THE MONTREAL METRO

1. The Montreal Metro was the first metro system in the world to use *only* trains with rubber tires instead of metal wheels.
2. The brake pads are made of wood that was soaked in peanut oil. Unlike other materials, it doesn't screech when braking; it wears out the wheels less, and it doesn't stink.
3. All entrances to the metro are indoors in order to keep weather out of the system.
4. Almost every station is designed by a different architect. Each architect even got to design the benches to be installed at the platform. As a result, each station looks dramatically different, even with just brief glances.
5. Internally, the four metro lines are referred to as Line 1, Line 2, Line 4, and Line 5. Line 3 was planned, but was delayed. It then just got cancelled because Line 4 was better, anyway.
6. The older trains in the metro system produce a neat little tune when they pull away from the station. It's the first few notes to *Fanfare for the Common Man*, a piece by composer Aaron Copland. It was a musical theme for Expo 67, but STM — Montreal's public transit agency — claims that it's totally a coincidence. (Note that the metro was built in preparation for Expo 67.)
7. The *dou dou dou* tune that the trains produce is made by a component called a *Jeumont current chopper*, used in the older trains in the metro system. The trains draw power in discrete steps. Each step produces a different frequency, which people interpret as a melody.
8. The *dou dou dou* also shows up in the Mexico City metro. The company that built the Montreal metro trains also built ones for Mexico City at around the same time period.
9. Unfortunately, the new trains that STM put on the rails in 2016 no longer make the *dou dou dou*. To make up for that, STM now uses the *dou dou dou* as the chime to warn that the doors are closing.

Loquatius

MATHSOC SEZ

Weird, I don't have any updates.

Check your email in the coming weeks!

Alex Lee
MathSoc Prez

N TIPS FOR INVESTING

- **TIME TRAVEL:** Don't wait to see how stock goes get a time machine and use to know how your portfolio would have gone [Outcomes vary]
- **GET DRUGS:** If you get high, it won't matter how your stocks are doing? Are you making money? Are you losing money? Who cares!
- **BE CORRUPT:** Now this one takes patience but it is always effective. Work your way up to a mid- or high-level holder of public office or other government position. Once you obtain this, use your power, knowledge and influence to manipulate it to how you want it to go!
- **BE RICH:** If you want to be rich, just start that way. Easiest way is to be born into wealth, but winning the lottery and gambling are all accepted means to this end.
- **BUY EVERYTHING:** You can't lose if you are on every team. Buy a sizable amount out of every stock and then you can never lose!
- **LIE:** This is similar to BE CORRUPT, but you don't need to wait at all! You only need the ability to have neither morals, dignity nor integrity. Just lie to your investors, colleagues, partners, family, friends, doorman, custodian and everyone else who you can communicate to. For extra money, try to lie to those you can't.
- **USE THE GEESE:** If all else fails, just go to the wise and all knowing geese of Waterloo. Just make sure to pay a little bit of money for a goose interpreter.

Totally_not_a_traitor

Have something you
want to publish in
mathNEWS?

Drop it off in the
mathNEWS blackBOX
by the Math C&D or send
it to mathNEWS@gmail.
com!

A mathNEWS EDITOR WHO WANTS
MORE WORK FOR THEMSELF

profQUOTES 138.2

C0342: BRUCE RICHTER

“ I used isthmus and the publications said it was too old-fashioned...

C0351: ROSE MCCARTY

“ I'm going to write a proof, but it's a pathetic little proof.

“ The saddest QED. [upon completing a sketchy proof of Feasibility Lemma]

C0456: JOCHEN KOENEMANN

“ Free is always good.

“ We live in a harsh world where people only care about themselves.

CO 485 / 685: DAVID JAO

“ Are you interested in this stuff or are you bored? Well, I guess I should ask are you a mathematician or engineer.

“ Hopefully you know how to write zeta in your notes.

“ I didn't prepare an example because I don't do that.

CS 135: ROBERT HACKMAN

“ We're making money hand over fist selling weed!

“ If you know someone named Dylan, 75% chance they sell weed. That's what Dylans do.

“ If your trombone is hungry, it has a demon in it.

“ Being drunk is great, I don't know what they're talking about.

“ I reserve the right to test you on anything we've mentioned in class. Including what haircut I decided to get this weekend.

