snowdozer

2024

$2^3 \times 11 \times 23$

9 770705 041004

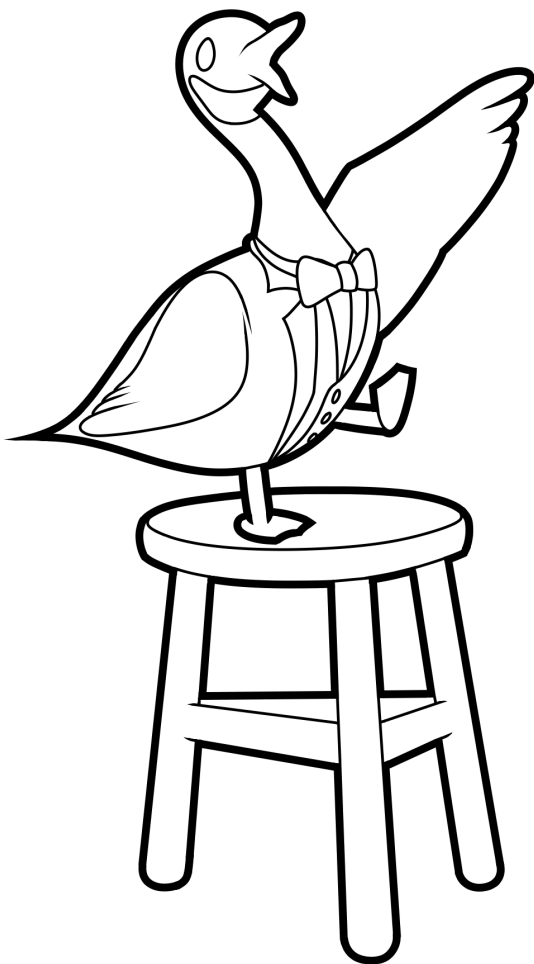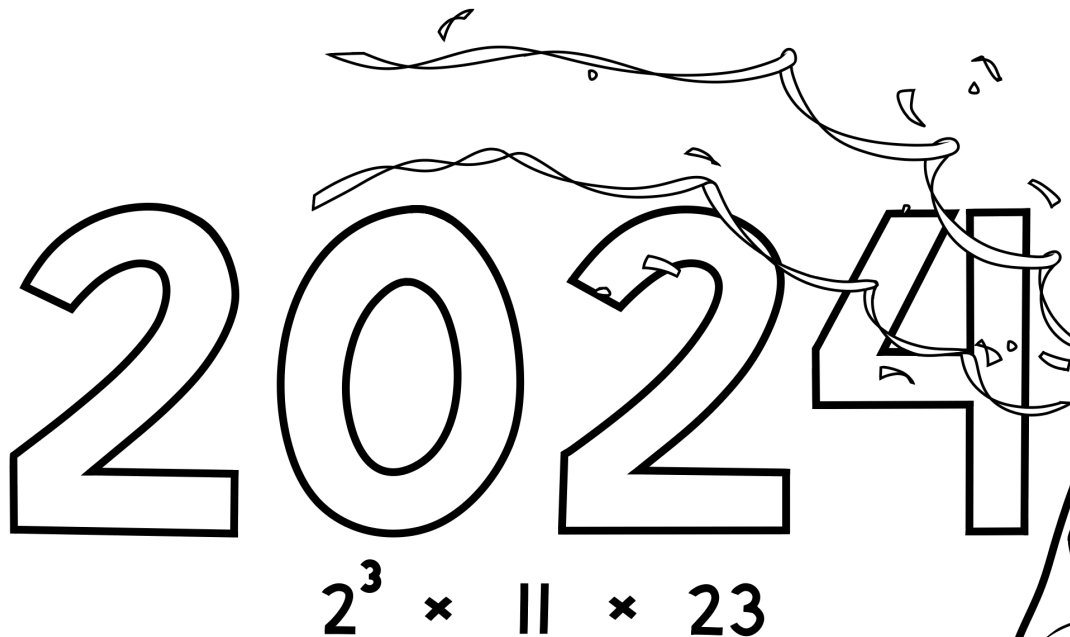# "WHAT WOULD IT TAKE FOR THE UNIVERSITY TO GIVE US A SNOW DAY?"

Warm welcome from your editorship (because you certainly aren't getting it from the Waterloo weather) to a whole new year of **mathNEWS**! And school, I guess. It's been great to see everyone back on campus, and much less great to see everyone back in PAC, but seeing M3 1006 stuffed full of writers on Monday made the cold trek across campus all worth it.

Speaking of that weather, does anyone else feel like it's partially their fault? Fall 2023 had almost no snow and double-digit weather into December. We flew too close to the sun, and now we're reaping the consequences. It's been negative double degrees for like a week, as I'm writing this, sulking in the familiar warmth of MC.

