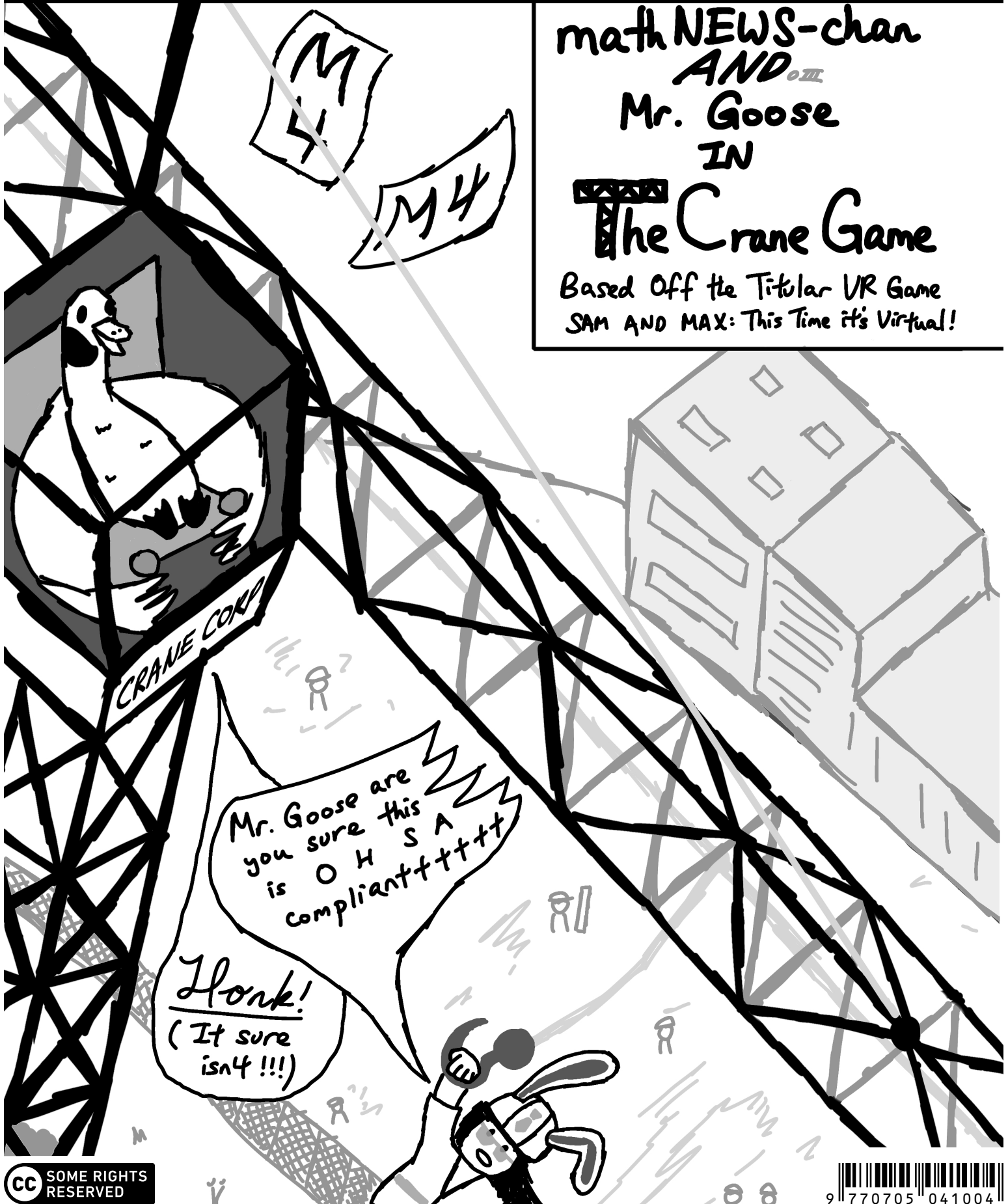


mathNEWS-chan *AND* Mr. Goose IN The Crane Game

Based Off the Titular VR Game
SAM AND MAX: This Time it's Virtual!



“HOW DO YOU BEAT THE HEAT?”

I was born in May, down in a coastal city where many inhabitants breathed a sigh of relief when the mercury finally went down to 30 degrees Celsius. I lived for nineteen years in houses architected to encourage windflow and keep the heat out. But human engineering can only do so much, and I spent many afternoons riddled with power outages in what I can only describe as a sauna.

The heat was never really a friend to any of us, but it was familiar and nearly ever-present for most of the year. When winter would finally bring eighteen-degree days by late November, we would wear thick sweaters to keep ourselves from freezing outside.

When I first arrived here in the fall, I felt like I was constantly on the edge of hypothermia. My friends would joke about how I would be shivering in a winter snow jacket, whilst they complained of the heat.

The human body, however, with all its nonsensical design flaws, is also an incredible thing. To my shock, I acclimatised to the cold quite quickly after my first winter. But I never forgot the heat of the forge that had birthed and molded me.

OR SO I THOUGHT. GOD WHY HAS IT BEEN SO HOT THE PAST FEW DAYS. HOW DOES ANYONE GET ANYTHING DONE IN THIS HEAT.

At least MC is nice and cool! So my plan is to just hide out in the **mathNEWS** office for the week getting this lovely issue together.

And quite the issue it is! We have *Beyond Meta* talking about putting on a play, a shocking (!!!) update to the wending machine story by our very own *molasses*, writers *Coda* and *Yamnuska* trading blows over whether “feels like” temperature is real, and much more to keep you entertained over the weekend.

On that note, I am quite glad that it is Friday and that the university has graciously allowed us all the liberty of taking Monday and Tuesday off. It’s not quite the reading week I wish we had, but it is a longer weekend than usual, so I’m not complaining too much. I can’t wait to get out of here.

awED
Editor, **mathNEWS**

CHERRY ♡	with my hand 🤚 🤚
SNOWDOZER	If you can't beat 'em, eat 'em
MOLASSES	what heat
SEASONED SLACKER	By using the latent heat of melting the arctic sea ice
USMAN!	beat my what?
ROBBOTC	Throw jabs aimed primarily at its head until you knock it out.
YAMNUSKA	Beat my meat
SEXY_SOFTWARE_BABE	please tell me if you have the answer, I start melting at 22°C
YALEVOYLIAN	By eating ice cubes
TERMINAL	move to the other side of the country
TEMPORARY_CHAOS	Tell it to chill out
NO PUN INDENTED	Idk, it beats me
LARS NOOTBAAR	If you can't beat the heat you join the Heat Babey! Catch me doin alley oops and slammin it down with LeBron, D-Wade and Chris Bosh
GAYA	ac is out in my apartment. may just die
BIG A	jerk it off
ANDOIHI	With a stick and with passion
APHF	Lug wrench
DOLLAR STORE PERSON	become my dad?
ABS(JESTER)	Heating the Beet
↑←↑→↓→	BegForMercy
AMIRDADP	Indeed
MEOW	meow
DICK SMITHERS	By leveling up my character's stats
BEFUDDLED	Move to somewhere colder than here, like Trinidad

ARTICLE OF THE ISSUE

Congratulations to *Dollar Store Person* for their AOTI win for the long-anticipated conclusion to the bridge erotica saga, MC/DC Bridge x M3/MC Bridge Erotica (4/4) but it's all bridge euphemisms. It is somehow not the only piece of UW-related anthropomorphic smut you can find out there, but it's absolutely the best. Come by MC 3030 to get your prize.

befuddled
Editor, **mathNEWS**

We're giving the writers too much democracy.

GRACE FENG, **mathNEWS** EDITOR FOR SPRING 2025
ALONG WITH OWEN GALLAGHER, SARA NAYAR, AWAB QURESHI, AND ISABELA SOUZA

mathASKS 158.4

FEATURING PROFESSOR SIMON WOOD

MOLASSES: FAVOURITE SONG NAMED AFTER A NUMBER?

Hmmm... being a devoted fan of those Canadian Gods of prog rock, Rush, the obvious answer here is: “2112” (1976). And that magnum opus is certainly high on the list. But even in the hallowed archives of Rush there is also “Cygnus X-1” (1977) which combines two of my favourite things—Rush and astronomy (and who can resist the blood-chilling sound of Geddy Lee being spaghettified?!). And even as late as 2012, their final studio album gave us “Seven Cities of Gold.” Rush at their heavy riffing best!

Further afield we can find the Bill Bruford masterpiece “Five G” (1979) with a thunderous bass opening from Jeff Berlin. Or a little more recently, the pop brilliance of Vanessa Carlton’s “A Thousand Miles” (2001). Come for the great vocals and first-rate song writing—stay for the killer back up band and beautiful string arranging! (Yes, my friends. This is what music sounded like when people knew how to play instruments!) And, for those seeking a more laidback sound, take your headphones into a dark room and drift among the stars with BT’s “1.618” (2006). Of course, an honourable mention must go to John Cage’s “4’33”.” A serious exploration of what “music” really means. And like a box of chocolates, you never know what you’re going to get...

Simple answer is, I have no idea!

USMAN!: HAVE YOU GONE ON THAT MODEL-BUILDING PLAYDATE WITH YOUR NEW NEIGHBOUR YET?

Not only are you coming to class, but you’re actually listening to what I say. Huzzah, my friend. Well played.

No, not yet. They have just moved in, so they are currently renovating. I’m not sure what is left to renovate. My previous neighbours renovated so much that I was convinced that the only original thing left of their house was the brick work and their children. And even that may have been changed while I was asleep. Those children were a bit too perfect. The downside is that everyone with a power tool in the greater Hamilton area appears to be in my neighbour’s home, hammering, drilling, routing, grinding, sanding, sawing, ripping, screwing, or simply revving the tools up and down for dramatic effect. Even worse, it’s giving my wife ideas. She’s taken to standing in the middle of the living room with a wry smile on her face. I’m convinced that she’s imagining all the things that could be changed or removed. I’m most concerned that one of those things may be me.

BIGFAN: WHAT IS THE SONG OF THE SUMMER?

They have music for specific seasons now? I wonder what the song of the winter will be? I’m afraid that I can be little help here. I like my music the way I like my tires: All season, cylindrical and grippy in the corners.

AMIRDADP: AS A FELLOW RUSH FAN, WHAT’S YOUR FAVOURITE RUSH ALBUM (AND SONG)?

Wow. Why don’t you ask me something easier like: which one of your children would you be most willing to sell for scientific experiments?

I can’t pick just one. It must be two and if you ask me tomorrow, my answer may be different.

Songs:

1. “Red Barchetta”: I love the various sections. It really is a short story in music and much of the story is told by the instruments as opposed to just the lyrics. But the lyrics are also great. It’s a delightfully compressed story about a dystopian future where driving (along with many other things, one assumes) is illegal. It is also a great deal of fun to play.
2. “Time Stand Still”: Some beautiful guitar work here along with one of Neil Peart’s best lyric offerings. Even though he was only in his mid-thirties (and yes, my friends, from where I sit, that is still quite young) his lyrics poignantly capture what it is to realize that you are steadily getting older and that there may be fewer days ahead than behind.

Albums:

1. *Moving Pictures* (1981): Not sure what to say here. I envy anyone who hasn’t heard it yet as they still have the opportunity to hear it for the first time.
2. *Clockwork Angels* (2012): Rare is it that a band can keep up a high level of quality across a 40-year career. But Rush went one better and saved some of their best for last. A prog rock masterpiece.

JOCH: WHAT/WHO DETERMINES WHAT OBJECTIVELY SOUNDS GOOD IN MUSIC?

Seriously, I don’t believe there is anything objective. It all comes down to what you value. For me, I’m drawn to excellent musicianship, innovative composition and outstanding production. I really like a piece that surprises me in some way—such an unexpected harmonic change, an interesting rhythm, a clever use of a melody or an unexpected use of an instrument. The best thing I can say about a piece is that, once it’s over, I want to hear it again.

LABYRINTH: HOW MUCH WOOD COULD A WOODCHUCK CHUCK IF A WOODCHUCK COULD CHUCK WOOD?

42 units. The proof is left as an exercise for the reader.

DISGRACED: WHAT ARE SOME NEAT COMPOSITION TRICKS YOU HAVE?

First off, don't wait for "inspiration." Composing music is like most other things. The only way to learn how to compose is to compose. Try to write a little bit every day. Composing music is like working out. If you stop for a while, you lose muscle tone. Apparently, John Williams, at the age of 93, still composes something every day. You'll write a lot of stuff that sucks, but eventually you will produce something that doesn't quite suck as badly—that's how you make progress.

Secondly, if you can make the time, learn some music theory and harmony and do some ear training. Anyone who tells you that you don't need theory to write music is a fool. It's like telling an engineer that you don't need to learn math and physics to design a bridge. True, you can poke around and you might get lucky. But most of the time your stuff is just going to fall over and sink into the river. Music theory isn't an abstract thing that's separate from music. It IS music. It's why great music doesn't fall over. Knowing why things work can save you so much time and make your work a great deal more interesting.

Analyze music you admire. Figure out the chords or the melody or the bass line (and don't go online to find a YouTube video on it—do it yourself. Start building those monster ears!). Then write something that incorporates what ever you learned into something new. Particularly when you are learning, plagiarism is your best friend.

Develop your skills as an instrumentalist (keyboard and guitar are the most important here) and a producer. No matter how great music is, it sounds even better when it's well played and well produced. Plus, as you get better at playing your instruments and recording, you will see the range of ideas you have also start to expand.

Learn everything you can about the software you use. If you always fall back on presets and prerecorded loops, etc., you will always sound like everyone else.

Anything can serve as inspiration. A fragment of a melody, a guitar lick, a bass line, a drum pattern, even a sound on a synthesizer. Just come up with basic ideas and save them in your music software. Have an "ideas" folder in your music software. Now and again, go through them and develop them as more ideas come to you. Take a basic phrase, repeat it a few times and then start adding things to it. Just see where it takes you.

If you want to compose songs, then you need to write lyrics. And writing lyrics means developing some skill with words. Like composing music, this is a skill you need to develop by constant practice. This means you need to read—a lot! It's hard to use words creatively if you don't absorb the work of other lyricists, poets or authors. Read as much as you can across as many genres as possible. Keep a notebook and when a word or a phrase catches your attention, write it down. I just opened a book that I am reading to a random page. Skimming

over the page inspired the following: "A Wicked Son," "Let the Statues Speak," and "The Kindness of Dark Humour." These could be song titles, or the titles for an instrumental work. Or they could be part of a song lyric. Or they may go nowhere. The point is to generate as many ideas as you can, so you have lots of things to work with when it's time to write.

Finally, if you study theory and ear training, and learn a bit of music notation, you will be able to write music without an instrument. Indeed, I think the most interesting music I've composed has been done without an instrument nearby as my imagination is not limited by my ability to play the piano or the guitar. You don't need to write it down in full detail. You just need to get enough down so that when you sit down at your instrument, the music is firmly fixed in your head. This is a skill that takes a while to develop, but I really think it's worth while. Even if you don't learn music notation, you can still do this by singing your ideas into an audio recorder on your phone.

DISGRACED: WHAT GOT YOU INTO MUSIC?

Girls. Somebody told me that girls really liked musicians. So I bought a guitar. It turned out that it wasn't true. In fact, it turned out that a lot of women are better musicians than I will ever be. Sadly, the greatest obstacle that most women have ever faced (and continue to face) is men.

The reason I stayed in music was that I wanted to figure out what Geddy Lee was doing with a bass, and what John Williams was doing with an orchestra. That and girls.

LABYRINTH: WHAT'S YOUR FAVOURITE GENRE OF MUSIC? WHAT'S YOUR LEAST FAVOURITE?

I like most things if they are interesting, in some way original and well done. The things I tend to drift back to most often is Baroque (in particular, JS Bach's "Goldberg Variations" and "Brandenburg Concertos"), early 20th century composers such as Ralph Vaughan Williams or Aaron Copland, progressive rock / progressive metal (at the moment: Arch Echo, Plini, Porcupine Tree, and Sleep Token) and a lot of film music—particularly John Williams.

There are no genres that I dislike out of hand, but I feel like Country has lost its way over the last few years. I enjoy older stuff like The Carter Family, Johnny Cash, and Patsy Cline. But the more recent stuff all sounds like it's being produced by AI. Every recent country song I've heard sounds like something I've already heard and found a bit boring. All the progressions are the same, all the lyrics are the same, the drum sounds are all the same. It sounds like music written by committee. And given the way the Nashville writing room system works, it basically is music written by committee. I don't believe that music is well-served by having a small group of "hitmakers" co-writing everything.

LABYRINTH: WHAT'S YOUR SECRET SAUCE TO BEING SUCH AN ENGAGING LECTURER?

It's lovely that you've phrased the question in this way. So, thank you. I'm the worst person to judge my quality as a lecturer, but if I am any good at this, it really comes down to a couple of things.

First, like all of you, I spent time as an undergraduate and was often in large classes. Most of my teachers were okay, a few were terrible, but a few were outstanding. And the thing I noticed was that no matter what the subject was, a great teacher could make it interesting. I realized that there were no boring subjects, just boring teachers. So, when I was first asked to lecture, I was determined to be as engaging as possible. I thought about the teachers I'd really admired and made a list of the things they did. For example, they rarely read from their notes. They knew the material inside and out and rather than reading at me, they talked to me. They often presented the content in the form of a story, and they often made bad jokes: indeed, the worse the joke, the better.