“ I've never heard of that band before. Is that Nightcore?

“ I actually listened to some of that Nightcore. I was ok with it.

“ They'll be looking at your test and your student card, and making sure it matches your face. If your face changed severely in the last month, you'll have some problems.

“ If you don't absolutely hate Canadian telecom companies and airlines, then you should.

“ I don't know what **profQUOTES** is, but you can quote me on hating [telecoms and airlines].

CS 145: GORDON CORMACK

“ ...and a relation is just a table of shit.

ECE 105: FIRAS MANSOUR

“ Don't trust me.

MATH 135: JORN VAN DER POL

“ You guys should be shouting out, setting the building on fire!

“ Maybe I shouldn't be telling you to set the building on fire...

MATH 135: MARTIN PEI

“ Math is my dictatorship.

MATH 137: BENOIT CHARBONNEAU

“ Don't use degrees. We use radians. We're all adults here.

MATH 137: BARRY FERGUSON

“ There's nobody here less than 0, right? Just making sure.

“ Our function has a problem at this point [...] Of course, I don't know if the function has a problem being here, I've never discussed this with it.

MATH 137: RICH DLIN

“ Who needs drugs when you have math?

“ Enough of being a human, let's do some mathematics.

“ My daughter is pestering me. I'll have to tell her not to text me when I'm teaching. And what is she doing? She should be in class! Hm. What does she have now? Oh, English. Makes sense.

MATH 145: DAVID JAO

“ I think I've given you too much to think about.

“ As much fun as it is to keep thrashing around in the dark without an answer, sometimes you need an answer or two.

MATH 145: STEPHEN NEW

“ (paraphrased) This problem is so hard that I wouldn't give it to you as a bonus question, but Jao would.

STAT 231: MICHAEL WALLACE

“ I need you to let me know if I'm incompetent.

“ We say maths in England, it takes forever with that extra s.

- “ If you're at a party - wait that's not realistic - if you're at a bus stop and meet a statistician...
- “ If you do ever do meet a statistician at a party, be nice to them, but don't encourage them.
- “ Murder isn't neat, I should stress that, but statistics of murder are neat. Wait that sounds bad.
- “ I don't know what they were busy with in the 19th century, there wasn't twitter.
- “ I can colour in my graph, because what is university education without colouring.
- “ We don't have to worry about dying directly from these plots.

THE GREATEST ANIME OPENING OF ALL TIME



Hey you!

Yeah you. You probably watch anime, don't you? What I'm saying is, if you're reading mathNews, you DEFINITELY watch anime. Not even the good stuff. You probably like slice-of-life trash, you weeb. Well, get ready, because I've found it. The best anime intro ever. Moody, exciting, and completely unforgettable with an excellent hook.

No, its not from My Hero Academia, or Attack on Titan, or even FMA. Behold, in all it's glory:

<https://www.youtube.com/watch?v=vA9fvXIvaGw>

A Helpful Hint

THE SZABO-SLOANE PARADOX: FUN WITH THE OEIS

Founded in 1996 by mathematician Neil Sloane, the Online Encyclopedia of Integer Sequences (oeis.org) catalogues useful and/or interesting sequences of integers. These include sequences such as the decimal expansion of pi, prime numbers containing 667 in their digits, or the greatest number of white and black queens that can be on an n-squared chess board such that no queen can capture an enemy queen in one move. Among other features, each sequence comes with explanations, links to relevant discussions and papers, and ways to reproduce the sequence. Much like the Pokédex or the SCP Wiki, each entry is numbered for easy reference. For instance, pi's digits are A796, the 667-primes are A138563, and the peaceful queens are A250000. So if the Palace of Numbers numbers its numbers...

This is the part of **mathNEWS** where I will self-referentially talk about two integer sequences in the OEIS that refer to OEIS sequence numbers themselves. The current sentence segues smoothly into the next paragraph.

SELF-INCLUDING SEQUENCE NUMBERS

The integer sequence A53873, self-evidently named “Numbers n such that OEIS sequence A_n contains n ,” lists every integer that appears in its own OEIS sequence. For example, the number 195 appears in A195, “ $a(n) = \text{floor}(\log(n))$,”¹ and so is included in A53873.