If you're wondering why I'm spending so much time on the weather, there's two reasons. First, I forgot my boots at my parents' house, so I've spent the last week trudging through 20cm of snow in my runners, and I need to make this other people's problem too. Second, I really need to fill space for this **mastHEAD** comment and it's my first time as editor so I'm stretching this as far as it'll go so I don't have to think of something funny.

I'm befuddlED, by the way. Nice to get to know you! Great weather we're having.

Look at that! I killed most of the space I needed to. I guess I could tell you what to look forward to in this issue, but I'm mostly out of space, so I won't. It's a good one, though, folks! Trust me! Would an editor with wet shoes lie to you?

*befuddlED*
Editor, **mathNEWS**

# ARTICLE OF THE ISSUE

Thank you, Popcorn Rock Eater <3, for sharing your research with readers in <u>Rating N Sleep Schedules from my 1A Term</u>. Come by MC 3030 to pick up your prize during regular business hours.

*evaluatED*
Editor, **mathNEWS**

| | |
|---:|:---|
| **Wink wonk** | nuclear winter |
| **snowdozer** | Getting dozed |
| **boldblazer** | Freezing rain according to precedent, but is having snow already not enough? |
| **belugaz** | the day after tomorrow movie irl |
| **Popcorn Rock Eater <3** | If it was snowing Lazeeza… |
| **Andoiii** | Instead of a snow storm, it's a geese storm. Only when the honkening is upon us shall we be free |
| **0.423** | 7ft of snow is my guess |
| **sexy_software_babe** | https://uwaterloo.ca/secretariat/poli-cies-guidelines-signing-procedures/weather-closing-guidelines |
| **dollar store person** | when 0=1 |
| **not_a_UW_student_(YET)** | Mysterious brownies being donated to the dean's office. |
| **Skit** | whatever the opposite of snow falling is. us throwing snow into the air? SNOWBALL FIGHT? |
| **free food enjoyer** | olive pizza |
| **\_\_init\_\_** | A whole bunch of snow |
| **PlatypusGod** | An army of snowmen |
| **rockfacts** | blood sacrifice i think |
| **yummyPi** | Nuclear winter |
| **Whole Number Haver** | 🫡 |
| **別** | An act of God (in the legal sense) |
| **normalparameters** | anything other than snow |
| **peacelovemath** | A sizeable donation |
| **finegeometer** | Rain. |
| **water** | 50 million dollars |
| **APHF** | Why wait for a snow day you can rupture a gas main anytime |
| **cutlet** | temperature integer underflow |
| **jeff** | June 9, 2025 |
| **heli×2** | snow too thick for geese to access grass :( |
| **molasses** | your mom's full name, credit card number, expiry date, and three digits on the back of the card |
| **distractED** | for Needles Hall's doors to be blocked |
| **caffeinatED** | what if it was too cold for the cnd to brew coffee 😵 |
| **befuddlED** | when Stanford does it first |

# "XENOBLADE CHRONICLES 2: TORNA — THE GOLDEN COUNTRY" SEMI-SPOILER FREE REVIEW

*CONTAINS SPOILERS FOR XENOBLADE CHRONICLES 2*

### SYNOPSIS

*Torna — The Golden Country* is a prequel to Xenoblade Chronicles 2 in the form of a DLC. It tells the story of the fall of the Torna Titan, 500 years prior to the main game, through the lens of Jin, one of the main antagonists in XC2, and his driver Lora, on their quest to defeat the Aegis, Malos, who is also one of the main antagonists in XC2.

### REVIEW

First and foremost, even though *Torna* is listed as a DLC, it is in fact a totally separate game. The story for *Torna* spans over 20 hours with 100% completion taking up to over 50 hours (based on Reddit and HowLongToBeat). Although the UI, combat, and gameplay mechanics take inspiration from the main game, they are very different. Some of the mechanics are gameplay improvements, while others are a massive pain.

Before we dive into the differences in gameplay, let's talk about the story. Honestly, the story in *Torna* is better than *Xenoblade Chronicles 2*, and I'll preface this by saying that the story in XC2 is incredible. The story in *Torna* is action-packed and suspenseful. Since the epilogue in *Torna* was already spoiled in the main game, we know how the story is going to end. Thus, we play in anticipation of what actions the characters are going to make to achieve that ending. This adds a charm to the storytelling and makes it stand out, especially compared to the main game.