The second reason comes from my time as a touring musician. Good musicians understand that when they put on a show, it's not the musicians doing the audience a favour, but the other way around. The audience has given you their money and (even more valuable) their time to come and see you. You may have done five shows in the past week and spent eight hours in a van living on junk food, and you may have played the same damn songs hundreds of times, but the audience doesn't know that. This will be the night they remember. And they deserve the very best you can give them—every time. I realized that there is really no difference with lecturing. As students, you are paying hard-earned money for your courses. And more importantly when you come to class, you are spending the most valuable thing you have—your time. So even if I've done a lecture dozens of times, or I'm not feeling great, or the traffic was bad, etc., none of that should matter. Every time I stand up in front of a class, I owe it to my students to be the very best I can be.

MUSIC ENJOYER: DO YOU HAVE ANY ADVICE ON FINDING NEW/OLD MUSIC TO LISTEN TO? (SPOTIFY RECOMMENDATION SUCKS)

It can be a challenge breaking out of the algorithm. One thing you could try is to read up on artists you enjoy and find out what their influences were. Then give those artists a listen. Do some more searching to find out if others were influenced by the same artists and check them out. Or do a bit of research on a new style. Find out who the key figures are and give them a try.

REALLY IMPORTANT POINT: often when you listen to something the first time, you may not get it for some reason. And it would be easy to just hit delete and move on. But with new things, give them a few listens to get used to the sound and you may find that you really start to like it.

CLASSIFIED: WHAT IS THE BEST THING ABOUT PLAYING BASS?

I like that it's normally a melody instrument (you only play one note at a time) so you can think of what to do as a counter point to the melody. It's also the link between the kick drum and the rest of the band. You need to sit with the drummer, but you also need to support the guitars/keyboards etc. Really locking in with a good drummer is an amazing feeling. It's a very social instrument. You have the most fun when you are playing with others.

APHF: WHAT ARE YOUR THOUGHTS ON SIMON WOOD, THE 2015 MASTER CHEF WINNER?

I feel badly for his choice in name. There are quite a lot of us. There are at least three other professional musicians (one of them should cut his hair, he's starting to look like a hobbit), a successful mystery writer, a pilot/sexual predator (he came to an unfortunate end), along with several other academics and other writers. If you expand the pool to "Simon Woods" with an "s" then it just gets right out of hand.

We could all get together (except for the pilot) and Simon could cook dinner.

One of the great mysteries of my life is that when the internet was first getting going, I decided (for the first time) to search my name. Imagine my surprise when I found that there was already a site named www.simonwood.com. I looked it up and it was a single page. All it said, in very large black letters on a red background, was "SIMON WOOD IS AN ASSHOLE." I'm assuming it wasn't a reference to me...

LEAH: WHAT DOES A PERFECT DAY (WEATHER-WISE) LOOK LIKE TO YOU?

I'm English, so if it isn't raining, it's a good day! But given the choice: 18 degrees, no humidity and a very light breeze. For extra points, add no clouds and dark—perfect for the telescope!

BUFFALO UPDATE

Good news for fans of [You Can Go To Buffalo, NY for \\$19.90](#) from **mathNEWS** 155.6: GO Transit recently started a new bus route from UWaterloo almost directly to Burlington (the 17B). This makes it possible to leave the university at 8:19 AM and arrive in Niagara Falls, ON around 11 (a half hour earlier than the route I suggested in the article), giving you more precious hours of sleep should you choose to embark on this quest yourself. Also you don't have to spend that extra \$3.40 now. Huge.

Bad news for fans of [You Can Go To Buffalo, NY for \\$19.90](#) from **mathNEWS** 155.6: [*gestures vaguely at current political situation*]

madLIB

This **madLIB** can be completed either alone or in a group, we recommend the latter with about 5 people.

We have written out all the blanks in this part, along with a number and description of what they should be. When you go to fill out the blanks in the three parts of the story, you will do so according to the number assigned to each blank. Some words will be reused for multiple blanks in the story.

For a group:

Nominate one person as secretary and hand this copy of **mathNEWS** to them.

We should now be speaking to the secretary. Hello secretary. You have the responsibility of collecting and filling in your group's answers. There are also a couple blanks we have indicated with bold. These are blanks you **should not say aloud**. Instead, fill these out secretly.

For all other clues, ask your other players, in turn, to contribute a word of the specified type for each blank. Write this down below. You will notice each word has an associated number. Use these numbers to know what words to fill in which blanks in parts one, two, and three.

When you have filled in every blank, your final act as secretary is to read aloud the finished story for your group.

For an individual:

If you don't want to go find a group and be their secretary, then fill out the blanks below and use the corresponding numbers to know which blanks in parts one, two, and three to fill with which answers.

1. German word _____
2. Verb ending in -ing _____
3. Verb ending in -ed _____
4. Verb _____
5. Verb _____
6. Adjective _____
7. Gourmet spice _____
8. Italian deli meat _____
9. Adjective _____
10. Adjective ending in -est _____
11. Place _____
12. Adjective _____
13. Noun _____
14. Verb ending in -ed _____
15. Adjective _____
16. Verb ending in -ed _____
17. Noun _____
18. Adverb _____
19. Shape (plural) _____
20. Noun _____
21. Verb ending in -ed _____
22. Insult _____

23. Noun _____
24. Noun _____
25. Furniture _____
26. Noun _____
27. Third-best Tim Hortons menu item _____
28. Adjective _____
29. Adjective _____
30. Metal _____
31. Sport _____
32. Adverb _____
33. Verb ending in -ed _____
34. Verb ending in -ed _____
35. Nouns, Plural _____
36. Verb ending in -ed _____
37. Place _____
38. Job _____
39. Adjective _____
40. Verb ending in -ed _____
41. Noun _____
42. Verb ending in -ed _____
43. Adjective _____
44. Adjective ending in -est _____
45. Verb ending in -ed _____
46. Verb ending in -ed _____
47. Verb _____
48. Verb + er _____ (e.g. run+er=runner)
49. Adverb _____
50. Sound _____
51. Adjective _____
52. Verb ending in -ed _____
53. Adverb _____
54. Noun _____
55. Nouns, plural _____
56. Verb ending in -ed _____
57. Adjective _____
58. French bread or cheese _____
59. Verb ending in -ing _____
60. Nouns, plural _____
61. Adjective _____
62. Verb ending in -ed _____
63. Canadian city _____
64. Verb ending in -ed _____
65. Verb ending in -ed _____
66. Noun _____
67. Drug _____
68. Sound _____
69. Number _____
70. Units _____
71. Verb ending in -ing _____
72. Emotion _____
73. Adjective _____
74. **Name of someone in your group providing answers for this madLIB** _____
75. **Where you are currently** _____

THE TRAP

"EEEEK! Is that a mouse?!" cried out the Baroness _____(1).

The _____(2) mouse _____(3) across the floor and out of sight.

"I don't _____(4) that, honey. I specifically had the contractor _____(5) for mice when they built this _____(6) castle," said the Baron _____(7).

"I sure hope that Baronling _____(8) hasn't left the door _____(9) again!"

The three of them were the _____(10) family in the country of _____(11). They had accumulated such _____(12) wealth by means of _____(13) trading.

"I got it," _____(14) little _____(8) from the adjacent _____(15) room. He _____(16) in, _____(17) in hand.

The mouse _____(18) dodged _____'s (8) swats, as he chased it around the room in _____(19) and then straight into a _____(20).

Now, that really _____(21) off the Baron.

"That's it, you little _____(22)!" he shouted, taking his semi-automatic _____(23) out of its holster.

He fired off _____(24) after _____(24). Into the couch, over the _____(25), and deflecting off the _____(26) right through Baroness _____'s (1) wig!

"Is everything agreeable, madam?" said Butler _____(27), walking in.

"We need a _____(28) professional to deal with this _____(29) mouse!" shrieked the Baroness.

Butler _____(27) reared back with his _____(30) platter and hurled it _____(31) style across the room at the mouse. The mouse _____(32) _____(33) the platter with ease, skittering back into its hole.

The platter _____(34) loudly against the wall, ricocheting right into the heirloom _____(35).

The Baroness _____(36). "Not my favourite _____(35)! My great-uncle brought those back from the war in _____(37)! I meant we need a real expert _____(38) to deal with this."

THE TWIST

It was a _____(39) and rainy night when the doorbell _____(40).

In walked the _____(38), completely soaked from the _____(41).

"Sorry about the mess," said the _____(38), as he _____(42) water all over the _____(43) carpet. "Now tell me about this mouse."

"It's the _____(44) mouse I've ever _____(45)!" shouted the Baron.

"And it _____(46) my precious _____(35)!" added the Baroness.

"Well, don't _____(47)." said the _____(38). "I'm the best mouse _____(48) in all the land. This will be over super _____(49)."

_____ (50) thundered outside, causing a power surge. All of a sudden, the lights went out, plunging the foyer into _____(51) black.

A scream _____(52) through the silence.

When the lights came back on, a corpse lay sprawled _____(53) on the floor. The _____(38) was dead as a _____(54).

The Baroness fainted into a pile of _____(55).

The Butler _____(56) little _____'s (8) eyes.

"_____ (57) heavens!" shouted the Baron _____(7), "I haven't seen this since the Somme!"

Fun fact: Plant Ops cut power to MC for supposed "emergency maintenance" while we were trying to finish this issue. I think they were trying to stop us.

THE mathNEWS EDITORIAL TEAM

THE DÉNOUEMENT

Inspector _____(58) paced around the room. The body was still freshly _____(59) on the floor. He was on the hunt for the cold hard _____(60) of the case.

"And you!" Inspector _____(58) shouted at Butler _____(27), "This is all just a _____(61) coincidence to you? That the _____(38) _____(62) your wife in _____(63)?"

The Baroness _____(1) gasped, little Baronling _____(8) began to cry. Baron _____(7) _____(64) his head indignantly.

"I'm innocent!" cried the Butler.

"This is no time for fun and games!" shouted the inspector _____(58), "A man was _____(65) to death with a _____(66)! And all to keep a supply of _____(67) flowing!"

"I didn't know anything about that," cried the Butler, at which point a _____(68) came from the door.

"Sorry I'm late," you say entering the foyer, "My car broke down _____(69) _____(70) back and it was _____(71) rain out."

"So _____(72) you could make it, please have a seat," Inspector _____(58) says. "Now that everyone is here, I can finally reveal who committed this _____(73) atrocity."

Everyone sits silently, waiting for the inspector to continue.

"It was _____(74)!" The inspector says, turning to you.

"I did no such thing," you protest, "I wasn't here! I was in _____(75) the whole time!"

"Nonsense!" The inspector says, "That alibi doesn't hold up one bit. You knew every detail of the case, you knew how he died and you even gave me the motive. The only person who could have provided all that information was the one who committed this very crime!"

"NOOOOOOOOOOOO," you cry. "How did you figure it out?"

"It was light work," Inspector _____(58) chuckles, "It just took a minute for me to fill in the blanks."

Lars Nootbaar and aphf

YOU DON'T WANT TO KNOW HOW THE DANES DO THEIR GRADES

The thing about percentages as a form of assessment... is that they're stupid.

At least, that's what a bunch of prominent Danish policy makers thought in the late 1960s. Percentages are a continuous value; how are we supposed to distinguish a 69.6% grade from a 69.9% grade? We can't, obviously, so we should come up with, idk, maybe seven different grade values you can get. The Americans took the letters already, so we'll have to come up with some new numbers that just sort of *feel* like those letter grades.

Behold, the beloved seven-point scale was created, where students could achieve the following grade values:

- **-3:** You failed before you even took the exam.
- **00:** You took the exam, and failed miserably.
- **02:** You are dumb, but somehow you passed.
- **4:** Can be considered a C, B-, or B according to their official conversion table to the American Grading Scale.
- **7:** Felt like a 7/10 performance in this class.
- **10:** Nice round number. Must be good.
- **12:** Even more nice and round than 10, you deserve a 12/10 in this class!

"The first 0 in 00 and 02 is used to prevent fraud with grades."—Academic Grading in Denmark, Wikipedia.

I hope you agree with the Danish policy makers that these numbers "feel about right," and that you also agree that this new scale is worth the exhausting, misaligned, perennially fruitless process of transferring grades between Denmark and literally anywhere else in the world.

no pun indented

APOLGY FOR BAD ENGLISH IT IS MY FIRST LANGUAGEN'T

Where were you when MathSoc president resign
I was at PMC eating CnD patty when phone ring
"MathSoc President is resign"
"no"

Whistleblow'er

[mathNEWS]

OBLIVION

The existential dread has been getting to me, especially over the past nine months or so. I act like everything is fine on the outside, putting up a facade: the perfect student, the perfect daughter, the perfect, independent young adult. These facades, that I carefully designed over years to keep myself safe, have gradually transformed into prisons of my own creation. Then, with the combination of ruthlessly applying self-imposed rules and mounting external pressure, these facades cracked one by one, until the only thing left is me, broken under the weight of the world and completely defenseless against the next onslaught. Inside, it feels like being torn into a million tiny pieces, and yet, at the same time, completely nothing at all. I call it the oblivion.

I'm constantly oscillating. The completely silent apathy is one end of the spectrum, its deafening numbness so overwhelming that I resign myself to remaining paralyzed, the knowledge that none of my actions will ever be enough to change anything preventing me from taking any action whatsoever. On the opposite end of the spectrum, I hear every scream of rage and shriek of agony, every injury and injustice another fiery hot pitchfork added to the pile tearing me apart, until nothing remains but smoldering shreds of what used to be me.

Every day is the same, going through the motions, any actions entirely monotonous. Stay in bed far too long in the mornings, not sleeping or resting, just dreading the start of the entire process. *At least if I stay here, I can pretend the world is just me, in this room. I can shut everything else out, at least for awhile.* But inevitably, the dread seeps in, pounding in the back of my skull, demanding to be let in, clamoring for attention. When it starts, I try to run from it. I make myself breakfast, or, more accurately, feed myself the ingredients. Stopping to think in order to make a proper meal would let the dread catch up. So I eat the yogurt out of the container, let my mouth go numb from the still-frozen berries, chew the plain piece of bread (not toast; toasting the bread would give enough time to let the oblivion sink its claws into me again).

I drag myself to my one class. It's only one hour long, but I still struggle to focus. At the very least it serves as a good distraction for a little while. It's also the only thing making me leave my apartment frequently and keeping my sleep schedule semi-consistent. As the class ends, I bolt, one of the first out the door. I can't stand being in such a small space with so many other people for too long. But I could stay in my apartment, alone, forever.

It's this point in the day that offers me the most choice. For someone not constantly overwhelmed by simply existing in public, the choice would be simple: eat lunch and then find somewhere to study on campus until the evening, when you can then enjoy various extracurricular activities. For me, I get to pick one, maybe two on a really good day, of the three. If I want to actually go to and be an active part of something after class, I have to stay on campus until it starts.

If I go home in the time in between, even if just to have food, the chance that I'll actually leave the apartment again that day plummets to near zero. And if I do stay on campus, the chances of me studying are also near zero. Stopping to think means letting the dread catch up, and it *will* overwhelm me.

When I eventually do go home, I feed myself a makeshift dinner of snack foods, and if I have the energy, I might make myself a microwave meal. If I'm lucky, or if the sensation of sweat dripping down my body becomes too much, I'll take a cold shower before lying down again. Never without something to keep the dread away though; listening and half-watching YouTube videos through my earbuds works best, though in a pinch, drowning everything out by blasting music through my phone speaker works too. Regardless, I crawl into bed afterwards, barely having done anything, yet feeling so entirely exhausted. I have no energy to do anything useful; I just watch YouTube videos and play mobile games, because god forbid the background noise disappears for even a second and lets the existential thoughts return. I usually manage to put my phone away and plug it in before falling asleep, although occasionally the oblivion will be so loud, so demanding, that I just let myself pass out while listening to avoid having to confront it.

When I wake up the next day, the cycle continues. Unending. Eternal. Ceaseless. However you want to describe it. I know something has to change, eventually it'll break me. Eventually I'll be forced to confront the existential dread. It seems like so many people never have to confront it, and I envy them. I envy the ability to tune out the rest of the world, and only care about what happens to me and the people around me. I envy the ability to be willingly ignorant. But I feel every injury as my own, every death a loved one who I'll now never get to know. It's a crushing feeling, and I feel utterly insignificant in the shadow of its overwhelm.

I know I have to come to terms with the oblivion one way or another. I've started to take some steps towards it; trying to be better about reaching out to people, building community. I'm not ready to confront it just yet. But someday, I will be. And when that day comes, the oblivion better watch its fucking back. Because when I finally stop running and turn to fight, all of the anger and pain it has caused me will be channeled back directly at it, and it will need all the strength in the universe to survive that onslaught.