However, should the number 53873 appear in A53873? Oddly, yes and no both satisfy the sequence's condition. If you say yes, the sequence would define the presence of its own number. If you say no, it would not make itself self-including, so it's still not defying the definition.

SELF-EXCLUDING SEQUENCE NUMBERS

On the other side is A53169, “A paradoxical sequence: a positive integer n is in this sequence if and only if n is not in sequence A_n in the database.” This list, authored by Miklos Szabo and Neil Sloane, contains every number not listed in its own OEIS sequence.

Is the number for the self-including sequence, 53873, in this list?

Should the self-including sequence contain the number 53169?

So what if 53169 didn't appear in A53169...²

Loquatus

1. Bonus: find the smallest integer n such that $\text{floor}(\log(n)) = 195$.
2. You search on Wikipedia for Russell's paradox, dumbass.

N THINGS OVERHEARD AT THE ONTARIO UNIVERSITIES FAIR

A COLLECTION OF THINGS OVERHEARD AT THE UWaterloo Booth at OUF on Saturday and Sunday

- What's the admission average for CS?
- What's the AIF?
- Do I have to do the Euclid?
- Can I get a CS brochure?
- What's the admission average for CS?
- What's the admission average for ActSci?
- What courses do I need for CS?
- **Person:** Can I talk to someone who can talk about computer science?
Non-CS rep: I'm not a computer science student, but I can answer any general questions that you may have about the program, or about CS student life!
Person: *walks away*
- Is computer science in the science faculty?
- What do you even do in pure math?
- What courses do I need for CS?
- What score do I need on the Euclid?
- Can I get a CS brochure?
- Wtf does "Beyond Ideas" even mean?
- Do you adjust my average based on the high school I went to?
- What's Data Science?
- Can I get a CS brochure?
- **Person:** What even is ActSci?
Rep: *points at Western booth* I think they'd be able to answer your question
- What's co-op?
- How much money do you make in co-op?
- Do I have to do the AIF?
- What's the difference between CS and SE?
- **Person:** Can I get a math brochure?
Rep: Sure! Is there a particular math program you're interested in?
Person: CS
- **Person:** Do you know about the joint math and business program that Waterloo has with

Laurentian?

Rep: Uhhh... do you mean Laurier?

- Can I get into Waterloo with a 99% average?
- What's the difference between Math/CPA and AFM?
- **Rep:** Have you had your OUF passport barcode scanned yet?
Person: *takes out Chinese passport*
Rep: wtf
- Can I get into Waterloo CS with an 82 average?
- Is the Financial Analysis and Risk Management program about accounting?
- UofT is better than Waterloo anyways. Who wants to go to a university named after a toilet?

Axel

A REVIEW OF THE SONIC ADVENTURE 2 REVIEW FROM LAST ISSUE

From the sarcastic tone in the first paragraph until the discussion of Fortnite and Ocarina of Time, the Sonic Adventure 2 review from last issue was horrendous. If it was written with the goal of purveying that the author is a 12 year old Sonic fan with no knowledge of games or reviews, bravo.

The purpose of a review is twofold. One is to inform about what a product is, the other is to suggest whether the product is any good. While the article in question is somewhat informative about the game, it lacks any and all justification as to whether the game is good.

A suggestion for the future: compare games to other games in the series, to other games in similar genres, to talk about the handling/controls, camera, etc. Also, don't just say OoT/Pong/Fortnite are the best games -- it makes you look like a fool.

IceNine

P.S. SA2 came out first on the Dreamcast, and you don't play songs on killer whales.

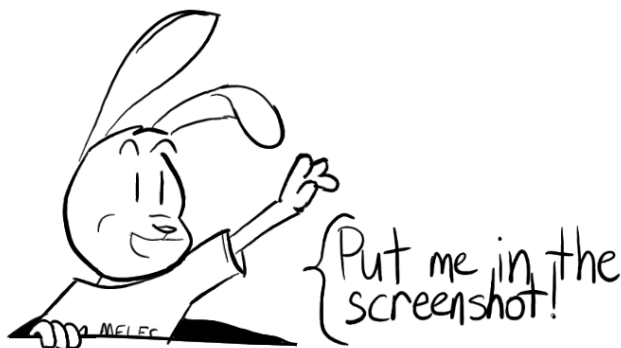
Want to write for mathNEWS? Come to the next production night! New writers are always welcome! Check the lookAHEAD for the next date!