Onto the new changes in the game. What I like about the game is the new combat system. In XC2, you control a driver who swaps between three different blades, each with a different type of weapon and element. The player uses arts corresponding to the specific weapon and the blade's elemental powers to combo the enemy to death. In *Torna*, the driver and the blade are separate beings. You can only control one at a time, with the blade able to contribute driver combos (*Break*, *Topple*, and *Smash*) and the driver being able to contribute to blade combos. This new system adds a lot more strategy to the game, especially since there are more ways to combo the enemy. Another thing I like is how easy it is to use blade combos. In XC2, you can only follow a specific elemental path, and for every step in that path you have to use a higher level ability. For example, level 1 ice is followed by level 2 water and level 3 wind. If you don't have the elemental ability of the required level up yet, then you are out of luck. In *Torna*, you are able to use any element you want in order to combo. The only downside is that the damage is reduced when you don't follow the elemental paths in the main game, but that can be accepted.

That is basically everything I like about the new features in *Torna*. Now, onto the downsides. While I just said that combat is my favourite improvement, it's also kind of annoying.

Earlier, I said that you don't have to follow a specific elemental path like you do in the main game. But, if you do, you'll deal additional damage. That's good and all, but they don't show you which path to take. You have to swap between characters and check out different elements before you get a prompt telling you that you're following one of the elemental paths. In the main game, there's a diagram telling you which path to take, but not in *Torna*. This usually resulted in me switching characters to figure out whether one of my character's elements is the next one in the path. Considering that there is a cooldown to switching back to the same character, that is incredibly annoying, especially if I swapped out of my healer.

Next is the pouch-and-key item system. In the main game, to get pouch items (temporary buffs) you just have to go to a shop to buy them; same with some of the key items (permanent buffs). However, in *Torna* to get them you have to manually craft them. The issue with that is that you need to collect specific items, which is incredibly time consuming and confusing since it's never stated where an item can be collected. Thus, if you want to craft an item, you have to run around to different collection points and hope that the next collection point will give you the item you need to craft what you want.

Lastly, the thing I dislike most about this game: the community system. In short, the community system is a particular level which you can raise by completing side quests, and it is required for story progression. This basically means that, to complete the story you have to do almost every side quest in the game, and that… is… *painful*. So very painful. Of the 23 hours I spent completing the main game, at least 5–7 of those were spent doing side quests. From what I've seen from people talking online, the community system is the worst part about the game. So, be warned: if you do play this game, do side quests as you go because, as I learned the hard way, it is exhausting and tedious to do it all at once.

### VERDICT

In conclusion, the story and the combat of *Torna* are incredible, but some changes to the gameplay have made it a lot more boring and tedious — especially the side quests. Despite its downsides, it's an incredible game, and I would highly recommend it to anyone who has finished *Xenoblade Chronicles 2*.

**Rating:** 7/10.

*Fried Rice*

math**NEWS**

# OBJECTS FROM THE mathNEWS OFFICE
## IV: DESKS AND THEIR DRAWERS

Well, wouldn't you know? It's the start of a new term. Last term I started a series where, every two weeks, I carefully bypass the military-grade defenses guarding the **mathNEWS** office (wood door) to bring you some of the many secret historical materials buried within. Last volume, I wrote about the **BLACK BOX**, a chunk of a door from MC, and the raw stuff from the times of glue-and-tape **mathNEWS**. If you're interested in those, go find a copy. Or read online if that's your thing.

Anyway, this time it's all about the *desks*. Here I go:

### DESK 1, RIGHT DRAWER

### CRIB SHEET

So, first up, the drawer on the right that says "Weakly Stationary *[sic]*". This drawer includes an old **mathNEWS** "Crib Sheet". From what I understand, "crib" is a word old people use to mean "cheat". So it's a cheat sheet for production. In particular, back then, **mathNEWS** used an in-house language called *mNmL*, developed by Ian Goldberg (then a student, now a professor in the School of Computer Science) for issue production. It was some kind of XML-adjacent language that was processed into print-ready articles. **mathNEWS** was early to get on the web, and in the '90s it used to publish individual articles as HTML webpages, rather than whole issue PDFs. I'm of the opinion that this was bad; having the original PDF for the issue is good, both for reading and especially for archival. Either way, frankly, **mathNEWS** would have collapsed if it still had to use this system, so I'm glad it moved onto greener pastures.



### WATSFIC FINANCIAL RECORDS 1997–2017

Yeah, that's right. This drawer also contains the entire financial records of WatSFiC (Waterloo Science Fiction & Fantasy Club) from 1997 to 2017, all in a black book that's, uh, certainly seen better days. I'll be honest with you: I don't know why we have this. I don't think any sort of fraud could be committed with this, but it would be really funny if it could.