Sexy_Software_Babe

**I put this here so I could
run up the printing costs.**

A SPENDTHRIFT mathNEWS EDITOR

BEING QUEER BUT IN THE WRONG WAY

pride month is coming to an end... but i will still be gay(a)! with the heat numbing my mind, i'm like, yeah, i should be vulnerable on main (very bad idea).

personally, i can feel really isolated in my queerness despite being surrounded by a lot of awesome LGBTQ+ people, so i thought maybe i'd talk about certain aspects i feel lonely about and maybe (hopefully) help other people feel less lonely about them. for context, i'm pan and a girl but like a thats-how-you-will-perceive-me-and-i-dont-really-care girl.

not caring enough: growing up, i kind of always knew i liked girls in a what-is-gender-and-why-do-i-care kind of way, but i also like guys so it was really easy to hide my not-straightness and i always just... did? there was nobody out around me so i never felt the urge to be out. then covid happened and i had too much time for introspection plus my friend came out as queer so i went yeah okay i'll be out now. and then proceeded to not tell anyone. i think people know now (that tends to happen when you date a girl for almost three years) but coming out was never really a Thing for me and sometimes i feel wrong about it, like i should have done more. i do pride things, go to events, am open about my sexuality, but i still feel like i'm doing it Wrong. other queer people seem so loud and proud and *secure* about their sexuality or gender and i'm always just... there.

not being all that sure: i know i'm queer (although even if you don't, you're still valid! we're just talking about me rn because i'm the center of attention at all times) but i think i don't know myself as much as other queer people do. and it's like... i'm pretty sure i am pan, really, but there's still that feeling of am-i-really-pan-or-am-i-delusional. sometimes it feels like everyone else knows themselves so well and i'm so far behind and can never catch up. it's like. how do they *know*, though? will i ever truly know myself like they do? there's also the gender aspect, where i'm totally cool being considered a girl, but i'd also be cool being considered other things. does that even matter? i don't know. and don't even get me started on my possible asexuality.

that little feeling i get when mentioning my own queerness to someone new: this one is, objectively, really stupid to feel lonely in. i think a lot of other queer people feel a Certain Way when talking about their queerness for the first time with someone new, but i still always feel like shit when i hesitate to share. when we were still together, i'd talk about my girlfriend a lot (lol gay). she has a unisex name and sometimes i would pause before using gendered pronouns for her. i always felt awful because i had no reason to hide her and it's not like these people gave bad vibes, but i always hesitated before acknowledging that i was dating a girl. even now i'll hesitate before saying my ex is a girl.

other people's assumptions: i don't even know what to say about this one because there's nothing new for me to bring to the table. it's just so damn frustrating when people assume i'm straight if i mention a guy and assume i'm a lesbian when i

mention my ex's gender. and i'd like to be CLEAR, there is nothing wrong with being straight or a lesbian. i'm just not! and it's always like... do i correct them when they make those assumptions? it doesn't actually matter in any way so maybe i shouldn't, but it's also an incorrect assumption about me so maybe i should? but then it feels weird if i do, and a lot of the time people don't even care, they just continue on with their assumption no matter how many times i correct them.

okay that's all i'm willing to get into! i hope you are all happy and content with your identity, LGBTQ+, not, or unsure. it's important to remember that you don't owe yourself to anyone else. nobody is entitled to information about you, especially about your sexuality or gender. i feel lonely in some ways, and you may too, but a big part of being LGBTQ+ is being different and sometimes that includes within the community itself. yeah, i feel isolated sometimes, but other times i feel so far from it that it's insane.

i think back to the little girl who just really, *really* wanted to be friends with that other girl from gymnastics, and smile. i look at my mom, with her proud parent pin on her purse and pansexual sticker on her kindle case, and feel warm inside. i look at my friends, a wide range of people who are all so awesome and different from each other but who all still care about me, and feel the urge to cry happy tears.

at the end of the day, being different isn't a bad thing. you can feel isolated, can feel alone, but sometimes being alone is okay. we can all be alone together.

happy pride month! i love you :D

gaya

SONGS ABOUT SEEING SOMEONE CUTE ON A TRAIN

shocker there is someone cute on the ION every morning who has become my only motivation to go to my co-op

- "beautiful stranger" by laufey
- "girl at the station" by grentperez
- "third avenue" by rocco

these are actually lovely songs to daydream to !!! :D

also the person with a wolf cut, glasses, a sword necklace, painted converse and a dark green kanken bag who gets on the train at waterloo public square every morning WHERE YOU AT!!! XD

gaycommuter

COURTS OF SUPPORT: WATERLOO STUDENTS FIND COMMUNITY AND MENTAL HEALTH BENEFITS IN INTRAMURAL SPORTS

On a crisp winter evening in Waterloo, math student Danny (last name withheld) found himself on the badminton courts of the Physical Activities Complex, racquet in hand. “I played badminton almost my whole life,” he explains, “so finding a place at university where I can play was huge.” In a span of months, he and his roommates had also formed an intramural basketball team. They carved out evenings to compete. “It’s definitely been a good way to relieve my stress,” Danny says. “It’s just a break from school, from studying.”

Danny’s experience mirrors that of research showing that unstructured campus sports, friendly or competitive, can strengthen student mental health and social bonds. In a recent national survey of Canadian post-secondary students who used on-campus mental health services, **95% reported feeling overwhelmed and exhausted, 83.7% reported anxiety, 86% reported depression, and 81% experienced loneliness.** Almost half said their stress levels were above average, and up to 35% had at least one diagnosed mental-health condition.¹

Accessible recreational programs at the University of Waterloo provide students like Danny with integral growth opportunities. Intramural leagues offer “student-focused and inclusive” competitions, with beginner divisions designed to emphasize fun and learning over winning.² The Badminton Club, with a small fee, runs multiple weekly drop-in sessions that match players of similar skill levels, while intramural basketball welcomes all people of different skill, scheduling games to fit around academic timetables.² Danny felt better almost immediately: “After badminton and basketball, I could shut off my brain instead of dwelling on assignments.”

Scientists extrapolate clear benefits from exercise: physical activity triggers endorphins and dampens stress hormones, interrupting negative thought cycles and boosting mood. But it’s more than biology. A University of Waterloo study showed that students who participated in campus recreation before the COVID-19 lockdowns reported lower stress and better confidence in handling the sudden shift to online learning. “There’s something about that organized group engagement in a university-based activity that was also having a positive spillover on another university-based activity, which is their academic adjustment during the lockdown,” says Narges Abdeahad of Waterloo’s Department of Recreation and Leisure Studies.³

Social connection is of equivalent importance. Intramural sports create a built-in community where students make friendships through shared victories and defeats. Danny recalls the camaraderie of post-game dinners. “We’d stick around after badminton and go for food,” he says. “We could talk about anything: school, home, whatever. Meeting people

on a deeper level.” He adds, “If I hadn’t gotten involved in these intramurals, I don’t think I’d have all the friends I have now.”

Professor Maureen Drysdale, of Wilfrid Laurier University’s School of Public Health Sciences, emphasizes the value of belonging. In a university article, she implied that when students engage in group activities, they foster resilience and reduce isolation: **a sense of belonging, she notes, is fundamental to mental health.**² She also adds, informal sport leagues give students “permission to let down their guard” and embrace vulnerability.

Nearing the end of last term, Danny had changed from a reluctant newcomer to a team player. “Last term I was a spectator,” he notes. “Now I’m organizing and going to practice, making sure everyone’s onboard.” Whether his team wins or loses, he leaves the court with the same sense of pride in knowing he’s taking care of his head as much as my body.

As UWaterloo expands its athletic outlets, students like Danny are exemplifying that the true value of intramurals isn’t just about the scoreline, but in the community, routine, and mental catharsis they provide. In an academically inclined campus culture, finding a place to play—and to belong—can be the most important win of all.

Ryan Maudgalya

1. Moghimi, Elnaz, et al. ‘Mental Health Challenges, Treatment Experiences, and Care Needs of Post-Secondary Students: A Cross-Sectional Mixed-Methods Study.’ BMC Public Health, vol. 23, no. 1, Apr. 2023, p. 655. BioMed Central, <https://doi.org/10.1186/s12889-023-15452-x>.
2. Research Stories | Recreation and Leisure Studies | University of Waterloo. <https://uwaterloo.ca/recreation-and-leisure-studies/research/research-stories>. Accessed 21 June 2025.
3. Kraemer, Brad. ‘UW Study Shows Students Involved in Campus Recreation Adapted Better to Pandemic.’ CityNews Kitchener, 28 Mar. 2023, <https://kitchener.citynews.ca/2023/03/28/uw-study-shows-students-involved-in-campus-recreation-adapted-better-to-pandemic-6766562/>.

NO THOUGHTS, HEAD EMPTY

One of these days, I’ll actually come to prod night with an idea of what I want to write, but today? Today is not that day.

Sexy_Software_Babe

PRIVACY COMMISSIONER FINDS CAMPUS M&M MACHINES BREACHED STUDENTS' PRIVACY RIGHTS, RECOMMENDS UNIVERSITY BE MORE CAREFUL

On June 11th, 2025, the Information and Privacy Commissioner of Ontario released a report finding that 2024's on-campus M&M vending machines' use of facial detection software breached students' privacy rights.

It finds that the University of Waterloo did collect personal information in violation of Ontario privacy law, and finds shortcomings in their procurement processes that allowed this to happen. In response, they recommend the university be more careful next time.

I don't know if that's enough.

BACKGROUND: M&M MACHINES' BRIEF TIME ON CAMPUS CUT SHORT BY STUDENT REACTION TO SELF-DECLARED FACIAL RECOGNITION

The report concerns the events of the Winter 2024 term, where bright yellow M&M-selling intelligent vending machines (IVMs) were deployed across campus.¹ A few weeks later, Redditor *u/SquidKid47* encountered one displaying the following error:

Invenda.Vending.FacialRecognitionApp.Exe — Application Error

Students' efforts against them quickly escalated from Reddit complaints, to stickering over the cameras, to a **mathNEWS** article comparing the machines' actions to past Canadian privacy cases,² to gaining the attention of local and international media.³ Around this time, **mathNEWS** writers filed complaints with the federal and provincial privacy commissioners.

Soon after, the university removed the machines from campus.

In December, MARS's resolution to stop the machines' rollout in Canada resolved the federal complaint.⁴ This recent development concerns the provincial report, which sought to answer the following three questions:

1. Can the use of face detection technology be considered collection of personal information?
2. Was collection of personal information done in compliance with Ontario privacy law?
3. Did the university have reasonable measures in place to protect personal information?

ITEM ONE: FACIAL DETECTION FOUND TO CONSTITUTE COLLECTION OF PERSONAL INFORMATION

As recording the demographic data of passers-by was an explicit selling point of the Invenda machines,⁵ (§30) Investigator John Gayle sought to identify whether doing so

legally constitutes recording of personal information under Ontario law.

Per Gayle's investigation, the M&M machines ran facial detection software to detect passers-by.⁵ (§37) Upon detecting a face nearby, the machine would take a picture, strip all personal data, and reduce it to a feature map from which only your age, gender, mood, behaviour, and qualities of having facial hair or glasses could be identified.⁵ (§42) Of this data, only age and gender data ultimately reached the machines' manufacturer, Invenda.⁵ (§47)



THE MACHINES' FEATURE DETECTION ALGORITHM.⁵§43

The university argued this does not constitute personal information collection. They claimed that the machines' "optical sensor" was too low-res to be considered a camera;⁵ (§31) its 480p resolution—the output resolution of a PlayStation 2—could not produce identifiable images.⁵ (§59)

To this, Gayle rebukes:

I note that the university did not provide any evidence to support its position.

Gayle concluded that if an algorithm strips away personal information, that implies it was initially recorded. Hence, it meets the definition of collection of personal information.⁵ (§82)

ITEM TWO: DATA COLLECTION FOUND TO BE NON-COMPLIANT WITH ONTARIO LAW

Per Ontario law, "No person shall collect personal information on behalf of an institution unless the collection is expressly authorized by statute, used for the purposes of law enforcement or necessary to the proper administration of a lawfully authorized activity."⁶ As the first two conditions did not apply, Gayle sought to determine whether collection of personal data was "necessary to the proper administration" of snack sales. He states:

I have been provided with no evidence or argument by the university, nor am I aware of any facts or circumstances, by which the collection of facial images by the IVMs for

conversion to demographic data is necessary for operation of the machines or the completion on [sic] individual transactions.

Ontario law further requires that users be informed when their data is to be collected. Gayle found this also not to have occurred.

Hence, not only did the university's contractors collect our data, they did so needlessly, and without the informed consent required.

We were right. :)

ITEM THREE: IPC FINDS UNIVERSITY PROCUREMENT TO REQUIRE FURTHER SAFEGUARDS AROUND "INTELLIGENT" PARTNERSHIPS

Last, Gayle considered whether the university has "reasonable measures in place to protect personal information" in accordance with Ontario law. The University of Waterloo has an information risk assessment process in place, enabling them to investigate whether new contracts involve biometrics or surveillance capabilities.⁵ (§115)

The university chose not to perform such an assessment.⁵ (§117) They saw no need; the machines' operator gave them no reason. The operator disclosed working with MARS to test new, "intelligent" machines, but that was the full extent of their disclosure.⁵ (§136)

Notably, the developers of the facial detection software recommend that users be informed of its use.⁵ (§94) Somewhere in the supply chain to the university, a contracting party forgot to pass along this vital information.

IS THAT SUFFICIENT?

Ultimately, the report recommends the university review its privacy policies and be more careful when the word "intelligent" appears in a contract. That's all.

It's a win; Ontarian privacy advocates now have this decision to point to in future battles.

Simultaneously? The report has no teeth.

How is it that the university, equally blindsided as the students were, is the only party held accountable?

Why are there no consequences to other companies involved for failing to properly disclose the cameras' use to the university?

Why is the vending machines' operator, who reasonably should have the duty of care to be aware of the technology in the machines they operate, free of consequences for failing to do so?

Some of this is due to the nature of the privacy complaint, having been made against the university. I find this uses present systemic failings as a bar to change.

We're a school of engineers. Anyone with an engineering background can tell you that all failure is systemic failure; all systemic failure is a driver for systemic change. We need privacy regulators to be able to take meaningful action when presented with breaches. All of this clear evidence of wrongdoing, and all they were empowered to do was recommend the university alone try harder?

We have a privacy commissioner for a reason. We need a system that lets them act.

Until then? **mathNEWS** makes do.

molasses

1. *The sexy M&M bandit strikes*, **mathNEWS** 154.2
2. *The M&M machines are watching you*, **mathNEWS** 154.3
3. Cecco, Leyland. "Canadian university vending machine error reveals use of facial recognition." *The Guardian*, 23 February 2024, <https://www.theguardian.com/world/2024/feb/23/vending-machine-facial-recognition-canada-university-waterloo>, among others
4. *MARS Canada to halt video analytics vending machines' rollout after mathNEWS reporting*, **mathNEWS** 157.1
5. University of Waterloo (Re), 2025 CanLII 54835 (ON IPC), <<https://canlii.ca/t/kclqn>>, retrieved on 2025-06-21
6. R.S.O. 1990, c. F.31, s. 38 (2)

I beg the Canadian media to cite their sources. It took several days to find a publicly-accessible source for this.

I AM SO EEPY

I've royally messed up my sleep schedule by taking too many naps, staying up till 4am, and constantly worrying about the three midterms and three group projects that I have, yet have no motivation to do. And now I am spiraling and losing touch with reality, just like any other term around halfway through I guess. I just wish I could get a long night's rest without feeling tired after waking up, and that I can go home and feel productive enough to work instead of instantly collapsing in bed.

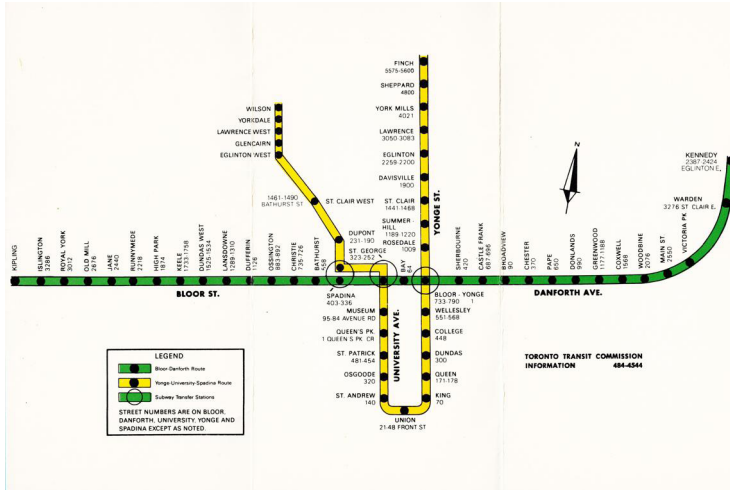
Case in point, this article was written at 12:30am. I was done for the day at 3pm, collapsed in bed until 7, and finally worked up the courage to write these 151 words after five hours. And the rest of my work is still undone!

Only if I know my psyche enough, may I discover why I am like so. Anyways, gonna go eep again. toodles

andoiii

THE DANGEROUS “LIGHT RAIL” IDEOLOGY

With the rise of suburbanism and car traffic in the 1950s and ‘60s, as well as the rise of neoliberalism in the 1980s, we observe the decline in public transit spending in North America. This manifests itself in Toronto as the “40-year itch” from 1985 to 2017, where barely anything happened. Okay, that is not completely true, Line 3 Scarborough LRT and Line 4 Sheppard happened, but for a System that used to open a line (or equivalent extension) every decade in the past, this is absolutely unacceptable.



TTC SUBWAY MAP CIRCA 1980. Courtesy of <https://transittoronto.ca>



TTC SUBWAY MAP CIRCA 2017. Note that Line 3 is now decommissioned. Courtesy of <https://transittoronto.ca>

So what's the outcome? Voters got tired of the “40-year itch” in the 2010s when we suddenly found out that entire subway systems are built in cities around the world. For example, Hong Kong's MTR first opened in 1979 and Singapore's MRT opened in 1987. And here we are, left in the dustbin of history.

As a result, something needed to be done. But people are still not willing to spend large sums of money. (If they were, we would have an actual Line 4 that is not just a 5-station appendix.) So what came of it? Light Rail Transit (LRT) and Bus Rapid Transit (BRT), when you are too poor to spend on full subways but want all the benefits of subway systems. Sounds good, doesn't it?