A mathNEWS EDITOR WHO NEEDS NEW FRIENDS

N REACTIONS TO MY *ZOOTOPIA* ARTICLE FROM LAST ISSUE

It has come to my attention that a fellow Math Wizard got their paws on a copy of the previous issue of **mathNEWS** and found my article¹ so interesting that they shared it online with some Zootopia fans. Oh, whoa. What?! Is this a plea to get your pink tie revoked? You know it is strictly against Math Wizard faculty policy to share secret mathematical knowledge! If you—

Oh, great. You led them here, too? Now we'll have to—



This is NOT fucking real. Is it? Plz say it's not.

[picture of Nick Wilde with googly eyes] Which one of you fuckers wrote this

[picture of Nick laughing]

[picture of Nick laughing, but his eyes are glowing]

Okay, how many got in? There's— Can you get off my leg?

Wow. Congrats to Weaver and 83.

Woo! Shout out to Weaver and OC for having their work highlighted! Its awesome to see them explain the works so succinctly and respectfully.

I mean, I wrote that article to get free pizza, and I don't think that's so—

Absolute legend

I feel justified... I think?

I know that as far as lauded fandom output goes I'd certainly rather have Pack Street over something like, say, Fallout: Equestria.

[The Weaver, author of Pack Street] This isn't even the first time I've been published for posting on 4chan

Wait, why are you here? What was that other time you got published?

I lost my shit so hard reading this NASA's gonna need a lunar mission to give it back to me. Fuck.Loquatius if your bitch ass is reading this THANK YOU? But also FUCK YOU.

Thank you more than fuck you though.

I'm still having a moment over here IGNORE EVERYTHING I JUST SAID

FUCK

Uh, thanks? (SOMEONE GET THE SOLVENT!)

I remember college... In one of our French courses we just watched French versions of popular old timey American movies, then talked about it or acted out scenes. I wonder if the school board goes to these teachers and tell them "Look just... keep them busy for a few hours a week, give them something to do. Then at the end of the session give out points however you like. I don't care, come up with a system yourself."

What do you do during production night? And, why the idea of suggesting fanfic?

We meet up and write stuff, then have pizza. Then someone joked about submitting a fanfic just to be eligible for the free pizza. Didn't really know what I was going to write to get my slices, but that comment led me to recommending fanfics. Then I added some stuff to make it marginally related to math.

The entire newsletter appears to be dedicated to making proofs and academic arguments for intentionally stupid shit, i.e. basically satire

[responding to the fact that Pack Street had a grade 6 reading comprehension level] Well great now I feel like a fucking dumbass

[also responding to the reading comprehension level] I feel bad now :(

(YOU GOT THE LIGHTER? ALRIGHT, I'M COMING!) Hey, off, off! Shoo! Don't sniff there!

Slam!

Whew. Okay.

Light it.

Loquatius

1. See Volume 138, Issue 1, "War and Peace or Zootopia fanfics: which is more worth reading?"

MY SHOES' SMELLS AND MY PLANS TO DEAL WITH IT

Fall is coming. The clean, hot summer sky is overtaken by the everlasting depressing, cold, damp rain. Everywhere on the ground is wet and dirty. I have to walk to school every day across some muddy road and naturally, my cheap ass Walmart shoes is taking a heavy toll. Right now, they are soaked and very uncomfortable to wear.

Uh, lately, I been having crazy thoughts (yeah). The way I'm living, stuff gets crazy dark (uh) -- I noticed a foul smell comes out of my feet, even if I wash my feet and change socks everyday. The problem did not improve. This lends me to suspect the source of the odour is coming from my shoes. Some light research reveals that with warmth and moisture, the bacteria and mould would make themselves home in the shoe. It's not good. Bad. Bigly bad.

Therefore, I came up with a few plans to deal with this, with pro and cons.

First, buy shoes and rotate them. The greatest advantage is that the problem is solved. Each shoes have time to dry and let bad air out. However, the problem is I am a cheapskate. Look, if I am buying shoes from Walmart, you bet my butt I won't have money to buy better shoes with all the debt I have.