Throughout history, **mathNEWS**' editorship has had a reasonably consistent non-trivial intersection with WatSFiC's leadership, going all the way back to the '70s. It looks like the book was just about full, and the club's treasurer in 2017 was a **mathNEWS** editor, so maybe they threw it in the office for preservation. Not sure. Well, that's good enough for me.
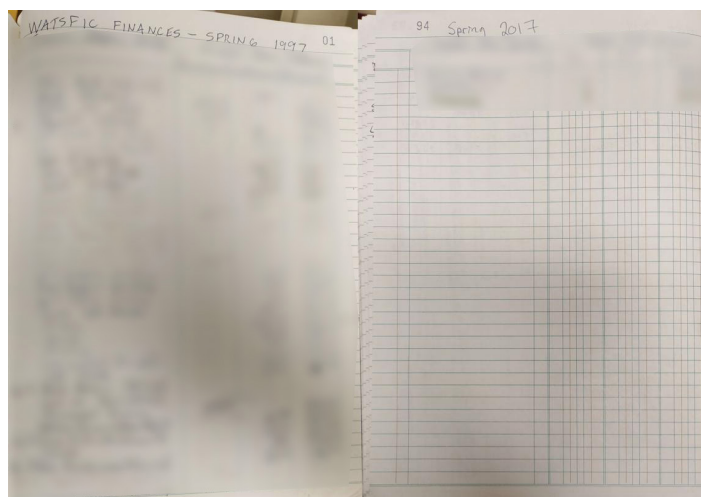


### DESK 1, LEFT DRAWER

### PUNCHED CARDS

Moving on to the drawer on the other side of the table, things get a little more mysterious. The first thing is a deck of old punched cards, emblazoned with the University of Waterloo's logo. These things probably come from the '60s or '70s, most likely for the IBM System/360. They're just data cards: they store a bunch of numbers. Not sure what they mean or why they were kept here.

### MATHSOC SPOON

Next to the punched cards is… is, uh… yeah, a MathSoc Spoon. Maybe for ice cream? I don't fucking know. I don't know why they made this, and I don't know why we have it. It's just here for some reason. Whatever. *[Editor's note: maybe it's for punch.]*
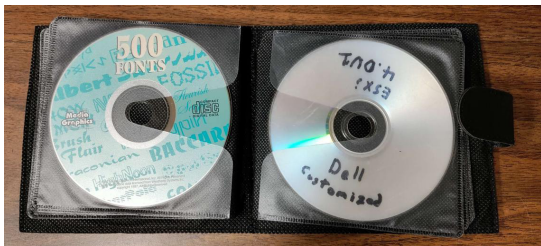
A photo of both is on the next page because I'm bound by the constraints of paper. Frustrating.
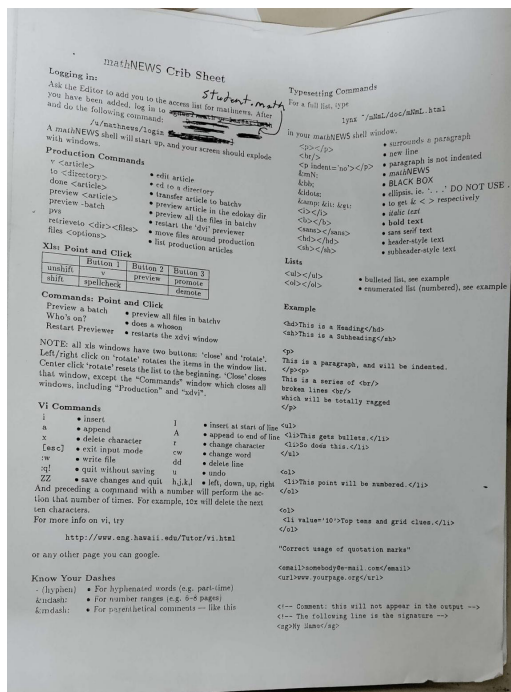
**A CD CONTAINING 500 FONTS**

Wow!!! 500 of them!!!!!! Yippee!!! I bet they all look professional and don't look gaudy or tacky at all!!!!!!!!! (clueless)



**DESK 2, RIGHT DRAWER**

**DAVIS CENTRE BLUEPRINTS**

Somehow — probably at the hands of some enterprising, light-handed **mathNEWS** editor of the time — an original blueprint for the top penthouse floor of the Davis Centre (DC) is in **mathNEWS**' possession. The architects are listed on the right. Mathers & Haldenby ceased to exist in 1991, and IKOY Architects… still exists? Kind of? The website is still up, but I think the company mostly consisted of one guy, so as you'd expect, the website seems like it was mostly written by that one guy. He's retired now. The firm was pretty prolific though; they also designed the Library and Archives Canada Preservation Centre. Well, in any case, although we may never see the top floor of DC, we can now dream of its documented architectural features. Photo in the next column.
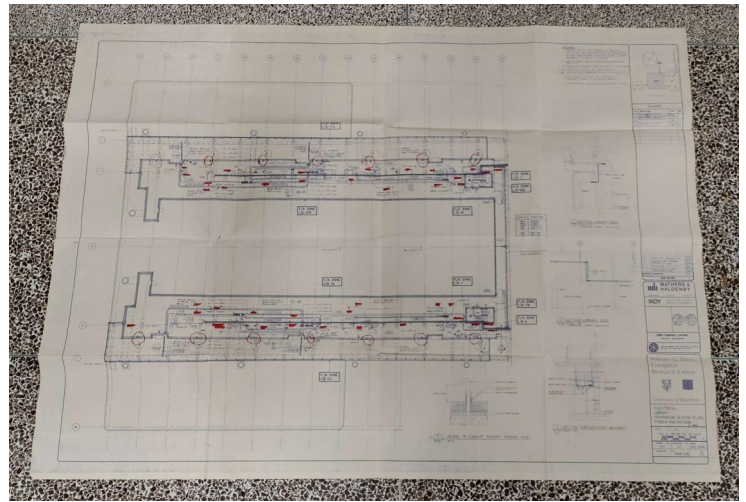