Sounds too good to be true, and it was. We will talk about BRT in the next issue, but for this issue, we will simply talk about LRTs.

Now, are all LRTs complete duds that should be tossed into the trash bin of transit history as “bad transit?” Not necessarily. But oh-so many places are doing light rail wrong, and it frustrates me.

Since the most useful metric for any transit system per any individual traveller is the amount of time saved, we argue that a “good” light rail system then must be faster, or carry more passengers than the alternative (e.g. buses). And how should we achieve that?

Light Rail Transit is inherently slower to accelerate and decelerate due to its mass, and usually its speed is no faster than 90km/h theoretically, and 50km/h practically, making it only marginally faster than street traffic, and slows down to 30km/h or even slower when approaching street crossings, sometimes even slowing down to 10km/h for corners. Additionally, it carries more passengers than buses or streetcars, but typically half that of subways. This means that, effectively, a light rail is just a marginally faster bus unless given dedicated right of way ahead of everyone else.

So then, when is it good transit, when is it not, and how should it be designed?

If you are hoping to achieve what is effectively a subway, where people are carried en-masse in a dense region, while you want to cut the traffic time down to, say, half that of a bus; that is just fantasy, and you should stop dreaming and start saving up. (Yes, looking at you, Eglinton Crosstown, you were supposed to be a subway.) Street-level light rail is more akin to a streetcar given signal priority rather than a subway. So if your objective is to significantly speed up transit time, then this is a horrible idea.

Let us also mention the topic of signal priority. Unless fully enclosed (by, say, a concrete wall), inevitably, there will be a need for light rail to stop in traffic. So, lest we want it to run like a normal streetcar or bus timing (which we will elaborate on in the BRT article next issue), it is absolutely imperative that LRTs take signal priority and install barriers wherever possible for full utilization of the shiny new infrastructure. Otherwise, it would be more economical to run more buses anyway.

So what is a justified scenario to build LRTs? I would argue for places where the population is not as dense, but congested enough for buses where express buses or additional frequency is considered, then LRTs with dedicated signal time is possibly a much better option, with not too much budget constraint. This means that smaller towns (like ION) or suburbs (like Mississauga's Hurontario) would be good ideas, if and only if LRTs get dedicated right of way.

And for cities like LA or Toronto, it is time to get your feet down—we don't need more glorified streetcars, we need mass public transit.

There is no free lunch in the transit world, so stop daydreaming and build your dedicated underground or above-ground infrastructure, or even dedicated level tracks that do not run on roads.

RobbotC

AN M&M REPORT JURISDICTIONAL ADDENDUM

This isn't ultimately relevant to the conclusions of the Information and Privacy Commissioner of Ontario report into the Winter 2024 M&M machines, but I thought it was funny.

At the report's outset, John Gayle draws attention to the University of Waterloo's repeated jurisdictional challenges. While Waterloo ultimately cooperated with the investigation, they raised concerns that:

1. As snack sales are unrelated to the University's core mission, only federal privacy law applies; hence, the province has no grounds to investigate.^{\$12}
2. UW claimed no personal data was collected, and as such, no investigation was needed.^{\$13}
3. As UW did not contract the machines' operator to collect data, the investigation should only concern their vendor due diligence procedures.^{\$14}
4. As all collected data had been deleted, no investigation was needed.^{\$15}

You might note that objections two and four seemingly contradict each other.

Gayle tossed out the objections. With respect to federal/provincial division of powers, Canadian law allows for the "double aspect doctrine," wherein the province is enabled to expand on federal matters.^{\$21}

As to the other three points, those are *explicitly* the questions of the report.^{\$23} UW heard that an investigation was happening into alleged privacy breaches, and argued that no investigation should be occurring because nothing happened.

im sorry. you can't use "nothing happened" as an argument against the "did something happen" investigation. that's like. the silliest defense you can possibly come up with. why did they think that would work.

man.

molasses

THE "FEELS LIKE" TEMPERATURE IS FAKE: A PRE-EMPTIVE REBUTTAL

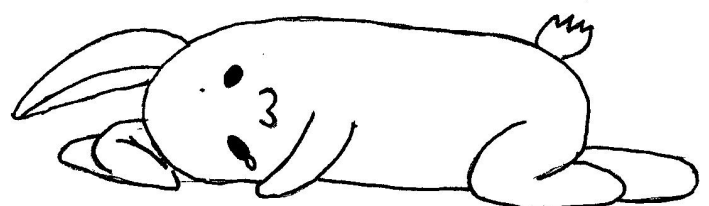
Hello. Long time lurker, first time poster. *Yamnuska* and I are neighbours and so I often hear about many of his complaints before they get posted to **mathNEWS**. For the most part, I agreed with his grievances, until now, I cannot remain silent about this one. You see, I am a proud Ontarian and almost exclusively live by the feels like temperature. *Yamnuska* has many issues with Ontario and some, I agree, are valid, but don't come after the feels like number like this. I find it very helpful, and although somewhat arbitrary, I still think it's a valid method of describing the weather.

Why do we even bother looking at the weather? Unless you're in aviation, it's almost always to figure out what you're going to wear. I'm not a huge shorts wearer or scarf wearer, but on the rare occasion I will wear shorts or a scarf if needed. Last weekend, for example, was 35 (real) degrees, which I'm fine with wearing pants in, but with the humidity making it feel like 44, I opted for shorts instead because that is way too hot. Same for in the winter, -5° is just jacket weather, but if there's 1 million km/h winds making it feel like -20°, I'm wearing a scarf and a few more layers. Yes, turning something arbitrary into something that can be described by numbers is hard, but it's what keeps the math people employed, so you're welcome. Don't hate the people of Ontario, hate whoever did the math to create the humidex.

Who might that be? J.M. Masterton and F.A. Richardson. I went and *did* find the paper describing how Humidex was created and it *also* has a lot of numbers in there so there was a lot of thought put into this one too (source: just trust me, I looked). It was created by Masterton and Richardson in 1979, the 1965 version does appear to be lost to time but it doesn't matter because we don't use that one anymore anyways. Not only is Ontario the most important place in Canada, it also is the place with the greatest frequency of high temperatures and high humidities, which is the real reason the humidex is modelled after Ontario, as mentioned in the abstract of the 1979 paper. The feels like number is not commonly used in western Canada because it simply is not needed. Wind chill on the other hand *was* developed with all of Canada in mind because it's relevant to all of Canada.

No conclusion because I have one minute left to submit. oops

Coda



THE “FEELS LIKE” TEMPERATURE IS FAKE

This came up because I think people from Ontario are babies. In my experience, when you are speaking with someone from Ontario and they are telling you about the temperature, they tell you the “feels like” number rather than the actual number. Sometimes they say, “Be careful, it feels like -20° outside,” which is fine I guess, but when they say, “Be careful, it’s -20° outside,” then you’re just lying to me. Similarly, this past week, I have heard lots of people tell me, “Look out, it’s going to feel like 45° on Monday.”

In my experience back home, when you ask someone about the temperature, they tell you the temperature. No “feels like” bullshit, and if it is mentioned at all, it’s after the real temperature, like “It’s -10° , but -15° with the wind chill.” My theory on why people in Ontario don’t do this, is because it doesn’t actually get cold here. They need to cope by using the “feels like” number rather than the real number. They say it feels like -20° when it’s actually only -5° . You can make the argument that the “feels like” number is relevant because that’s what it feels like, but in the winter, if it’s cold, you’re wearing a jacket, which is most likely windproof. As a result, you are not experiencing the wind chill. You are experiencing -5° but calling it -20° because Ontario is tropical.

I will concede that Ontario does get hot in the summer, and it does get humid. I was confused, however, this past week when I was told it’s going to feel like 45° degrees or something on Monday. When I checked the weather app on my phone, it said that on Monday it would be 33° degrees, and feel like 34° . I had no idea where the 45° number came from. When it was mentioned again, I asked where the person had gotten it from, and they said The Weather Network. I looked for myself and lo and behold, it said it was going to feel like 45° .

This led me to learn about measures of apparent temperature, and because I learned that, you have to learn it. If you want, take a moment right now to go to The Weather Network dot com, and check the temperature and “feels like” numbers for Windsor and then Detroit. Note that these places are right next to each other and are separated by just a small river. If you can’t be bothered or if it isn’t hot anymore, when I am writing this, it is 34 degrees in both Windsor and Detroit, but the “feels like” is 35° in Detroit and 44° in Windsor. The astute among us may start venting to their friends in electrical that $34 = 34$ but $35 \neq 44$. Why is the “feels like” different when the real temperature and presumably also the humidity is the same?

Canada and the US do not use the same calculation for the “feels like” number. In the United States (and seemingly most of the rest of the world, although I couldn’t be bothered to do that much research), the “feels like” is based on the Heat Index. This was created by Robert G. Steadman in 1979. In Canada, we use the Humidex, which was created by someone (I could not find out who or why) in 1965, and then was modernized in 1979 as part of the switch to metric in Canada, and it sounds like it was maybe changed beyond that but I can only be bothered to do so much research.

Both measures are defined not by formulas but by tables. The Heat Index uses temperature and relative humidity, while the Humidex uses temperature and dew point. It is worth noting that relative humidity can be expressed as a function of dew point, and dew point is an actual measured value. Beyond that, it seems that both of the tables were basically just made up. I found a paper on why the numbers for the Heat Index were picked, and it had a lot of numbers in it so there was probably some thought put into it, but I did not read it. I have yet to find a paper on how the Humidex was created.

From the unreliable sources I have read, it seems that Humidex was designed to fit the Canadian climate better, with high humidity in the summer. Note that this is not true across Canada but Ontario is the only important place in Canada so it’s fine. Beyond this though, I have no idea how they came up with it. I am left to conclude that it was made for Ontarians to complain about the weather more and act like their life is worse than it is. That is the only way I can explain the large disparity between Heat Index and Humidex. I couldn’t find any real information on this in my limited research, but Wikipedia said, “A joint committee formed by the United States and Canada to resolve differences has since been disbanded.”^[citation needed] I am choosing to take that as fact because I think it’s funny.

In my research I also learned that AccuWeather and The Weather Channel have their own “RealFeel” and “FeelsLike” values which are trade secrets so I have no idea how they are calculated.

So what’s the conclusion here? What I have learned is that “feels like” values are basically made up. Begrudgingly, the US one seems to be derived from real math and research, while I have no idea what the Canadian one is based on, but it feels fake. In reality though, they’re all fake. They’re just ways to make up numbers to tell us how to feel about the weather. They don’t actually have units, we just associate them to temperature.

Following from that, I would like to propose a new apparent temperature index, called the Perfect Apparent Temperature Index of Ontario, or PATIO for short. If outside of Ontario, use the nearest place that starts with the letter O. It can be used to determine whether or not it would be nice to go out on the patio. Its formula is $\frac{T}{S}$ where T is the temperature in Celsius and S is the Spit/Sweat coefficient. When the temperature is above 0, it takes the value of the number of hours it takes to sweat one litre. When the temperature is below 0, it takes the value of the number of minutes it takes for your spit to freeze on the ground. Please use PATIO in place of Humidex or Heat Index any time you may be using a patio. I am currently developing adjustment factors for porches and decks.

mathNEWS MERCHANDISE IS NOW AVAILABLE!

PICK THEM UP AT THE NEXT PROD NIGHT (JULY 7, 6:30PM, QNC 1502) OR SWING BY THE mathNEWS OFFICE (MC 3030) TO GRAB THEM NOW!

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Most importantly, however, you'll help get these goddamn gigantic boxes out of our office.

So, what's available? We have two stellar options, each beautiful in their own special way.



First up is the Pink Bunny Mosaic Tee-Shirt. Draped in the bold, iconic colors of the math faculty, this design features the world-famous Bunny Family which has been featured for years as filler art in **mathNEWS** issues. Yes, that means buying this shirt can make you feel like a poorly-spaced **mathNEWS** article requiring dramatic amounts of filler. The dream is now a reality.

These shirts are unisex, come in small, medium, and large, and cost \$25 each.



Want something a little warmer? Why not try our Black Normal Bunny Sweater? It features the **mathNEWS** logo, tastefully embroidered on the sleeves, plus our world-famous "normal bunny," placed directly and symbolically over your heart.

Yes, I know it's June. Yes, I know it's been a thousand degrees all week. Consider it an investment for when the weather goes back to normal.

These sweaters are unisex, come in small, medium, and large, and cost \$40 each.

If these have piqued your interest, there's a few ways you can pick them up. You can come to **mathNEWS** production nights, where we'll definitely be selling them. The next ones this term are Monday July 7th and Monday July 21st, both from 6:30pm–8:30pm, and both at QNC 1502. If you happen to swing by the **mathNEWS** office (MC 3030) and you see an editor inside, feel free to come in and make a purchase then, too. **Cash or cheque only, thanks.**

(Also, while I have your attention, you should come to **mathNEWS** prod nights! Yes, you! If you've ever been interested in writing for **mathNEWS**, I promise the barrier to entry is even lower than you think it is. Come out, write something, get some pizza for your troubles, and then by the end of the week, whatever you wrote will be available in steaming-hot **mathNEWS** issues across campus and around the world. It's a great time! You should join us!)

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**Don't put that in
mathNEWS. I don't need
my name attached to it
when you Google me.**

BLAKE MADILL

The **mathNEWS** Editors

WANNA WATCH LIVE PROFESSIONAL ESPORTS THIS WEEKEND?

LEAGUE OF LEGENDS WORLD CHAMPIONSHIPS HAPPENING AT THE AUD IN KITCHENER THIS WEEKEND!!

By League of Legends I actually mean Call of Duty, which people seem to care much less about, but the COD League Championships *are* actually happening in Kitchener this weekend, I didn't lie about that. Anyways, now that I've got the attention of all you nerds, here are some more things happening in Kitchener-Waterloo this summer.

Starting off with this weekend, it's Canada Day long weekend and both Kitchener and Waterloo have community events planned for July 1st. There will be live music, food trucks, an art market, and a drone show all happening at Waterloo Park on July 1st. If you're willing to travel a little further though, there's a much more epic celebration happening at Carl Zehr Square in Downtown Kitchener featuring concerts from award-winning Canadian artists Terra Lightfoot and Sloan, and a firework show to close out the night.

On July 5th, the Cherry Park Neighbourhood's annual Cherry Festival is happening in Cherry Park Kitchener. I'm not even the biggest fan of cherries, but cherry ice cream and cherry pie at this festival is absolutely worth going (along with several other cherry-themed goodies). They've even expanded the festival this year to include more performances, more vendors, and more attractions.

Do you like using your brain? Do you like beer? Yeah me too, that's why I go to Puzzled Pint. If you *do* like exercising your brain, you should also go to Puzzled Pint so you can carry your team of beer loving friends. If you've heard of or participated in the Key Clues puzzle hunt, then you'll enjoy Puzzled Pint. It's hosted at a different bar on the first Tuesday of each month, the next one is happening on July 8th at a mystery location you'll need to solve a puzzle to discover.

Do you like using your brain? Do you like beer? Yeah me too! Which is why I go to bar trivia. Grad House hosts trivia every Wednesday, Molly Bloom's hosts trivia also every Wednesday, Abe Erb in Uptown hosts trivia on Thursdays. There's certainly other bars that do trivia nights but those are the ones I've been to so far.

Do you like eating food and listening to music? (Also do you like beer?) Kitchener Rib Fest is happening July 18th-20th at Victoria Park. There's food, there's drinks, and there's music, it's a good time, don't really have much more to say about it than that.

We're gonna do a rapid fire round of things all hosted by the City of Waterloo:

- Campfire in Waterloo Public Square on select Wednesdays with live music by local artists (truthfully, I have never actually been to one of these because it has been rained out *every single time*

I've been free to go, this year and last year, but I'm hoping to go to at least one)

- Movies in the Park at Waterloo Park Bandshell happening most Thursdays (A Minecraft Movie is being played on July 17th, I wasn't willing to spend money to get covered in popcorn and coke but now I can see it for FREE and far away from kids)
- Art Market at Waterloo Public Square happening July 25th, and August 15th. Come out to support local artists and vendors!
- Dance It Off Tuesdays happening every Tuesday in Waterloo Public Square. Haven't been able to go to one of these yet but they look like fun.
- Many more!!

I want to give a shout out to @waterloocommons on Instagram and the TL;WR Newsletter. Both do an excellent job of promoting events happening in KW and is where I find out about a large number of the events I go to. You can also check out the @create_waterloo Instagram page for Waterloo events and the City of Waterloo and City of Kitchener websites for a full list of everything put on by the city.

Conclusion? Idk, go outside more. It's late and I have to work tomorrow. Links below for more details on everything I listed, okay bye.

Coda

COD Championships: <https://torontoultra.gg/pages/cdl-champs>

Waterloo's Canada Day: <https://www.waterloo.ca/en/things-to-do/july-1-community-picnic.aspx>

Kitchener's Canada Day: <https://www.kitchener.ca/en/arts-culture-and-events/canada-day.aspx>

Cherry Festival: <https://www.cherryparkkitchener.com/cherry-festival>

Puzzled Pint: <https://puzzledpint.org/events/july-2025/>

Bar Trivia: They're all on their Instagram pages, not gonna link every single one here.