Therefore, we go to the second plan: wash my shoes regularly; the problem is solved with one pair of shoes.

From WikiHow© :

First, either use your own toothbrush or the one *that roommate* parties til 3 am in the morning, then do a quick scrub to get rid of the dirt on shoes.

Second, it's time to separate the sheep from goats (yeah). Separate the shoes and laces -- this is really important since you don't want them to get tangled together like Princess Rapunzel© in the washer. Place the shoe in the washer and add some baking soda. Set the options to small/delicate and with cold wash if possible. Put your shoes in and wash away. It might be a good idea to put the shoes in socks to protect it from bumping around.

Lastly, put the laces back and put the shoes in the dryer. Put your shoelace though the top door and dangle the shoe beside the door. The shoe actually won't get in to the drum but instead be stuck close to the door. This will make sure they get dry by hot air only without actually jumping around in the dryer. That would damage your shoe if it falls into drum, so be careful. Or, you can let it air dry self like cavemen used to. You do you.

The problem with this plan is that the (low) laundry cost is not worth the effort of taking care of cheap Walmart shoes. Over a few iterations, it would cost more than the shoe itself.

This brings me to the third plan: roughly wash with water and paper towels, then add deodorant or try to kill the underlying cause. Add some alcohol to kill the germs, then once the alcohol evaporates, add some baking soda to neutralize some of the smell. (The smelly molecules are acidic and baking soda is basic. Those whom have studied chemistry know that it becomes less reactive, therefore reducing the smell) On paper, it's the cheapest and fastest way to solve the problem, though I only have a sample size of 3. Interestingly, this plan somehow makes it worse.

Last Plan, Bad Idea: mask the smell with something worse, like farts! Pro: People won't notice the shoe anymore.

Con: I might get kicked out of school.

All in all, maybe I should wear sandals to school.

not me

N THINGS TO DO WHEN YOU AREN'T ALLOWED OUT OF A MIDTERM EARLY

- Skim the exam again to ensure you didn't miss anything
- Inquire if the professors/TAs will let you out now
- Check over those difficult questions again to ensure you didn't mess up a step
- Go over each question to ensure you got the right answers
- Ask politely if you may leave the exam
- Go over the fine details of the exam because nobody reads them the information is important
- Replace any meaningless answers on the exam with meme answers to give the markers a laugh
- Beg to leave the exam early
- Check out the info on the back of your student card
- Count the lights in the exam room (STC 1012 has 54)
- Draw the sun on your desk because that's the only way you'll see it again
- Make an origami pillow out of your exam pages and take a nap

Fruitboy

N WAYS I MIGHT'VE FAILED THE CS 135 MIDTERM

- Forgot to close brackets.
- Accidentally used Python syntax in function definitions.
- Claimed that "design recipes are stupid" in all of the purposes.
- Wrote a persuasive essay on why Racket is not a dialect of Scheme on the last page.
- Wrote legal contracts instead of design contracts.
- Memed every single non-code question.
- Wrote in Brainfuck.

whyOS

STARTING A WEBSITE FOR MR GOOSE

As you may have seen, this week we posed a deeply philosophical question to our contributors: what should the **mathNEWS** website's domain name be?

In the course of our research into the topic of available domains, swindLED and I discovered something that will revolutionize the way we honour the heroic demigods of our campus. I am of course talking about [mrgoose.fai.th](#).

It is my goal to spread word of our saviour, the great Mr. Goose, far and wide through the medium of not only memes but also definitive "religion". With the acquisition of this new website, we goslings take one step further away from fringe cult and one step closer to recognized cult.

True believers, please bring your donations to the **mathNEWS** office. Every nickel will be necessary to pry this website away from the heathens that own it. Together, we can make Mr. Goose great again!

confusED

A PROOF OF THE RIEMANN HYPOTHESIS

The proof is trivial and is left as an exercise for the reader.

Now give me my million dollars.

Axel

A GREAT MIND WALKS AMONG US

As many of you have probably heard by now, Dr. Donna Strickland has been named one of this year's recipients of the Nobel Prize in Physics. This is an incredible honour for Dr. Strickland, and it would be an understatement to say that students and staff university-wide are excited for her.