**DESK 2, LEFT DRAWER**

Envelopes. Manila folders. Crazy. See you in two weeks!

*jeff*

# WHEN YOU WERE ENJOYING YOUR WINTER BREAK, I STUDIED THE ART OF mathNEWS

When you were enjoying your winter break, I studied the ART of **mathNEWS**.

When you were "spending time with family", I mastered the N things article.

When you were taking a "mental health break", I stripped down the **gridWORD** to its bare components and then reassembled it from scratch.

When you wasted your days "catching up with friends", I had already written this article.

And now that it is 9:00 PM on **prodNIGHT** and we're going to the CnD for pizza, you ask ME for help with your article?

*Lars Nootbaar*

Notice — Lars Nootbaar's Plan for World Peace will be delayed for another fortnight.

## No qualifications or skills or talents required!

**A mathNEWS PROMOTIONAL BLURB**

# FO(UR MONTHS IN)RT MCMURRAY
## −30 DEGREES FOR $30 AN HOUR

When you think of Fort McMurray, what do you think of? Let's ask our fellow **mathNEWS** writers. I received responses such as "fire" (you mean the one in 2016? or the one in 2017, or '18, or—), "oil" (makes sense, oil sands IS a booming industry up there), "my cousin lives there" and for some reason, 'water'. It sort of makes sense? The city *is* on the intersection of three different rivers.

But what does Fort McMurray look like? One describes it as desolate and dirty—Fort McMurray's just the place next to the oil sands. To another, he envisioned "strips of land"—one city hall, one grocery store, one school, and then the airport. Another thought there was constantly smoke in the air.

I thought the same thing. Until I actually went there.

You see, dear reader, Fort McMurray is a city of roughly 66,000 people. That's the population of Aurora! Or for better terms, more people than Fredericton, capital of New Brunswick. Fort McMurray is part of the Regional Municipality of Wood Buffalo, which adds an additional 6000 people with the addition of all the other small towns in its area. It has a bus system, a college, and *multiple* grocery stores, schools, and malls. City Hall stands 7 stories and the Provincial building higher still. They have a recreation complex that's state of the art, and then some! Sure, it's not the tightly-packed metropolis Waterloo seems in comparison, but it's nothing to scoff at.

I spent my Fall 2023 co-op term in Fort McMurray, Alberta. It was a *ride!* Not only was I living by myself for the first time, but I was also alone in the sense that there was no one I knew even *remotely* in the province. I had a good apartment—my parents convinced me to get it fully furnished, even though it would have cost *way* less to get unfurnished and just get some IKEA furniture delivered up here, and pawn it off Facebook Marketplace come December. Still—my apartment was next to a bus stop and was walking distance to my work, not to mention pretty close to a Your Independent Grocer (I think it's the equivalent of No Frills? Valu-Mart? Whatever sells no name brands). And the pay was nothing to scoff at—roughly $32 an hour? That's without the cost of living adjustment—which was an additional bi-weekly payment to help plucky students like me adjust to the unforgiving North of Alberta. Not like it made a difference—the grocery prices in Fort McMurray were literally 1:1 to Waterloo's, all the way down to $30 for 5 chicken breasts. Hot take—I don't think 5 chicken breasts should be $30.

I started September off pretty roughly—I was on the 4th floor in an apartment with no air conditioning, so as heat rises, you can guess how bad it got. To make matters worse, the wildfires were burning further up north, so when I opened the window, I'd be letting smoke into my apartment. I made use of my gym membership at MacDonald Island, Fort Mac's recreation centre, to stay cool. Fun fact—Mac Island has a library, a swimming pool with *multiple* waterslides, a climbing wall, a whole second floor gym that puts PAC and CIF combined to shame, AND ice/curling rinks! How about that! And Keyano College has an actual ESPORTS ARENA! As in a room with gaming PCs! Why don't *we* have that?