Ribfest: <https://www.kitchenerribandbeerfest.com/>

City of Waterloo Events: <https://www.waterloo.ca/en/things-to-do/all-city-events.aspx>

@waterloocommons on Instagram

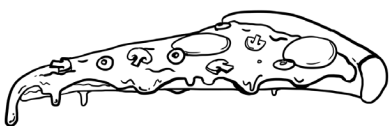
TL;WR: <https://tlwr.ca/>

mathNEWS

N UNINTUITIVE FOOD COMBINATIONS

1. **Garlic Bread + Hot Sauce + Strawberry Jam (Mel's Diner):** Now, Mel's didn't put something like this on their menu. I simply took advantage of the ample supply of jam and hot sauce at the table to—how do we say this—enhance the *regular* garlic bread that I *did* order. Personally, the sweet-spicy combo was not as revolting as other people might make it out to be, and the texture of the garlic bread definitely improved the experience.
2. **Avocado Toast on a Waffle (Williams):** This is *actually* on their menu—albeit their testing menu (available only on weekends). It's easy enough to visualize: finely chopped onions, tomatoes, and crumbled feta cheese on avocado paste. The only obvious twist in the scheme is that this rather popular breakfast item comes on a waffle instead of bread, leading to a rather intriguing sweetness standing in for the typical sourness of rye. It was pretty decent. Definitely trying it another time.
3. **Waffle Breakfast Sandwich (Williams):** Keeping up with the theme of substituting waffles in place of bread, this item—which is also on their testing menu—features scrambled eggs, cheese, and spinach between two waffle quarters. While I found it rather inconvenient to handle, I liked the taste. I don't remember if there were shallots, but I don't think it should have shallots. The texture was too soft for me—it would have been a lot better if it were crispier. All in all, I'd have it again.
4. **Garlic Naan with Sugar Syrup (Conestoga Mall):** I don't think anyone would be insane enough to consciously put this on a menu, but I was in an adventurous mood, and I happened to have garlic naan and gulab jamun (a North Indian sweet of fried dough-balls in sugar syrup) in front of me. All in all, it had about the same taste as honey on bread, so I don't think this is too objectionable.
5. **Strawberry Cream Cheese on 4-Cheese Bagel (SCH Tim Hortons):** When I told people about this one, I was met with some strong opinions, but I don't think it's half bad. The strawberry cream cheese itself tastes like a sweeter version of regular cream cheese, but not overly so. In fact, I'd peg it in roughly the same category as a very thick strawberry yoghurt. It didn't end up being terrible, and was in fact quite palatable. However: beware that it's only available at the South Campus Hall Tims—I tried ordering this at SLC Tims and they looked at me like I wasn't entirely... well.

temporary_chaos



UOFT profQUOTES

EDWARD BIERSTONE

“ I was surprised looking at people during the test... they seemed like they were really suffering!

A.W. PEET

“ If I look at my future light cone, I can see all the people I would impact if I start throwing bombs everywhere.

AEPHRAIM STEINBERG

“ Consider that I am a very militaristic person and am collecting a stockpile of bombs.

MIRIAM DIAMOND

“ This is what happens when you get the guinea pigs to type things for you.

“ They get paid in vegetables. [*Discussing her guinea pigs, or maybe her grad students.*]

Daenys

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UW'S BASTION OF ERUDITE THOUGHT SINCE 1973

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PUTTING ON A PLAY IS MUCH HARDER THAN WRITING AN ESSAY

BUT IT'S ALSO MORE REWARDING

It's December 1st, 2024. I am in a room full of stressed-out artist hoping their name gets drawn for the Ottawa Fringe.¹ My name gets drawn, and the room erupts in cheers in a way that it hadn't for any name previously. I feel terrified. I love the Fringe and the community around it, who also clearly love me back, but I have never written a 40-minute play, or memorized it, or produced it, or advertised it, or etc. I have signed up for a huge undertaking, and I don't know if I can do it. The people in the room do know. Even as my stomach lurches, I feel loved by everyone around me.

I have the idea of adapting my essay *I Am Too Lazy To Come Out. As Non-Binary. (So I Wrote A Whole Essay Instead)*, published in **mathNEWS** 148.5 on March 18th, 2022, into a one-person solo play. A play is a different medium that will require adaptation. I have up to one hour that I can fill, but I'm aiming for 45–50 minutes. An additional hitch is that I submitted my show in the Francophone category for the Fringe. This is the first year that the Fringe is explicitly carving out space for French plays. Most of my friends are Anglophone, so I worried that I limited the number of people who can help me or even see and understand my play.

Almost all one-person shows follow the same structure: a person talks about their insecurities, explaining why they don't feel like they are enough, before ultimately concluding that they are, in fact, enough. The thing is that if you put all your insecurities into a document, that document becomes very scary to look at. I underestimate the emotional labour that comes with writing this play. The question of competence in theatre flares up some specific shitty memories. I take a week off to couch surf at a friend's place and finish my first draft. Instead, I get into a falling out with a friend, and none of that writing happens.

The deadline is looming, and I am nowhere near where I want to be. I haven't been working on the writing. I constantly feel stressed. I get in the procrastination mood where reading *Wind and Truth* in 48 hours seems like a reasonable thing to do.² I don't know if I can do it. I have a conversation with my therapist where they state that I am capable, but to succeed, I need support. I stop asking if I can succeed and start asking how do I succeed? I was always capable of doing this play, but I was also capable of failure. Neither outcome was guaranteed, neither outcome define me as a person. I should know, I just wrote a play about how we define ourselves.

I started asking for help. Get a friend to do the pictures for the program. Another to design the poster. Recruit several people to body double as I need to do writing. Ask for advice from seasoned Fringe producers. I convince a friend to stage manage for me. I might be doing a one-woman play about being non-binary, but I don't have to do it alone.

It's mid-May; I am running out of time. I need to finalize my script and start memorizing. I want to have captions for my show. I have sent off my translation. I can't change the script anymore. I just need to perform what I wrote. I can see all the ways that could be better, but there's no time. I consider backing out, but I already paid the festival fee. I have written something, maybe if I don't memorize it, I will improvise my show off of bullet points, or I will do a staged reading. My show is captioned, so I can always look behind if I forget a line.³ Despite all the doubts, I keep moving forward.

Then it's time for the fringe. My title is **€{0,1} Trop paresseuse pour faire un coming out donc j'ai créé une pièce de théâtre** which is both genius and incredibly stupid. € places my show at the top alphabetically, but the rest of it is too long. Everyone, including myself, only says "trop paresseuse" as we are too lazy to say the rest. We are not in Waterloo, 90%⁴ of people have no clue what the heck **€{0,1}** is supposed to mean. If I ever remount it, I am changing it to **€{0,1} Sandwiched**.

All this time I was focused on creating the best play possible, so when I looked at my play, all I could see was the hypothetical better play that I could create. Putting it on stage meant I had to show people the play that did exist. The reception to it was better than anything I could have possibly imagined.

All one-person shows are fundamentally the same, but they are all also uniquely different. I could not see how my voice was enough to create something that stands out. Putting on a play is so much scarier than writing an essay, as you are having this immediate and direct conversation with the audience, but it is also more rewarding.

I will never know the full impact of writing in **mathNEWS** because there isn't that direct connection to the reader, the same way theatre provides to the audience. This project has been hard. It's been stressful, and I am so glad I did it. I have had the most incredible week immersed in theatre at the Ottawa Fringe.

All good things must come to an end. There I am at the closing party, there to celebrate the incredible work of my peers. The first award given is the Queer Jury Choice Award. Just like at the beginning, when my name is called, the entire room erupts to celebrate me. All good things must come to an end, but this adventure is getting a sequel. I will be remounting my show for Capital Pride at the end of August.

Beyond Meta

1. The Fringe is an international movement of theatre festivals. It was started in Edinburgh in response to the Edinburgh International Festival. A bunch of artists who were not invited to the festival organized their own festival on the fringe of the original

festival. The fringe follows an open-access model; anyone who wants to participate needs only to put their name in the lottery. Fringes tend to be the “indie band scene” of theatre due to the lack of gatekeeping; anyone who wants to put on a show can.

2. It's 1344 pages. I cannot emphatically say enough that this is not reasonable.
3. Which I did in every single performance. You might think that captioning is a great accessibility measure for the audience, but it's also great for the performer.
4. I did ask my audience in every show how many understood it. So this estimate is based on sampling my audience.

DELTARUNE CHAPTERS 3-4 QUOTES

OUT OF CONTEXT...

- Just forget about us and make some real friends, okay?
- He's groovy and never glooby!
- Bible
- It's normal for couples to fight sometimes!
- A strong aura emanates from the Watercooler.
- And the mom is kiss goodnight.
- He moved the laser pointer too fast!
- You were used up.
- Non-men are A-OK, too.
- Rebuild the set! Rebuild my kids!!
- They're coming out of the pipes.
- They're crawling out of the pipes.
- Suddenly, a tempest.
- his therapy, his psychology, his analogies, his first aid, his last aid, ...
- Bangin' sermon my man
- Oh no, exclamation point semicolon!;
- I mean... gotta admit this room is kinda sus.
- ...especially that vent.
- She's gone yandere for me.
- Um, anyone, um... feel free to... step on me.
- Ya winning, kids?
- (The cup bakes nine tense doughs. Exclusively on the switch.)
- your taking too long IS TAKING TOO LONG
- The watercooler babbles to itself sesquipedalinarly.
- The air crackles green with freedom.
- The air crackles with sound.
- What is *DELTARUNE*?
- What isn't *DELTARUNE*?
- Look, I... I'm smiling!
- Like, uh, hey, maybe things took a weird route right now...
- MY
- *DELTARUNE*.

↑←↑→↓→

MOVING ON SWIFTLY

~0W0~



MY TWO FRIENDS SHOOTING THE ENDER DRAGON (10 SECONDS BEFORE ~~DISASTER~~ SERVER CRASH)

I realize the title's only gonna make sense to two people, and I'm one of them. Oh well.

Anyways!

In the last two issues, I wrote about infinite games, but no games. Well, that has all changed with the two-week *Minecraft* phase PART 2: Electric Boogaloo. So my right-hand man Cobalt has a friend/harem member named St0mp, and he owns our *Minecraft* server, and this “season” is a version of Better MC, and that's what the gang and I have been up to. Annie, Oompa, and I have been making a homestead with Annie as the builder of the commune, and I as head chef. Oompa is honestly doing his own thing with his farm (he's Annie's and Cobalt's father, so he's just trying to chill with his kids and his son's harem/Discord kittens. Good father), and we love that. St0mp's got this castle he's working on, and his favourite block right now is chert. Cobalt's doing quests and achievements, as he's very progression-based in terms of getting us better stuff, and he set up our storage system. Big Nige (another beloved harem member) was late to joining but he's a part of the commune, and we're glad he's here. Now you must be wondering, who's farming, and where's Wolfe??? I mostly farm (my tomatoes are coming in nicely) and Wolfe is a busy bee with work and having a boyfriend (simp move). But in our hearts, she's still Cobalt's Discord kitten. As am I <3

If you read all that, I'm so sorry. Guess you just had to be there. All that matters is that my core friends are on the Block and we're living it up.

Jochemist

mathNEWS

SOMETIMES ALL I THINK ABOUT IS LOO

ZUTARA PART WHATEVER SUE ME

by some small miracle, the microwave manages to finish one last spin before the lights flicker, a trio of beeps marking its dying breath just as everything goes dark. katara winces, popping open the door—the plate is warm to the touch, even as all its contents sit unseen in the newfound gloom.

“well,” she says, “shit.”

“no kidding.”

she huffs out something somewhere between a laugh and a sigh, turning to what’s left of the light. zuko stands in front of the window, still angled towards her as he cranes his neck to peer outside.

“i think it might just be us,” he adds, frowning, and the weight of his attention falls back on her like a blanket. katara takes exactly one second to consider the probability of it all, then sighs for real.

“yeah, that sounds about right.” when she steps up to look beside him, the sunset’s washing over a picture-perfect view, streetlights and brighter balconies dotting the landscape all the way to a gleaming cube in the distance. dana porter, presiding over the rest of campus.

for a moment, she sees the path she could’ve taken—familiar, *safe*, a haven of her own making—but then the boy beside her shifts his weight across his feet. and she knows she wouldn’t want it any other way.

“you know, we’ve got to stop meeting like this,” she says lightly, letting a smile curl across her mouth as she looks up at the boy who might have ruined libraries for her. “i’ll start thinking you’re bad luck.”

he grins back, crooked. “i could say the same about you.”

“i just got home.” she lifts her chin, studying the break of his smile. “what have *you* been doing here all alone?”

zuko opens his mouth, and closes it—she can feel every part of how he hesitates, the air drawn tight between them as his

gaze drops away from hers, barely catching on her mouth before it darts away again.

she licks her lips, and it snaps right back towards her. “tell me,” she says, suddenly brave, unbelievably bold—and though her voice softens, she doesn’t think she’s asking. “you can.”

he chuckles, the sound a little rougher than before as he reaches out to brush a longer strand of hair out of her face. “you already know i’ve been thinking.” he meets her eyes, gold blazing bright as the last bits of sun slip behind the horizon, missing words split in the aftermath. “you don’t need me to tell you that—that sometimes you’re the only thing left in my head. do you?”

(one breath. another.)

katara’s fingers clench around the ceramic edge of her plate. “it’s going to be dark soon. we should report the outage while we can, or dinner will get cold.”

his laugh eases a bit this time, phone already in his hand—despite his shiny model computer, this one’s almost as old as hers. “do you think they’ll notice that it’s not my unit?” he wonders aloud, already taking the mandatory photo. as if they needed to see what their own light fixtures looked like when they were turned off.

“i don’t think they even know what building this is without you telling them.” she rolls her eyes. “if they even see the email while they’re probably on vacation.”

zuko lets out a noise of agreement, skimming the immediate message on his phone. “automated response says two business days.”

“on thanksgiving weekend,” she reminds him, tilting her head as she considers the timing of it all. “you really are bad luck.” his eyes widen—slightly, *enough*—and katara knows hers do too. *oh*. she swallows quickly. “i mean, eating dinner by flashlights? not exactly my preferred mood lighting.”

oh my god.

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A mathNEWS EDITOR WHO’S TOTALLY STILL ALIVE INSIDE, PROMISE.

"i've got candles in my room." it's just as abrupt as her own thoughts, an admission and an offer tumbling to the kitchen tile. "or, i mean—"

to *her* kitchen tile. because he's *here*. and she's not letting him get away that easily again.

katara tilts her head, brows arching. "i've never heard that line before."

"no, *no*, i didn't—i just—" she's also never seen him this *shy*, hands held up apologetically, high enough to match the flush rising on his cheeks. "i thought i could bring them down. here. if you wanted me to. whatever you want."

"so a candlelit dinner, then?" she teases, "i didn't know you had it in you, zuko."

he sucks in a breath—audibly—like she's shocked him. "tell me what you want me to say," he says, like he's pleading.

katara steps back to give him some space, but he sways forward like he misses it. and she can't help but smile as she hands him a plate. "we can start with how your smoke alarms are broken too," she says, "and then you can give me a tour."

>

she nearly bumps into him as soon as he takes the first step, slippers colliding with the front of the stairs. she fumbles blindly for the railing and finds his back instead, quiet strength through the pitch black.

"sorry—" he mutters, at the same time she begins the same apology. she can hear the sound he makes in the shadows, more amused than frustrated, and his shirt grazes her fingertips again before his hand replaces the empty space. "just in case," he says, fingers tangling with her own. they're smoother than she expects, faint calluses along the edge of his thumb dragging along her knuckles.

she doesn't shiver. she doesn't. but the back of her neck prickles with new awareness all the same. she's fixed his hair, touched his scar, grabbed his wrist.

has she ever just held his hand?

"just in case," she repeats. "can't be losing my guide, can i? i don't think he handles stairs very well."

zuko laughs at that, the same sound she's replayed over and over and over again. bright, new, cleansing, *safe*. familiar too, in a way. and him, really him, tangible and present and here. "no," he says, "i don't think so. not alone."

she squeezes his hand then—once, twice—taking in the boy that she knows, and the parts she's learning. *i'm here*, she thinks. "so lead the way, sunshine."

PASSING SHIPS IN THE NIGHT

I guess that's all we are
Ships, passing in the night
Without a word to share
The wind deafening my calls

Once, we sailed together
Floating over our woes
The waves crashing over you
I was in awe of your beauty

Then you strayed away
For years, I was calm
Til you emerged from the horizon
A storm had fallen over us

I reached for you
Hoping to regain balance
You pulled from me
Leaving me to drown

It's all we are
Ships, passing in the night
And as I drift away in thoughts of you
I reach shore a wreck of flotsam

Usman!

Inspired by *Queens of the Stone Age*—*I Sat by the Ocean*, PJ Harvey—*We Float*, and you.

BUT WHAT IS AN ENNEAGON?

Alright, I won't beat around the bush, I'll give it to you straight. It's a British nonagon.

And if all the sides are quadrilaterals (stretchy squares), it's the smallest non-hamiltonian polygon.

no pun indented

mathNEWS is the
best thing that's ever
happened to me.

A \$100% SINCERE mathNEWS EDITOR

big a

mathNEWS ARTICLE TURNED THEATRE SHOW WINS BIG AT OTTAWA FRINGE FESTIVAL

A (PROBABLY) VERY BIASED CONGRATULATORY ARTICLE FOR BEYOND META!