For those of you interested in learning more about Dr. Strickland, I urge you to read Rose Simone's article "Nobel Prize-winning physicist helped make lasers ubiquitous" proudly displayed on the University of Waterloo's home page (or you can get there directly at uwaterloo.ca/stories/nobel-prize-winning-physicist-helped-make-lasers-ubiquitous). It explains the gravity of the new laureate's work and provides commentary from Dr. Strickland about how she reacted to the news.

On behalf of all the **mathNEWS** editors, I would like to take this opportunity to congratulate Dr. Strickland. Her accomplishments have and will continue to shape the field of laser physics, and we are incredibly proud to know that such an intelligent, innovative and inquisitive woman walks the same halls we do¹.

confusED

1. Technically, we don't walk the same halls since she probably doesn't spend much time in MC, but the buildings are still connected.

ISSN 0705-0410

UW'S BASTION OF ERUDITE THOUGHT SINCE 1973

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LIGHTSPEED LOBSTER BOILS

gridCOMMENT 138.2

Heeeeyyyy puzzlers! I am back in action! This week's winner though has to be your HardWorkingCourseStaff, who I would award the prize to just based on their level of effort, even if it wasn't my hands-down favourite (which it totally is!). Their full instructions for controlling the speed at which lobsters die are reproduced below:

- Step One: Perfect "Light Speed"/relativistic travel
- Step Two: Set stove to "High"
- Step Three: Place pot of water on stove
- Step Four: Place stove in space-worthy vessel
- Step Five: Wait for water to boil
- Step Six: (Presumably) get clearance and route permissions for lobster light speed journey

Step Seven: Place lobster in boiled water
 Step Eight: Launch vessel at a speed of approximately c (0.99c or higher)
 Results: Lobster lives (relative to us) until ship leaves light speed, thus controlling speed at which it dies
 Bonus: Lobster dies at 0.99c
 Consequences: Lobster perceives its own death in absolute time

gridQUESTION: If you were stranded on a deserted island and had to be given math lectures for six hours a day for the rest of your life by any one UW math professor, who was stranded there with you, who would you choose and why?

Drop off your solutions and **gridQUESTION** answers in the **BLACK BOX** next to the C&D on MC 3rd floor. Deadline is Monday, October 15th at 6pm.

yclepED

ACROSS

- 1. Infinitely connected graph: The ____ Lattice
- 6. Safecracker
- 10. It's sometimes golden
- 14. Related to spiritual energy
- 15. Eye layer
- 16. Aroma
- 17. Voice lesson topic
- 18. Equal
- 19. Canceled
- 20. "What a shame"
- 22. Litter member
- 24. Alternative to OCT or HEX
- 25. Cork's country
- 27. 496 or 28 could be described this way
- 29. A von Neumann algebra, for example
- 33. Free from, with "of"
- 34. Parsnip, e.g.
- 35. "Picture it. Silicy. Mount ____ erupts everywhere!"
- 37. Player
- 41. It's sometimes full around Christmas
- 42. Everybody at UW wants to be on the ____ list
- 44. Cute nickname for Darth Vader
- 45. Chaotic
- 48. Common request
- 49. Auspices
- 50. "____ the fields we go"
- 52. Summer music festival in Guelph

- 54. A very important optimization algorithm,
- 58. Big name in chips
- 59. Toronto-to-Montreal dir.
- 60. Agenda
- 62. Aftershock
- 66. One way to stand by
- 68. x, y or z, for example
- 70. Absurd
- 71. A 10-Across, all grown up
- 72. It's good for forking with
- 73. Money substitute
- 74. Final, e.g.
- 75. Biblical birthright seller
- 76. Books

DOWN

- 1. Insulation
- 2. 100 cents
- 3. Not quite a quartet
- 4. Curator of 23 unsolved math problems
- 5. Bakery buy
- 6. "Uh-huh"
- 7. "... happily ____ after"
- 8. HYPE!
- 9. Actor James
- 10. Swindler
- 11. Software giant
- 12. It can be predicate or propositional
- 13. Attack locale
- 21. Preserved, in a way
- 23. High school math topic
- 26. "Come in!"
- 28. Kind of approval
- 29. Cup part

- 30. Bang-up
- 31. A long, long time
- 32. Grind, as teeth
- 36. Blacksmith's block
- 38. "The Gift of the ____"
- 39. Early BNL song
- 40. Acclivity
- 43. Comics sound
- 46. Absorb, with "up"
- 47. Canine cry
- 49. Core
- 51. Empathize
- 53. King David was one, famously
- 54. Capture
- 55. Cardinality, kind of
- 56. Kind of toast
- 57. An instance of 68-Across
- 61. A girl from Granada
- 63. 80s crooner Richard
- 64. "Don't bet ____!"
- 65. Gym set
- 67. "Dee-lish!"
- 69. Space Invaders and Defender are early examples (abbr.)