October brought about fall. My work was focusing on a move from our office in Timberlea to the downtown city hall, so that took up more of my time. I didn't find out we were moving until my first day, but still. We made our transition pretty smoothly—we got these really cool stand/sit desks, and I made really good friends with my cubicle-mate. As November settled in, though, it started to get rather cold—in fact, temperatures went to as low as −10 in **early** November! Meanwhile, all of you in Waterloo didn't even reach single digits. Lucky you. I count my blessings that the move allowed me to commute via heated bus, and not walking in −20. We also got two different snowfalls—while Ontario didn't even get an inch. L + ratio + skill issue + skim milk enjoyer. (Fun fact, apparently Ontario is the only province that uses milk bags??? ALBERTA USES MILK JUGS???)

I expected December to essentially be 24 days where 0 degrees was a luxury and the sun never shone (six hours—we only had six hours of sunlight), but surprisingly, we almost broke a record of highest temperature in December—6 degrees on December 13, compared with 7 degrees (remember—both positive), which hadn't been reached since 1944. With days like those, how can you deny climate change? The negative double digits seemed the norm temperature for everyone here—not to mention, I was assured I was getting off lightly compared to the temperatures seen in January and February (which, at time of writing, is currently −36 degrees.). Thankfully, the temperatures leading up to my departure on the 24th (literally being home in time for Christmas? Poetic!) were manageable.

Everything considered, if I were given the option to return to Fort McMurray, I'd say I'd give it one or two years. There's a good reason. For one—I want to stay a little bit longer in Ontario. Don't get me wrong, I love 5% income taxes, but I need to get enough money for a car because you kind of need one in this city. Not to mention—this city doesn't even have a good bubble tea spot. (Well, there's Sharetea, and a Yogen Fruz in Mac Island, but still). But insider information alert! Things might change. Remember how I said there was a mall? A Sephora recently opened up there—according to the Economic Development Department, there's retailers thinking it's worth it to expand up north. So, give or take a year, it might be all set up for me to make my big return!

Thinking of going to Fort McMurray? I say it's worth it—the pay's nothing to scoff at, it's just like Waterloo, and best of all, there's a true sense of community there you can't get anywhere else. So if you're hard pressed and find an opportunity in Fort McMurray—take it. You never know what you might learn!

Skit

# RATING N SLEEP SCHEDULES FROM MY 1A TERM
### EACH OF THESE SLEEP SCHEDULES INVOLVES A LEGITIMATE, VALID, AND REAL 8 HOURS OF SLEEP!

#### THE VAMPIRE: SLEEP FROM 8 AM UNTIL 4 PM

Do you feel tired and unmotivated during the day, and wide awake during the night? Well, why deny your nature? Make the best of those lucid hours by sleeping during the day, and working during the night. You can grab breakfast at 4 PM, lunch at 10 PM, and dinner as soon as Mudie's opens at 7:30 in the blessed AM. There's still time for you to hit those afternoon events: you'll probably be the most well-rested person in the MATH 137 review session. The only issue is that it's incompatible with the essential (I have learned now, from my experiences in 1A, it *is* essential) object of going to class.

**Rating: 8/10**

#### BRIEF NORMALCY: SLEEP FROM 12:30 AM UNTIL 8:30 AM

Nice when you don't have 8:30 AM classes (which I didn't have in my 1A)! It gives you a little bit of time to yourself in the evenings after you come back from swimming at PAC Pool from 10–11 PM, and you still wake up at a reasonable time. But if you're prone to hubris (like I am), then this healthy and reasonable sleep schedule won't last. It kind of makes you feel like you're drowning in the rat race, studying and working and eating and going home to Instagram reels. It takes away that "main character energy" from your academic journey. Nonetheless, I'm giving it another shot this semester. We're doing away with self-destructive behaviours in this year of our lord 2014.

**Rating: 7/10**

#### THE POST-EXAM CRASH: SLEEP FROM 3:40 PM UNTIL 11:40 PM

It is very satisfying to just immediately fall unconscious after writing your two-and-a-half hour long exam. You wake up to several hours of blissful quiet, perfect for continuous, focused study. However, you miss out on a lot of the afternoon/evening review sessions and events that are offered — and you have to make sure to stockpile some snacks if you're on meal plan like myself since the V1 cafeteria closes at 10:30 PM. Additionally, if you use Duolingo, oversleeping could endanger your 1,000+ day streak.

**Rating: 5/10**

#### EXTREME MORNING PERSON: SLEEP FROM 7 PM UNTIL 3 AM

Preserve your sense of peace by sleeping on all your problems. If you've had a long day of studying and going to classes, and are starting to burn out, just call it a day! Go to sleep! You can wake up at 3 AM, all the vitriol of your previous day's problems abrogated by some rest. It's so blissfully quiet at this time, and after a few hours the sunrise will greet you, just around the time when you can go for breakfast. After that you can hit the gym (or the pool!), and then your classes follow. This is, without a doubt, a really nice schedule to get things done — but it's a bit lonesome. You really have to make the time to meet your friends during the busy busy day.