The 28th Ottawa Fringe Festival took place from June 12th to June 22nd this year, featuring everything from a one-person show about reciting digits of pi under the watchful eye of the audience ready to deliver punishments for when said person inevitably makes a mistake (*10,000 Digits of Pi* by Vinay Sagar), to a heartfelt look at the complicated feelings when a sibling passes away and the unfortunate club that many unexpectedly find themselves in (*Dead Siblings Society* by Murph Hickey and Nick Maillet). Astute **mathNEWS** readers looking at the full list of shows however, would have noticed a familiar title from v148i5 right at the top (albeit in French)—*≠ {0,1} Trop paresseuse pour faire un coming out donc j'ai créé une pièce de théâtre*. You also will notice a bunch of **mathNEWS** anthologies including one that features the cover art from 145.4 in the featured show artwork and marketing materials, but that's besides the point.

Adapted to suit the medium, **mathNEWS** writer Beyond Meta's entry into the newly introduced Francophone category of this year's Fringe is not actually a direct reading of the original **mathNEWS** article itself translated to French. It is rather an expansion of the article transposed IRL for a live audience examining the infinite values on the number line of the set defined between 0 and 1, and from a more personal perspective of where their non-binary experience falls between. It is personal, it is raw, and thankfully for many who understand mostly/only English, it is captioned!

There is a lot of discussion (literally with audience participation in the languages of their choice) about how one arrives at definitions themselves (insert something funny about sandwiches here), and how that translates to the personal experience. As someone who is genderflux myself, I very much could relate to a lot of what was said and found myself weirdly relating to the Squeeze Theorem and how people are squeezed between two strict binary functions. That said, you also do NOT need to understand math to understand the show, though it will clue you to the brilliance of the inclusion of the MathSoc Novelty t-shirt that features a prominent 3ⁿ.

Just as selfishly I can add the role of costume designer/graphic artist to my own resume (though credit for the idea for the 3ⁿ shirt itself goes to Dee Darby Barton), Beyond Meta can now add "Award Winning Playwright" to their own. Winning the Queer Jury's Choice Award, *Trop paresseuse...* receives the honour of an encore definitely non-zero amount of performances for Capital Pride in Ottawa this coming August. If you find yourself in between terms and wish to explore the infinite opportunity for defining one's point on/around a number line, this play is definitely for you. More information will probably be announced closer to the date in a future issue of **mathNEWS**, so stay tuned.

Congratulations again Sophie! You did gr8 <3

waldo@<3.LE-GASP.ca

GET FLASHED BY CSC

I GOT FLASHED BY CSC TODAY

Hey beautiful bodies and insane children of the wonderful University of Waterloo zombies.

We are back to flash you yet again with more flashy CSC news.

Firstly, we had a wonderful Prof Talk by Tavernes Barnes on software performance and analyzing it.

Also, we had a talk given by Geoff Roth on the coordination between international police agencies to combat cybercrime. Also also, we have a Badminton competition on July 4th. Leetcode is on July 9th, so u can be.

We cried about trivia

Sadness

I hate servers

Please apply to suscom, we need more susadmins

pls

Im crying

I thought I was gonna beat the servers; the servers are beating me

help

cri

sadness

BRO I TURNED OFF A PROGRAM, BUT IDFK HOW BUT IT CAME BACK ONLINE

Office Hours:

Using a Mac Book makes me a better Mathematician

AMIR DADPOUR

I think we should go back to paper/pencils, fml

ctdalek



AITA FOR INTENTIONALLY REJECTING N/e PEOPLE WHO I GO ON DATES WITH?

So, for context, I (M22) care a *lot* about who I pick as a life partner. I'm doing a co-op term as an intern hiring manager at a secretary firm, and I can see so many of my older coworkers in unhappy marriages, and I see the toll it takes on them. They talk so much about the ways they need to "sacrifice" and "accommodate" their partners, but it's clearly making them miserable.

The one thing I've learned from this? I will not start a relationship with *anyone* unless they are precisely the perfect person for me. Despite what the haters tell me, this is an entirely realistic and possible thing to do.

The only problem with this is, as you may know, dating in 2025 is *tough*. Situationships run rampant since no one has the balls to commit to anything. Dating apps are inhuman, exploitative, and atomizing. Most frustratingly, everyone I find on these abominable apps gets super upset when I explain my perfect, foolproof strategy for ending up with the perfect wife.

The first time I started applying this strategy was during a first date at Ennio's. The woman (F21) I was with had a beautiful smile, a delightful sense of humor, and she was incredibly smart. Most shockingly, she was interested in me too. If I were foolish enough to trust my heart instead of pure mathematics, I might have made a mistake and seen her again. Fortunately, I know better. Unfortunately, she did not.

After the date, in the parking lot, I tried to be honest with her (what a lot of people on dating apps claim to want!) and told her that despite having a sensational time with her, unfortunately it was not mathematically optimal to pursue anything further. She seemed confused and hurt, and told me she thought we had something special, and so I tried to explain my reasoning.

I told her that I'm not just looking for a great partner, I'm looking for the *best possible* partner. The only problem with marrying the first person you go on a date with after the first date is that you have no idea how they compare with everyone else you might eventually date. The issue is, I can only judge this *after* I've gone on a date, so I can't tell how any person's relative quality compares to the people I've gone out with before, not the ones I go out with after.

This means that, assuming the quality of people I date is a randomly distributed variable, the odds of any particular person I date being the greatest I will ever date is $1/N$, N being the number of people I will date in my life. I've decided on a very large N to maximize the potential quality pool, and I will enforce this for the rest of my life.

She took this poorly, and for the life of me, I couldn't understand why. I told her it wasn't her fault—in fact, it was the opposite of her fault! Nothing she could have done or said would have changed this outcome. Unfortunately, at this

point, she had already left me alone in the rain. (It started raining during this conversation.)

Other women seem to have different complaints about my romantic technique. Someone I dated later (F24) remarked that the only way this would function correctly would be if I had an objective function which could compare every single person I've ever dated and result in a rankable list.

Well, of course I have that, I said. Doesn't everyone? I go into each date with a complex formula that leverages advanced machine learning categorization techniques to give every single person a discrete score between zero and ten, inclusive. I'm constantly running calculations in my head during the date. Everything she says and does moves the score up and down until I settle on a final value.

She thought this was weird and walked away after I said this, leaving me alone in the rain in the Mel's Diner parking lot. (It started raining again during this conversation, too.)

You see my problem, right? No, it's not that everyone I happen to date takes everything I say as an insult; the problem is how I decide when to settle down. I want to give myself the best possible chance of selecting the *perfect* partner, which obviously requires comparing people objectively and without emotion. But since I *have* to decide on marriage by the end of the first date, I can only decide based on an imperfect judgment relative to the people I've dated before.

I want to pick a person better than anyone I've met before, while minimizing the risk that an even *better* person is waiting just after them. How many people does it take to get an accurate judgment of when a person is markedly better than average? The answer is obvious: N/e dates, clearly. (Proof is left as an exercise for the reader.)

The funny thing is, even the people who don't get rejected out of hand are still uncomfortable with it. After going on my N/e^{th} date, I expressed to the girl on the other end of the table how excited I was that I could now finally put the data-gathering behind me and find someone to settle down with.

She looked confused, and asked if I was "that weird guy I heard about on TikTok who's rejecting people immediately after they pay for his meal." I said no, I was the guy who is going to discover his ideal wife using math.

I guess she hates math or something, because she lobbed her drink towards my face and stormed out of the restaurant, into the rain, before the waiter even delivered our 5-line Lazeez on the Rocks we were going to share romantically.

AITA for believing what they teach you in STAT 230?

Dick Smithers

profQUOTES

ACTSC 231: OLGA KANJ

“ A couple is buying a home for 300,000 dollars... I don't know where they're getting this kind of price.

BU 111: DAVID SWANSTON

“ *Professor*: What are the benefits of unemployment?
Student: People focus more on building their family.
Professor: So because people are unemployed they have more sex because there's nothing better to do? And that causes an increase in population?

AMATH 231: JOE WEST

“ I am invincible.

“ Number twthree. It's either number two or three. I said it like that so you wouldn't hear which one I said.

“ *Professor*: Is this proof rigorous?
Class: No.
Professor: So how do we make it rigorous?
Class: Make it a definition.
Professor: Yes, we will make this a definition.

CO 250: KANSTANTSIN PASHKOVICH

“ This is our main ingredient. This is the water for the soup.

CO 342: MARTIN PEI

“ I get a little uncomfortable when I have to refer to the cycle space in class. My Discord username is [redacted], my Twitch username is [same as prev. redacted], my Codenames username is [same as prev. redacted]... *[pulls up Codenames]* There it is. I should not be showing you games in class.

“ *[Talking about an assignment question]* My solution only has three cases. So maybe there is no hope.

“ I was working all weekend on the midterm. It was a terrible midterm. I'm sure you guys will have fun.

“ Just write things. You'll be fine!

“ This is how induction works on the exam, you do the first question, you do the second question, and by induction, the rest of the exam is done.

“ The open set of points outside C is the exterior $\text{ext}(C)$! Ext of C ... hm.

“ By “hiding some topological details,” I mean, “I don't know what the topological details are,” so you're not learning them.

“ Should we make a new cosmetic brand and call it “Facial Cycles?” I don't know.

“ *Student*: What are the applications of bridges [in graph theory]?
Professor: I don't know! You can be an engineer and build bridges I guess.

“ Just like in real life, I avoid [women].

CO 471: LEVENT TUNCEL

“ I don't think P equals NP.

“ I agree with the rock. I'm as smart as a rock.

CS 100: DAVE TOMPKINS

“ He just thought everyone got ads on Reddit for gay porn.

“ When I go to Reddit, I don't get ads for gay porn.

CS 246: MARK PETRICK

“ You only grant access to your private parts to your friends.

CS 453: ADAM CAULFIELD

“ This virus is older than all of you young spring chickens.

CS 486: YUNTIAN DENG

“ That's funny. I'm making the same kinds of mistakes that large language models make.

“ Somehow I thought 12.95 was greater than 49.

CS 489: SHANE MCINTOSH

“ I don't want to get anyone thrown in a gulag.

CUMC TALK: MICHAEL ALEXANDER

“ This is why I'm giving this talk, because I don't think this should work.

I basically only read the profQUOTES.

MOST PEOPLE WHO READ mathNEWS

CUMC KEYNOTE: FLORIAN GIRELLI

- “ I had a girlfriend in France, when I was in Sydney, which is just about the furthest relationship you can have. So when she heard I was coming to Waterloo, she cried. Not tears of joy, tears of despair. Because she was coming to Waterloo.

ECE 327: ANDREW BOUTROS

- “ *[Less than one week out from the midterm]* I’m going to quickly run over what this course is about. If you forgot... good luck.

MATH 245: BLAKE MADILL

- “ Aw, the good chalk is dead, now it’s back to Crayola. This feels like poverty.

MATH 239: CAMRYN STECKEL

- “ Now that we’ve finished learning to count, we’re going to play connect the dots, but the advanced version.

PHYS 363: KEVIN RESCH

- “ The midterm is going to be 200 questions for 25 lectures in one and a half hours.

PMATH 351: BLAKE MADILL

- “ I have my little niche where I’m quasi-smart. Everything else... it’s just random words, and I’m like “I don’t know how to spell.

- “ Any questions? No? Okay, motion carries.

- “ Do I want to use an open cover? No! Because my eyeballs see sequences.

- “ For once, the basement of MC is exactly where you want to be.

- “ That caused some trauma, but we are unpacking it, as you should.

PMATH 464: XUEMIAO CHEN

- “ Convincing? *[Long pause]* No, right?

PMC PROF TALK: YU-RU LIU

- “ I put your logo in for two reasons. The first is that I really like your logo.

STAT 230: RYAN BROWN

- “ *[Finishes a problem]* We good? Thumbs up guy? *[Thumbs up guy gives a thumbs up]*

PRIDE MONTH, PRIDE TAX



UWaterloo Plush Goose

\$19.99



UWaterloo Plush Pride Goose

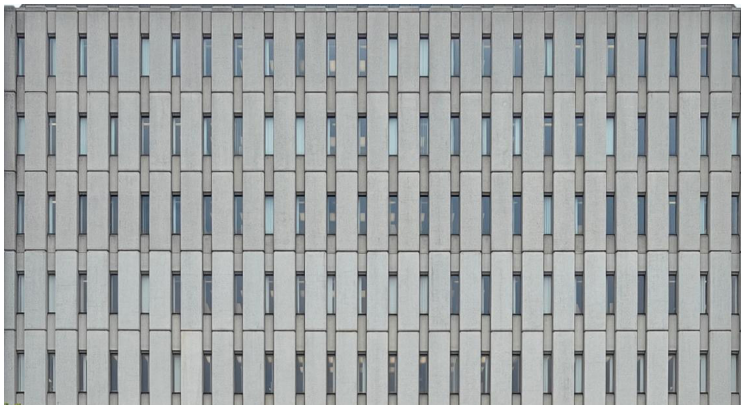
\$29.99

RobbotC

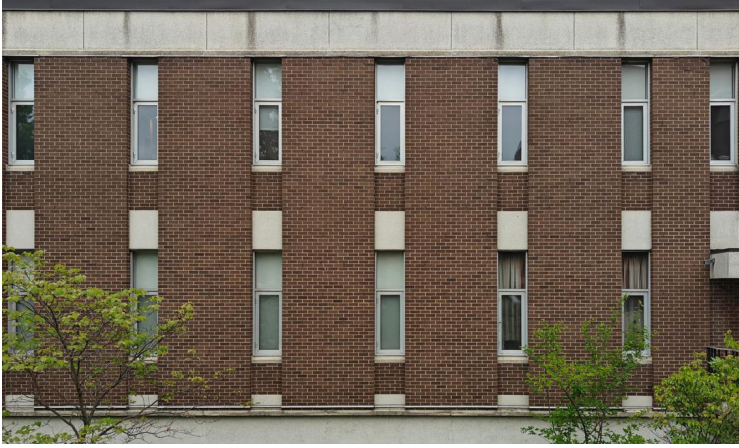


CAMPUS FAÇADES GEOGUESSR

hello my geoguessrs! i have returned from my unannounced sh*tposting break to bring you the fourth edition of campus geoguessr... façades! (that's right i even got the fancy letter so you know it's high-effort.) of course, i must announce the previous (157.7) solutions which were E7, E5, QNC, E6, NH, and OPT. did you figure them out? what...you weren't here last term? ok how about you have a go at these ones! colour images available online as always. glhf!!1 ;)



Eu não sei o que escrever aqui, eu deveria estar fazendo o meu trabalho de matemática, mas como você pode ver, isso claramente não é um filler.



Whole Number Haver

GETTING INTO LEAGUE OF LEGENDS BECAUSE OF ARCANÉ

I was going to write an article to warn of the dangers of deciding to get into League of Legends after watching Arcane, but unfortunately I'm too busy playing League.

Aspiro

SOLUTION

A while ago, I wrote an article titled *List of Profs ranked by something non-offensive* where I gave a list of profs ranked by something not offensive (i.e. they were not ranked by how good they are as lecturers) and asked readers to guess what they were ranked by.

The answer is... they were not ranked by anything, it was just a random list of profs.

easty

RANKING 6N DISCORD GAMES

BLACKJACK — 7/10

I mean it's blackjack, not really that many stakes but they do limit how many chips you can get a day so you can't game the system by leaving and rejoining like in poker. Fun as a background game to play while talking with your friends.

BLOCKBUSTER — 8/10

I keep seeing ads for this game everywhere but I always refused to download it due to despising the "rage bait mobile ad" model. Though I guess since it's a free game on discord now I can make an exception since I'm not using up any bandwidth. Honestly... pretty fun, I thought it would get boring and stale quick but there's actually a decent level of strategy and planning ahead required to get far. Similar vibes to *Tetris* but with a bit more time to think through strategy.

SNAKE SQUAD — 9/10

It's a clone of *Slither.io* but introduces a decently interesting gimmick of crystals. If you eat a crystal while on your slithery escapades you become invulnerable and sped up for around 10 seconds in which you can create carnage to your hearts content. It can let you escape a death circle or power through the biggest snake in the lobby and take them down, the way to avoid it is to speedup if you see an invulnerable person coming towards you which adds a nice game-balancing mechanic to this.

TINY ROYALE — ZOMBIES! — 4/10

Interesting game in concept but I think the execution falls flat, it's a vampire survivors escape horde survival game where you pick up weapons and try to kill off the zombies. The weapons unfortunately don't feel really good in this game and there aren't any movement options other than walking slightly faster than the zombies. Maybe I'm just a game journalist and can't figure out the gameplay but judging by the fact there's a battle pass and microtransactions to level up and get better characters I think you're meant to lose.

Catboy Supremacy

**Give us a bigger office,
and the rag lives.**

**A POSTER ON THE WALL IN
THE mathNEWS OFFICE THAT I
DON'T KNOW THE ORIGIN OF**

MC/DC BRIDGE X M3/MC BRIDGE EROTICA (4/4) BUT IT'S ALL BRIDGE EUPHEMISMS

NEVER BEEN MORE GRATEFUL TO FINISH THIS (LIKE THESE BRIDGES)

"Okay, babygirder, I'll show you how to come."

DC leaned in and dived into a firm kiss, tunnel slightly open and cloudy warm breaths travelling through M3's bridge body. M3 held onto the back of DC's cranium as her warm jambs reciprocated the rhythm of their matching heart rates. At a similar tune, DC tenderly rubbed the inside of M3's beams with his warm, fleshy hand as his tongue shyly entered M3's mouth, ticklishly licking the edge of her lips. M3 could feel her whole body tingle for DC as he traced the trough between her beams and her tunnel.