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		62			63	64	65
66			67			68		69		70				
71						72					73			
74						75					76			

YOU DON'T KNOW MATH

haltingCOMMENT 138.2

Hi, I'm your host, Loquatius, and I forgot to get Mom to sign the field trip form!

Welcome to **You Don't Know Math!** In honour of a new edition of You Don't Know Jack coming out in just two weeks, I've prepared a few UW-related trivia segments for your quizzing pleasure. But because it would be very impractical to have a YDKJ-style time limit on a piece of paper, I've written

these questions so that you can't just search the web for quick answers. Ironically, you might need to do some web searching anyway to be able to answer some of these questions.

Write down your answers and save them for next issue, where I'll reveal the solutions!

Loquatius

DISORDAT



It's DisOrDat time! For each clue, guess if it's:

- Something that UW President **Feridun** Hamdullahpur did (within the past 10 years),
- Something that a UW **first year** did (within the past 10 years), or
- **Both!**

		FERIDUN	FIRST YEAR	BOTH
1	LIVED IN RESIDENCE			
2	CHEATED			
3	JOINED THE UNIVERSITY OF WATERLOO (AS EITHER STAFF OR STUDENT)			
4	GOT STRUCK BY LIGHTNING			
5	GOT PAINT DUMPED ON THEIR HEAD			
6	DESIGNED A PLAY STRUCTURE			
7	WENT TO A PSYCH 101 LECTURE			

STACK ATTACK

Brace yourself for the Stack Attack! For each **key** on the stack, use the **clue function** to pop it off and find the corresponding **value** in the heap. You can only use a value in the heap once, and there's only one valid set of key-value pairs.

The clue function is: **That's your alter ego!** What is this person's secret identity? Hey, shush, it's supposed to be a secret! (The last one might be kinda hard.) Good luck!

Stack of keys, roughly in increasing difficulty:

EXAMPLE	Mr Incredible <i>insurance clerk</i>
	Yugi Muto
	Dan Wolczuk
	Dave Tompkins
	Nomair Naeem
	Adolf Hitler
	Pee-wee Herman
	A woman who murders men and eats their livers and hearts
	Tony Stark

Heap of values:

DJ
 juggling champion literature teacher
 pharaoh game show host fluffy animal
 karateka digital lifeform reptile KDE 3.5 user
~~insurance clerk~~ taxi driver possessed corpse dancer herbivore

LookAhead

SUN OCT 7	MON OCT 8	TUE OCT 9	WED OCT 10	THU OCT 11	FRI OCT 12	SAT OCT 13
Thanksgiving Day	Fall Break	Fall Break	Fall Break	Classes Resume Tuesday Schedule	Wednesday Schedule	
SUN OCT 14	MON OCT 15	TUE OCT 16	WED OCT 17	THU OCT 18	FRI OCT 19	SAT OCT 20

Back to Regular Schedule
mathNEWS 138.3
 production night

mathNEWS 138.3
 published

FURTHER ED FAIR 2018

The Further Education Fair will be held on Monday, October 22 from 11:00 a.m. to 2:00 p.m. in the SLC Great Hall. This fair is your chance to explore post-degree options and meet staff and faculty from more than 90 institutions across Canada and abroad.

These representatives will provide information and answer your questions about career options, graduate school admission requirements, program specifics and application procedures, and deadlines.

Come and explore programs like:

- Masters of Management in Finance
- Master of Data Analytics
- Master of Management and Professional Accounting
- MBAs and much more!

For more information visit our website:
<https://uwaterloo.ca/career-action/further-education-fair>

The CCA Team

IMPORTANT UPDATE ON SLC CONSTRUCTION

Shit's still broken.

Fruitboy

LAST WEEK'S gridSOLUTION

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