**Rating: 8/10**

*Popcorn Rock Eater <3*

# MY TOP 10 LINKS TO CAT GIFS
### LINKS TO GIFS THAT WILL MAKE YOU MEOW AND PURR

- Chipi chipi chapa chapa cat
  https://tenor.com/view/chipi-chipi-chapa-chapa-cat-rainbow-cat-mizahcimtr1-gif-12949221109051297325
- Two cats talking to each other
  https://tenor.com/view/talking-cats-talking-cats-meme-template-gif-5722862304601027852
- And why he eepy cat
  https://tenor.com/view/eepy-and-why-he-eepy-laughing-crying-emoji-animals-with-captions-cat-meme-gif-25115470
- Hey hey you you cat
  https://tenor.com/view/watch-a-fat-cat-dance-an-american-dance-girlfriend-meme-gif-6193372123771306115
- Huh? cat
  https://tenor.com/view/huh-cat-huh-m4rtin-huh-huh-meme-what-cat-gif-13719248636774070662
- Happy happy happyyyyy cat
  https://tenor.com/view/happy-happy-happy-happy-happy-cat-happy-dancing-cat-gif-716006509349864265
- Get out of my head cat
  https://tenor.com/view/get-out-of-my-head-meme-cat-meme-gif-21336536
- Typing cat
  https://tenor.com/view/typing-laptop-cat-busy-cute-gif-5822667
- Pop cat
  https://tenor.com/view/pop-cat-gif-20459297
- Oh the misery cat
  https://tenor.com/view/fsq-gif-25591733

*Notaklutz*

# FAIR REDISTRICTING PRACTICES PART 1

Hello everyone! I have a hobby stemming off from my interest in world maps as a kid, that being redistricting. When you sink in numerous hours to a hobby you started off just for fun, you tend to find out some things on your own. Mainly, they are the best practices for gerrymandering and likewise the best practices for fair redistricting. I would say it is easier to gerrymander, so my series will delve into how to redistrict maps in a fair manner.

At this point I've probably sunken way too many hours into making district maps for no one else's enjoyment except mine. Regardless, it still is very gratifying to see the end results, and the process feels more like a puzzle than a chore. If you want to have a go, I recommend `ridingbuilder.ca` or `daves-redistricting.org` and to start off with a smaller province or state. Lastly, don't fret, since there will be plenty of math still involved.

❧

### WHAT IS REDISTRICTING?

Suppose you want to elect a number of members to some legislative body. Well, assuming your political system only has single-member districts like in Canada and the US, each member to be elected needs to come from one district, where each district has about an equal population. In general, populations don't stay that stable, so every once in a while you will have to change the boundaries of the districts to ensure each district's populations are back to within some reasonable deviation from each other.

### FAIR REDISTRICTING

One may think that the best way to redistrict is to disregard any election data and blindly make a new map only knowing the population data. Doing that would surely prevent gerrymandering since you don't have partisan data available, but how would you ensure it be fair? You could get a computer to make a map for you free of human influence, but it may still not be fair.

A fair map has to make sense. It needs to take in account of the messy real world. If there is a mountain range in the way, you wouldn't make a district that goes across it. If you had two communities whose population size makes a district, but they are not even connected directly by road, you wouldn't make a district that combines the two together. If there is a body of water separating two areas with no bridge in between, you wouldn't want to connect the two sides together in a district.

There will always be messy decisions involved in making a fair map. What you should do in one case, may not be what you want to do in another, all based on the context of the map you are working with. The main part is that you should be able to justify why you made certain decisions over another. Often in every map, there will end up being one district where it looks a bit odd, but at least the $N - 1$ other districts are fair.

Let's get into the basics.

❧

### POLITICAL GEOGRAPHY

One way of making a fair map is to consider strictly one political geography. There are many levels of administrative boundaries available to you. Take some time to look through any of them for any that are already about the same as the district size you want.

Some examples include the old Ontario electoral district of Guelph, defined as just the City of Guelph, or the new Ontario electoral district of Waterloo, now defined as just the City of Waterloo. It works equally the same when an administrative division is worth about a whole number of districts such as Alberta's Lethbridge-West and Lethbridge-East.

One problem is that American cities tend to have super messy city boundaries, so you will need to clean up the shape a bit first. County boundaries will tend to be what you end up considering more often since they have cleaner boundaries.

### HISTORICAL GEOGRAPHY

Sometimes, you can use historical geography, although this would mean that you have to either know it already or do some research. For example, sometimes you can use pre-amalgamation borders within a city. Such is the case with the six Scarborough electoral districts in Toronto.

### CULTURAL GEOGRAPHY

This is one of the finicky parts in making fair districts. For the US, there is the Voting Rights Act. The plentiful court cases should tell you of its importance. This means you can take into account non-partisan population data of minority groups of interest to make certain districts, known as "majority-minority" districts. Doing this can make your boundaries look weird and may require sacrificing other aspects of fair redistricting.