Her tongue ran beside DC's for a second before he slowly retracted his jambs away, ready for more. He kneeled and pushed himself on his two footers, with his wet drawbridge strongly erect and glistening in the sunset. M3 couldn't help but swirl her finger around her paint-covered tunnel cap at the cinematic sight right in front of her; all she wanted was him and for him to swoon with ecstasy.

"This turns you on, doesn't it?" DC directed, casually stroking his bridge.

"Mhm. It makes me think of how much I want you right now." M3 murmured, longingly staring straight into his brown windows while her lungs expanded with every heavy draw of breath she took in.

"Well then, get your piers up, babygirder."

M3 nodded, raising her piers almost to DC's shoulders and letting her upper slab dig deep into the sharp marble stairs. DC advanced to her before hoisting each pier on top of his shoulders and holding her waist tightly. DC guided his knob to M3's tunnel and slid it up and down her wet path, pushing the boundary of temptation with every twitch.

He slowly inserted his bridge into her open doors, her body taut yet trembling with joy. She mellowly sighed as he glided his bridge out and pushed it back in to reposition.

"Does that feel good?"

"Mhm. Keep going."

DC obeyed, thrusting his hips deep into M3's tunnel while M3 stroked her cap, sending the softest of gasps out of her mouth and shivers down her spine. As his beam buried further into the warm entrance, her hand gripped onto the marble steps, knuckles tense as his cap reached her girder spot.

"Yes, yes, give me more, DC!" M3 shouted from the non-existent rooftops.

DC picked up the pace and bounced his abutment inside her, grunting louder and his juicy, supple slabs rippling faster in the waning sunlight. His blood throbbed through the pipes of his bridge as M3's pulsing, wet paint tunnel begged for another stroke, a blissful wind passing over them both. Just being in this moment with M3 felt so intimate, passionate, something he'd never forget. Even the increasingly chilly breeze couldn't stop them as they still chugged along on the staircase to heaven, climbing to the top of heavenly sin.

"Fuck me harder, D! I want to feel your paint in me!" M3 bridge screamed.

Her soft, thick beams jiggled faster, panting vigorously as DC rammed his bridge into her warm entrance. He slid his hands down onto her upper hips, fingers digging into her pavement at first before loosening his grip and rubbing up and down her guardrails. M3 purred viciously, letting go of the marble and slowly sliding her hand past DC's bearings. Using the tips of her index and middle fingers, M3 subtly stroked his road, striking a mellow chord in his body.

"Oh, fuck, M!" DC gasped. With every next move, he could feel himself floating to heaven, barely grasping onto heavy air and holding the one thing that felt sacred to him. She was coming up too, with her back starting to arch, her arches rising as high as the stars sparkling in her body.

"Oh my god, D, oh my god, fuck!" moaned M3, piercing through the sky as her body flew away.

Her entrance quaked to the rhythm of DC's deck and as following the metronome, she strummed DC's bridge of skin one last time.

"Fuck!" DC screamed, his doors opening up to pleasure as his steel body spasmed from M3's soft touch. Heat radiated from his body as he shot warm spurts of white paint into M3's shimmering body, painting her tunnel walls. The warm paint paradoxically cooled down M3 as they panted in unison, standing together still connected.

As the paint started to dribble out of M3's doors, she took her finger, already covered in her gloss finish, and caught some of the paint. Raising her finger beam up to the dusky sunlight, she messily sucked the mixture off her pointer, slobbering some of their combined paint as lip gloss.

"God, you're so hot, M," DC muttered, still reveling as king of the clouds.

"Then kiss me, D," she whispered, licking the salty edge of her jambs.

As requested, DC leaned in, tasting all her used moans as their frames bolted together like never before.

The fingers DC clawed into M3's hair turned to concrete dust, just like the tips of M3's toes that were still laying on his shoulder. Her hot, reddening cheeks splintered into lumber, her bones tensing up into metal bars while DC's skin firmed up to floor panelling. Grabbing onto DC's jaw was all she needed, yet all she had left as their bodies collapsed, melting down into bricks and glass. Even the white paint that dribbled

onto the marble stairs trickled and rained down onto the new concrete.

On that day, M4 was born.

Dollar Store Person

want to see the original, unfiltered version of erotica? click <https://archiveofourown.org/works/66837751> (or search up bridge erotica on your personal computing devices)

N+1 REASONS WHY ANDOR IS ABSOLUTE CINEMA

HEAVY SPOILERS

- Syril Karn being no one to Cassian, despite all his motivations being based on catching Cassian and gaining justice
- Mon Mothma having a breakdown to the best song in the galaxy
 - The reason? Essentially sacrificing her daughter and having to kill her childhood friend for the rebellion
- Luthen's speech
 - Actually, him being on screen is just peak
 - HIM IN HIS COURSANT FITS >>>
 - What do I sacrifice (for one [1] Klondike bar)? EVERYTHING!
- Krennic being a sassy DIVA of a leader
 - KALKITE 🏠 SYNTHETIC KALKITE 🏠 KALKITE ALTERNATIVES 🏠 KALKITE SUBSTITUTES 🏠
- Cassian being a tourist and IMMEDIATELY being imprisoned
 - ~~Honourable member of the Black community~~
 - Him as a fashion designer in Ghorman, the fit was too tuff
- Bix getting her lickback on that doctor who tortured her
 - Yas queen, slay your enemies
- Dedra Meero's smile in the mirror
 - Her being like "your son calls me mommy too" to Syril's mother
 - Her dedication to the empire being her downfall is especially cool overall
- Syril Karn being the most autistic coded neurotypical
 - He looks like my friend Cobalt and ACTS like him too. It's uncanny
- Major Partagaz. That's it, send tweet
 - The IBS scenes are so well done, showcasing the evil of the empire through bureaucracy
- Timm dying like the traitor he is. 100% deserved, jealous cunt.
- K-2SO absolutely rolling the people he used to serve to help the rebellion
- Kino's "I can't swim" absolutely shattering my heart after waiting for freedom for so long
- Him finally cracking and eventually leading the prison break with one of the best monologues in the show—ONE WAY OUT
- Saw Gerrera being high on fumes the whole time because the rebellion is not for the sane—MOOD
- Marvva's speech inspiring the entire community to fight back
 - This is why elders are important
- Kleya carrying the rebellion on her back, always listening, and getting that listening device out. And, y'know, getting the info about the Death Star to the rebellion. Being considered a 3 man team by the IBS ("Fuck the big 3, it's just big me" type shit)
- Eedy Karn being the most horrific mother of all time but still feeding her son cereal
- The set design for Coursant, specifically the Senate, Mon Mothma's crib, and Dedra's apartment
- Mon Mothma calling out Palpatine, costing her everything including her job as senator, her husband, and her house
- Luthen's ship and the way he curb stomped the empirical space traffic cops with a few fancy maneuvers
- The technology in the show! It's got buttons! And things! Very cool
- Vel being a lesbian and a RICH one at that is the type of representation I wanna see
 - Shame about her partner, tho. RIP [Editor's Note: Why do gay ppl always have to die in media??]
- Krennic interrogating Dedra and going 🏠 🏠
 - "Say the word. Say it." "Death Star."

And finally,

- Wilmon getting hella ladies despite being an engineering major technically. Y'all should take notes fr.

Jochemist

mathNEWS

EPILOGUE TO THE UNFULFILLED

Time and again, the heart aches. Brief pulses littered in the day-to-day. Seeking a vessel, the passion of a passerby. A memory of flesh branded on the mind's eye, buried alive. The curtains draw and open, and draw and open again. At a glance it blurs, distinction subsumed. Grieving whispers burrow through the veins, drowned in hot blood by the next heartbeat.

The breath of the night market fills your lungs, a polyphony of fryer oil, soy sauce, and cheap alcohol sounding against bustle and light rain. Rickety stalls line the street, flanked by gated apartment buildings of yellowed concrete. The uncles smoke in the clearing ahead, dealing wet playing cards around the circle—wet from the rain or spilled beer, you can't tell. It's been a while, mm? You let the summer air lift the age from your skin, the scars from your heart, of a life lived fiercely. There's an unearthly serenity here, calm below baseline. The subway doors open and shut, and open and shut again. At a glance it blurs, distinction subsumed. Grieving whispers burrow a little deeper this time.

You were late to your opening shift, but it'd be fine because your manager was too; you eyed her a ways down the platform. 1 train southbound, 66th and Lincoln Center. Averting your gaze, you landed on someone else. They were turned to face the tracks, idling against the worn tile wall. Fluorescent tubes cast a clinical glow overhead. It's hard to crush when you don't know what the hell it means, huh? But you were curious. Your eyes traced the fraying wire up their figure. What sound traveled through those earbuds, ungratefully blessed to be so near their face? What secrets lay on that camera, dangling but an inch from their chest? The subway doors opened and shut, and opened and shut again.

A whiff of fatty lamb and familiar spice taunts your appetite. The uncle nearest you slams his cards on the table, cackling in disbelief at what just happened. In nature's gallery above, the cicadas erupt into shrill applause, bystanders following suit. Still busy tending the grill, the skewer shop cook glances up and cracks a faint smile. You could stay here forever, honestly. Hands shake around the table—looks like some celebratory shots are in order! The crowd gawks on as golden goodness spills into glass after glass. As if summoned by the clinking cheer, a hearty gale sweeps the string lights off the awning of a nearby tent. The bulbs fly into the branches above, drawing cries and pointed fingers from wary onlookers. Glass-studded wire snakes around the neck. He thrashes and claws, unwittingly helping gravity in its work. The cicadas flee the gallows. The victim orients his marred, bloodied form to face you. You are not welcome here.

The apartment door opened and shut. Oh, work was fine. I like that artist too, we should see a show sometime! Picture? How do you want me? The shutter sounded as cover. They pressed into you, hot breath gently tickling your nose. The red thread hung in stasis. You pulled, beyond rescue from the siren's refrain. The room retreated into the distance as their hunger pierced your lips, eager for more. Isn't this what you wanted?

Passion, punctuated by brief gasps for air. Now relegated to the floor, denim and lace played voyeur to the shifting mass above. Minds coupled, blitzed into slurry, piloting bodies of vice and fever. You became lucid. Peering over their shoulder, the warm city light peered back. You blinked. It's hard to crush when you don't know what the hell it means, huh? The apartment door opened and shut again.

Time and again, the heart aches. Emotion thrust gracelessly into a box, motionless. Brief pulses littered in the day-to-day. That fanged memory of flesh, teeth gnashing, rending the heart. You will draw the curtains this time. It all blurs, distinction void. Grieving wraiths burst through the skin, drowning you in hot blood with each heartbeat.

autumnidyll

HAVE YOU BEEN TO FORDLÂNDIA?

The thing about rich businessmen is that they think they can do anything.

By the 1920s, Henry Ford had become jaded at the car manufacturing industry. You see, it's exhausting to have to manage the sourcing of aluminum from someone else's mine. Or shipping plastics from your competitor's plant. Or worst of all, getting rubber from an overseas plantation that employs slaves yet refuses to lower prices for you despite your global influence and status as the richest man on earth.

Henry was not someone to sit around and pout, though. He was a man of action. So he got to thinking, and about one nanosecond later, he had a brilliant plan that, in only two short decades, turned \$450,000,000 into a whopping \$5,000,000.

What if we vertically integrated car manufacturing? What if we carve out a large section of the Amazon and start a rubber plantation, where we condemn 8,000 workers and their families to eat, sleep, and breathe Ford Shareholder Value™ for the rest of their lives? That way, we could extract way more value out of them than the Brazilian government already was.

And that's what Henry did. You can still visit the ghost town of Fordlândia today, it's only \$8 by boat. I recommend.

no pun indented

RANDOM COOL THINGS ABOUT DELTARUNE

MINIMAL SPOILERS

DELTARUNE Chapters Three and Four released three weeks ago. Chapter Five is coming out in 2026. I still can't stop thinking about it. It has a lot of cool things about it. It also has a lot of cooler things about it. And some warmer things.

- During battles, enemies attack using with bullet patterns, which you dodge with your SOUL in a box, similar to *Undertale*. Also similar is how these patterns change with different enemy configurations. Enemies use different attacks when they're alone or in a team, and some shoot bullets that enhance or interfere with other enemy bullets, which make the "Smorgasboard" and the "Various guys appeared!" encounters really engaging.
- Different enemies also have different ACTs that your party can use on them to raise their mercy, to eventually spare or pacify them. Since your team often has multiple members who can ACT individually, there's quite a bit of thought you can put into being turn-efficient. And, some ACTs can affect other enemies, so it's sometimes worth it to use enemy specific ACTs for their side effects. One enemy's ACT can TIRE other enemies, another allows you accumulate mercy on every enemy if you aim well enough, and more.
- The battle system is often mixed up with unique gimmicks and changes, many times over each chapter. In one battle, you might only be able to ACT, in another, you might be unable to use items. In others, the battle box takes on unique shapes, and in another, you listen to sound cues to react to attacks.
- The dialogue system is used so well and the writing is also amazing. Many characters have unique ways of talking that it makes it easy to tell who is talking even with no name attached. Dialogue sprites are expressive, and even the absence of them can say so much.
- There are several instances where the dialogue choice system is used for horror in increasingly intense ways.
- Bizarre flavor text can somehow be so compelling. "There is no audience." "The air crackles with freedom." "Smells like rotten glass."
- The Toby Fox™ Music
- The Toby Fox™ Humor
- Animations, on one hand, include both accurate piano playing movements and pre-rendered 3D sprites, and, on the other, stock PNG explosions and static sprites sliding off-screen.
- Tiny decisions have minor to massive ramifications in the future. Skipping a specific cutscene in Chapter One changes some dialogue in Chapter Four; backtracking a single room in Chapter One can alter the punchline in many jokes throughout Chapters Two to Four; giving a gift to a specific person in Chapter Two makes your heart hurt much

harder in a specific scene in Chapter Four; there is so many tiny and big things that the game will remember.

- Many little things are only implied. A shared leitmotif signifies some connection; a side comment gives more insight to a past event; a strange reaction hints at secrets; the things in between hide easter eggs.

...play *DELTARUNE*.

↑ ← ↑ → ↓ →

HISTORY LESSON

STRAIGHT ARROW → SUPER TWISTY ARROW, THINK A SNAKE WITH AN ARROWHEAD ATTACHED TO THE END → GARDEN OF EDEN → APPLE OF MY EYE → WILLIAM TELL

and the serpent said to eve "if you got your husband to shoot an apple off of your head with a bow and arrow that would be sick" and eve was an adrenaline junkie so she agreed and convinced adam to do as the snake said, and he did so successfully, and they were overjoyed and high-fived each other. but then god stopped by and they tried to hide the bow from god's sight, but god saw the apple and said "have you been shooting arrows in my garden" to which adam lied and said no, for he knew that what they had done was reckless and dangerous. but god saw through the deception and realized that they had eaten from the tree of doing trick-shots, and that if they were then to eat from the tree of filming it in vertical and posting it on social media, they might "go viral," and god decided this must not happen. so he banished adam and eve from the garden and deactivated their vine account (this was back when vine was around) and changed its password, and set a really hard captcha that mere mortals could not decipher to stand guard in case they tried to reset the password using email verification, so that they may never stand equal with god and his angelic clique of influencers, and instead be condemned to lurk forever. and he made childbirth really painful for good measure too

wacfeld

**You should be concerned
if I were to stop biking to
the university.**

PROF. BENOIT CHARBONNEAU

WHICH VARIABLES HAVE YOU UNLOCKED?

Mark the variable names you've encountered throughout your studies below! Here are some brief notes on the organization method, inclusion criteria, and various other things if you care about that:

- Only sticking to letters of various alphabets in various fonts and the like in this article, since while adding more math symbols that represent operators and mathematical objects and and such would be a lot of fun, there's only so much space I can work with
- Variant forms of a symbol share a box with the “base” version of the symbol, but have a separate checkbox (they're included because `\varphi` is beautiful and deserves representation and because more people need to know about the horror that is `\varpi`)
- Italic and bold forms aren't represented separately (once again due to space constraints), and count as instances of the base character. So, if you've seen the bold form of a letter in here but not the regular version, you can still check it off
- Why are some capital Greek letters missing? Because there aren't any base LaTeX commands for them, and they look exactly like Latin letters anyways (I say, while including lowercase omicron, which looks almost exactly like Latin lowercase o)
- The last two symbols in the Miscellaneous section (Cyrillic “sha” and Hiragana “yo”) are a bit unfair to include since they're not super commonly used, but I wanted to give them shoutouts cause they *do* show up from time to time (Cyrillic “sha” can be used to represent the Tate-Shafarevich group¹ of an algebraic variety over a number field, and Hiragana “yo” has been gaining traction as a symbol to represent the Yoneda embedding² of a locally small category) and I think it would be cool if writing systems other than the Greek and Latin alphabets got more representation in math (if you're a PhD student reading this I dare you to introduce a Indic “Na” in your thesis somewhere)

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L5, it might take five years of dedicated effort to show a clear separation of skill from L6.

Why is this the case? If we picture a discipline like a skill tree, where each node represents answering some question about the domain/knowing about some feature, we can imagine that each level of the tree has exponentially more nodes. But to an outside observer/arbitrary problem within the domain, that corresponds to searching down some random branch in the tree. So to be able to see one step further than another person requires you to fill out exponentially more nodes in the tree. This also means that the more experienced you get, the less immediate benefit you'll get from each additional node, since most people wouldn't even know to ask about questions on your frontier of knowledge.

A couple of limitations to such a thesis: defining "dedicated time" is nebulous, I don't have access to the necessary data to test my hypothesis, and people have different "natural levels," owing to different starting aptitudes and unaccounted training time (e.g. time spent working on similar problems as a kid). You can make the argument that progress looks more factorial than exponential, or there's a cliff where it gets seriously harder to make progress, but for my own psyche I'd like to believe that at no point does it reach a vertical asymptote. It's more that, at a certain point most people run out of time to dedicate to the problem.

Let's look at some other examples.

In climbing, there's a concept of V-grades for difficulty of a given climb. I'd argue that most can climb V1 on their first session, and then with dedicated training they might hit V3 within six months, V5 with one more year, V7 with two more years, V9 with four, which tracks with my own experience, and explains why climbers often feel like they're in a plateau of progress.

When buying things, there's also a power law when it comes to price. Think about a used car costing \$20K, new \$40K, fancy \$80K, luxury \$160K, fancy luxury \$320K, imported luxury \$640K, super car \$1.2M, you get the point. At each level the price doubles because you're looking for a more specific set of features, which means that those who satisfy your conditions have more selling power.

When you look at social hierarchies, you can represent it like a pyramid of who you influence. In order to move up the hierarchy you need to amass enough people that see you as "better." People only have so much time to follow what others are doing, so they tend to follow those directly above them.

So while it can seem like you're not making progress at times, that's actually not the case. It's more that you're building out a skill tree, and you're just working to reach the next level of it. So while externally, progress appears stepwise, to those who know about the skill tree, progress looks more linear.

SaltOverflow

1. <https://www.reddit.com/r/cscareerquestions/comments/18hk323/comment/kd7yze9>
2. An argument can be made that it's not a power law, but more like factorial. But that's harder to explain in a title so you'll have to bear with this white lie.
3. Who you know also plays a large part into your chances, but if you're really good at your job and make yourself sufficiently visible, at a certain point that resolves itself. I will argue that at a high level, it is merit-based—if you lack the skills and the achievements, *p*-hacking will only get you so far.

N REASONS I AM WRITING THIS ARTICLE

- The editors asked me to
- They need to fill space
- I am procrastinating studying for my AMATH 351 midterm
- I am tired from CUMC and out of brain energy
- You there! Yes you! You should go read Joyce's book "Riemannian Holonomy Groups and Calibrated Geometry" if you like fun and special holonomy
- While you're at it, go read Besse's book "Einstein Manifolds" if you're a fan of joy as opposed to sadness
- What is a gerbe?
- There's this really good local metal band called Local Goblin who are awesome. Go see them July 18th
- My fiancée is really lovely and more people should know that
- Stop asking me to be the MathSoc president

notoh

PANCAKES WITH OLIVES

In a delusive fugue state on Sunday, I made some pancakes (from pancake mix, alas, I am not fancy enough to make it from scratch) and afterwards I decided to top them with some black olives.

I would totally recommend doing this, and then snacking on the rest of the can of black olives afterwards. The **mathNEWS** writers who downvote pizzas with back olives in it must be converted.

andoiii



MY FIRST EVER SCRABBLE TOURNAMENT

FT. FORMER mathNEWS EDITOR DERAILED

I started playing Scrabble seriously a couple terms ago when I found out about the UW Scrabble Club, and last Saturday I attended my first tournament, hosted by the Golden Triangle Scrabble Club in Cambridge. And it was a lot of fun! I even got to meet Arie Sinke, one of the top ten players in Canada.

I didn't win any of the prizes for the top three places in my division, which was the lowest out of the four (because my rating was nonexistent prior to this) but I came pretty close. I won my first three games before lunch and went 5–2 in my seven games but had less spread points than the third ranked—spread is the signed sum of your victory margins (positive if you win and negative if you lose), and it's used as a tiebreaker.

Something I found interesting was the age distribution. In my division of ten people, me and David (yes, derailed himself) were the only people in our 20s. There was one twelve year old, a guy in his 30s, and everyone else was at least 50. I think about half were retirees.

One of my two losses was to David, actually, and it was mostly because of an enormous blunder on my part: I left a triple word square near a double letter square, allowing him to play FUTZ for 78 points by sextuple-counting the 10-point Z tile, when I easily could have blocked it the turn prior. But nonetheless, I'm pretty happy with my performance, especially considering it was my first rated event. These were some of the most memorable moments:

- I played ZOUAVES, a historical French class of infantry, for 85 points. My opponent (probably having never seen the word before) held the play and considered challenging, but didn't.

- I tried intentionally playing some obscure words including AOUDAD (a species of sheep) and GAIJIN (a somewhat derogatory term for a foreigner in Japan) to bait my opponent into challenging, which would cost them their turn if they were wrong, but it didn't work.
- However, in my final game, my opponent challenged both of my consecutive plays of WOT (the past tense of WIT, meaning to know) and MOSK (an archaic spelling of MOSQUE).

Speaking of Scrabble tournaments, the UW Scrabble Club is hosting one on July 12th! You can learn more by joining the Discord (which you can find from the UW Student Hub) and register for it with this link:

<https://forms.gle/13qoG4ZXx4XPbJk86>



yalevoylian

A MULTIVARIATE GENERATING SERIES

I WAS BORED ONE FRIDAY

What? Actual math in mathNEWS? Yes, because as a math student I simply can't stop myself. And I hope this can serve as a quick intro to multivariate generating series for people who haven't taken a course involving them yet to spark some interest.

So does anyone remember being in high school and figuring out that $\cos(3x) = 4\cos(x)^3 - 3\cos(x)$? How about $\cos(4x) = 8\cos(x)^4 - 8\cos(x)^2 + 1$? I know for a fact I didn't go past the identity,

$$\cos(5x) = 16\cos(x)^5 - 20\cos(x)^3 + 5\cos(x)$$

if I even got there in the first place. There's just so much beyond the double angle formula!

But high school me would have lost his little mind if he saw what I can do casually now while ~~bored at work~~ being diligently employed. Now the problem.

Find $\cos(kx)$ as a polynomial of $\cos(x)$ for any natural number k (including 0 because I have self-respect). Method: multivariate generating series. That was my intuition and it was a very good one I must say.

First, I did a basic proof of feasibility. I probably had the capacity to do this as a highschooler but didn't know at the time that it would be useful. It goes as follows.

Base case $k = 0$: $\cos(0x) = 1$ which is a polynomial in $\cos(x)$ and $\sin(0x) = 0 = \sin(x) \cdot 0$ and 0 is a polynomial in $\cos(x)$.

Why do we need \sin ? You'll see in a second.

Induction step $k > 0$: Assume $\cos(kx)$ can be written as a polynomial in $\cos(x)$ and $\sin(kx)$ can be written as $\sin(x)$ multiplied by a polynomial in $\cos(x)$. Then,

$$\cos((k+1)x) = \cos(kx + x) = \cos(kx)\cos(x) - \sin(kx)\sin(x)$$

Now, $\cos(kx)\cos(x)$ is a polynomial in $\cos(x)$ by induction and we also expand out $\sin(kx)$ as $\sin(x)$ times a polynomial in $\cos(x)$ by induction. This means we need $\sin(x)\sin(x)$ times a polynomial in $\cos(x)$ is a polynomial in $\cos(x)$. But we know by trig identities that $\sin(x)^2 = 1 - \cos(x)^2$, which is a polynomial in $\cos(x)$ as desired. Amazing! We're done, right?

Nope, only half.

$$\sin((k+1)x) = \sin(kx + x) = \sin(kx)\cos(x) + \sin(x)\cos(kx)$$

However, this one is a lot easier since we may use the induction to get what we want instantly. And *now* we're done the proof.

Second, we set up our generating series and recurrence relations.

I'm going to let $y = \cos(x)$ and then I need to pick another variable to do this series in. Let's go with z . So we want

$$\sum_{k=0}^{\infty} \cos(kx)z^k$$

to be written in closed form in terms of z and y ... assuming it's possible. Which it turns out it is!

We can call this one $f(y, z)$ and then similarly

$$g(y, z) = \frac{1}{\sin(x)} \sum_{k=0}^{\infty} \sin(kx)z^k$$

Now we recurse.

For those of you unfamiliar with how generating series work, what you do is use previous terms, which are accessible via multiplication by powers of z to construct current terms, modifying them as necessary along the way.

$$\begin{aligned} f(y, z) &= 1 + yzf(y, z) + (1 - y^2)zg(y, z) \\ g(y, z) &= 0 + zf(y, z) + yzg(y, z) \end{aligned}$$

To break this apart, the 1 and 0 added to the start there are the base cases from the induction.

Then in the induction step we take

$$\cos(kx)\cos(x) - \sin(kx)\sin(x) = \cos(kx)\cos(x) - (1 - \cos(x)^2) \frac{\sin(kx)}{\sin(x)}$$

and we then sub in $f(y, z)$ for $\cos(kx)$, y for $\cos(x)$, and $g(y, z)$ for $\frac{\sin(kx)}{\sin(x)}$.

Also, multiply by z to increase the power from k to $k+1$. Same deal for $g(y, z)$ except once again simpler. And that's it! We just need to solve for f and g and we're done.

Sparing you do the details (you can do the algebra yourself, I think it's a fun exercise and it's only a linear system), we eventually get $f(y, z) = \frac{1-yz}{1-2yz+z^2}$ and $g(y, z) = \frac{z}{1-2yz+z^2}$.

Series expansion at $z = 0$

$$\begin{aligned} &1 + yz + (2y^2 - 1)z^2 + (4y^3 - 3y)z^3 + (8y^4 - 8y^2 + 1)z^4 + \\ &(16y^5 - 20y^3 + 5y)z^5 + (32y^6 - 48y^4 + 18y^2 - 1)z^6 + \\ &(64y^7 - 112y^5 + 56y^3 - 7y)z^7 + (128y^8 - 256y^6 + 160y^4 - 32y^2 + 1)z^8 + \\ &(256y^9 - 576y^7 + 432y^5 - 120y^3 + 9y)z^9 + \\ &(512y^{10} - 1280y^8 + 1120y^6 - 400y^4 + 50y^2 - 1)z^{10} + O(z^{11}) \end{aligned}$$

(Taylor series)

Look at that beauty. Isn't it amazing.

I love just being able to do this. Baby me would be so proud.

Not only that, but since I have generating series I can get the expansion for powers of y instead of z , which makes finding individual terms significantly easier (left as an exercise for the reader).

I love combinatorics so much, and I wish it was more widely known as a subject because it's very useful if you're like me and have questions about patterns of things you can compute for small cases. It's tangible while also letting you do wild and powerful manipulations. So, hopefully, this inspires you to make your high school self proud by solving a problem you forgot you had but now have the tools to do. And also to do more combinatorics.

別

I REALLY WANT TO BECOME A TECHNICIAN

Yesterday, a technician came to my home to fix the fridge. He is hilarious. He figured out how to fix the fridge, and told me what I should take care of when using it afterwards. Not gonna hide it, I just learned how to fix a broken fridge!!!

I have greater talent in being a technician than sitting here and solving math problems all day. And I would be so chill, if I could visit different people's homes and have conversations with them. Let's quit Waterloo!!!

AKEIJIN

mathNEWS

I'M MR. WORLDWIDE

gridCOMMENT 158.4

ciao friends,

i think i've been having a bit too much fun with the **gridWORDs** lately. i have too many undercooked theme ideas, and they all must be executed regardless, so i give to you the first (and hopefully the last) asymmetrical **gridWORD**. you'll notice there's a lot of abbreviations, and that's because it was quite difficult to make some of these clues work. i give you a half-hearted promise to return to your regular **gridWORD** programming for next time, with less three-letter words, less abbreviations, and more white cells.

last time, i asked you all what your favourite wikipedia pages were, and you all said:

- *Math Tutoring Centre: Bayes' Theorem* 🍕
- *Peanut Free Snacks: Rapid Prototyping*

- *pac gym playlist: Timeline of the far future*

i loved all of these wikipedia pages, but Timeline of the far future was by far the coolest. pac gym playlist, please pick up your prize at MC 3030!!!! ok guys next **gridQUESTION**: where would you most like to visit in the world? not to be cliché or anything but i would really like to visit antarctica. please submit your completed **gridWORD** and **gridQUESTION** answer with your pseudonym to mathnews@gmail.com OR MC 3030 by **monday, july 6 at 6 pm** for a chance to win PRIZE.

good night,

spaghettinhalers

ACROSS

1. Rich soil
5. Caprine Zodiac animal
8. "Exactly!"
14. Jason's ship
15. ___ Khan
16. Continent in this area of a Mercator projection world map*
17. Withdraw gradually
18. Pronoun for 14-Down
19. "Little Women" author
20. With 46-Down, continent in this area of a Mercator projection world map*
22. Indications
24. "If only ___ listened to me..."
26. Pedigree
31. Berlin-based intl. org. for sport science and education
34. Stage signal
35. Continent in this area of a Mercator projection world map*
36. Dove sound
37. Brit's hairy lip strip, slangily
39. Struggle for air
40. "___ and Me!" (Yuumi W)
41. Continent in this area of a Mercator projection world map*
44. Mars, to the Romans
45. Fakes
47. Huge success
49. Indigenous group found mainly in the southeast region of 35-Across

50. Pungent culinary herb popular in cuisines from the southeast region of 16-Across
55. "Star Trek" rank: Abbr.
56. Geographic region in this area of a Mercator projection world map*
57. Pub
59. Genuine, borrowed from Germany
60. In a largely widespread fashion
68. Community-promoting event
69. Continent in this area of a Mercator projection world map*

DOWN

1. Backyard feature
2. Black-and-white cookie
3. Petri dish gel
4. There are 12 in a year
5. Stadium cheer
6. Forever
7. Genre of music originating from the Southern part of 20-Across
8. Medium meeting
9. Beat
10. Tolkien creature
11. Also
12. Decide
13. Total
21. Seven-sided shape
23. Safari antelope
25. Overwhelms with noise
27. Epic story
28. Nicholas II, for one

29. Swell, as a bug bite might
30. Doesn't shut up
31. Frigid
32. Dove noises
33. With 46-Down, continent in this area of a Mercator projection world map*
38. Special Representative of the Secretary-General, abbr.
42. Half of a train sound
43. Intl. Conf. for AI, Robotics, and Control
46. See 20-Across and 33-Down
48. Golf ball prop
51. Celtic language spoken in the northeastern region of 16-Across
52. Historical name of the largest capital city by area in the world
53. Federal med. research agency
54. Granola grain
57. GO, for one
58. Popular blood-typing system
61. Dynasty known for a wall in the eastern region of 35-Across
62. Validation of testing performed at the end of the development cycle, abbr.
63. Pier grp.
64. Black gunk
65. For sure, in text speak
66. United Federation of Teachers, abbr.
67. PaintTool ___



Drop your **gridWORD** solutions off at MC 3030. And yes, we do award points for creativity.

A PERPETUALLY BORED mathNEWS EDITOR

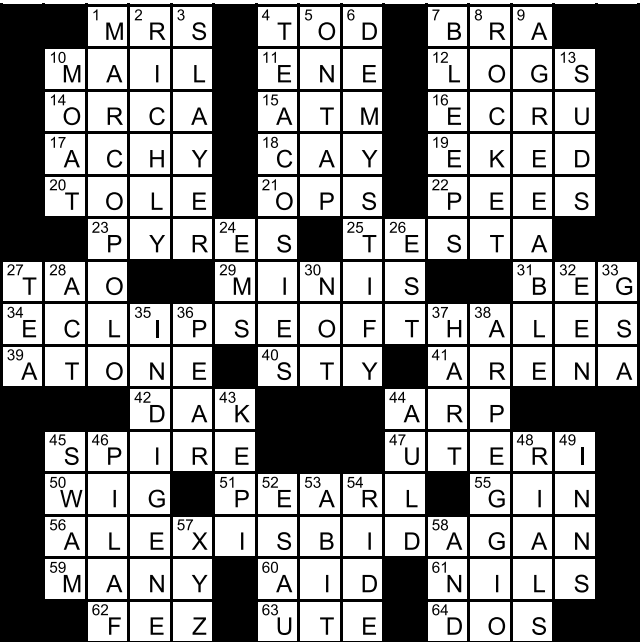
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68														
			69											

Send good jokes to mathnews@gmail.com, please. I'm running out of ideas.

lookAHEAD

SUN JUNE 29	MON JUNE 30	TUE JULY 1	WED JULY 2	THU JULY 3	FRI JULY 4	SAT JULY 5
	No classes	Canada Day No classes again Dog House Repair Month begins	Makeup day for Victoria Day (Monday schedule for classes)	International Drop A Rock Day	May the Fourth of July Be With You	WaterlooWorks Cycle Three begins Mechanical Pencil Day
SUN JULY 6	MON JULY 7	TUE JULY 8	WED JULY 9	THU JULY 10	FRI JULY 11	SAT JULY 12
	mathNEWS 158.5 production night 6:30 PM, QNC 1502		Nunavut Day	Pick Blueberries Day	mathNEWS 158.5 escapes containment	

LAST ISSUE'S gridSOLUTION



PIZZA PIAZZA

Need a break from your assignments?
Join us on **Wednesday, July 9th** from **12:30–1:30pm**
in **MC Comfy** to:

- Express yourself through artistic journaling 📖
- Snack on delicious pizza 🍕
- Connect with fellow math students 🤝

Open to all women and gender minorities in Math!
Sign up now at:
<https://www.ticketfi.com/event/6421/w24-july-undergraduate-pizza-piazza!>



WiM Committee

The audience should be afraid of me.

FORMER DIRECTOR MICHAEL ALEXANDER