In Canada, there is a separate concept of "community of interest" that you should not violate. This means you should not split communities of interest and try to keep them reasonably together in one district. The term is kept vague on purpose. I've often seen issues raised with redistricting committees where some First Nations reserves became split between two districts and the "community of interest" argument was used to shift the boundaries over.

### PHYSICAL GEOGRAPHY

Mountain ranges and bodies of water make for great physical boundaries between districts, because there tend to not be many connections that go in between them connecting the two areas on either side. When you cross a district between

them, it should only be for a justifiable reason such as in Michigan's Upper Peninsula. This can mainly be justified if there is a strong connection available between the two sides. Otherwise, these become hard boundaries that constrain where your districts can go.

Physical boundaries can be man-made too. Nothing is stopping you from splitting a city's two districts using a convenient interstate highway. Sometimes they tend to be as imposing as mountains to a city anyway. Another example is San Francisco's Market Street being a great case for a boundary you can use.

<div align="center">ẽ</div>

I hope this gives a place to start off making some district maps of your own. See you in Part 2!

<div align="right">*boldblazer*</div>

# HOW TO CREATE A METAL SPOON FROM SCRATCH

**Step 1:** Obtain stainless steel.

**Step 2:** Sketch a detailed design of your favourite spoon dimensions, including handle length, bowl curvature, and bowl radius.

**Step 3:** Place the metal piece in a forge and heat the entire structure uniformly to approximately 1050°C and allow for gradual cooling within the forge's controlled environment.

**Step 4:** Transition to the shaping phase by positioning the heated metal on a dedicated anvil. Employ a ball-peen hammer to meticulously shape the handle, adhering to the predetermined design parameters.

**Step 5:** Implement iterative shaping procedures employing precision hammers and anvil manipulations. You should be revisiting the annealing process to temper the final structure over the course of 15 years to achieve a perfect spoon.

**Step 6:** Embark on the finishing processes by employing progressively finer grits of sandpaper to meticulously abrade any residual surface imperfections. Subsequently, initiate a multistage polishing regimen, incorporating proprietary compounds and a buffing wheel to attain a mirror-like surface finish, elevating the spoon's aesthetic allure.

**Step 7:** Drink soup.

<div align="right">*ZestyPickle72*</div>

# WHY LOVE MATH?

The day is sometime around last December. I am working on a blackboard, having tried to prove a certain inequality for an assignment for the better part of an hour. I finish my proof, neatly written down in a corner of the board in five lines, and proclaim my success. However, another student points out the obvious: they had already helped me prove this inequality, albeit with some casework, half an hour prior. Why didn't I just transcribe that proof into my assignment?

For a moment, I am surprised at myself. They're right, of course. Writing down the proof using casework would have been a lot easier, and would have taken far less time. I'm not gaining any extra marks for doing this, either; assignments are graded for correctness, not elegance. The little space I save with a shorter proof on its own hardly justifies the effort I spend to achieve that gain.

When I think about it a little more though, I realize that there is something else to it. Why did I decide to keep looking for a solution without using casework? It was because of my interest in the challenge of finding a "nice" solution. It was separate from the desire to finish the assignment or get the marks for the course. It was born out of my personal appreciation of the cleanliness of just a sequence of inequalities with no extra fluff attached. My efforts were not for anything or anyone else, just myself. And if I gain personal value from it, then it is indeed worth the effort to me.

And when I reflect on it, I realize that this is why I do math. For me, math is not primarily about using it for any other purpose, though that is of value. Rather, it is mainly about the satisfaction of coming up with a nice solution, a proof that goes along a pretty line of reasoning which shocks you and makes you laugh when you hear its twists and turns, or a proof that you write up and you can only smile when you see how short and neat it is, or a proof that initially looks absurd until you see all its pieces fall together. To me, math is about when your lecturer takes the derivative in an esoteric proof in an algebra lecture. It's about seeing pi show up when you least expect it, and then when all the layers are stripped away to reveal the circle hidden inside. It's about when you realize that one little trick you can do to solve that integral in two steps. Math, and the proofs within, tell a story, and for me, it's about being taken along that storyline. In that way, it's not all that different from art.

Math doesn't have to be pretty to you. After all, beauty is in the eye of the beholder. It also doesn't have to always be nice and elegant — if I was running down the hours before an assignment was due, I probably wouldn't have put the effort into finding the no-casework solution. See, you're allowed to find your value wherever and whenever you choose. I just hope that maybe someone reading this takes a look inside themselves and realizes that this is, in some part, why they too love math.

<div align="right">*hyperlynx*</div>

# prof**QUOTES**

### CS 246E: BRAD LUSHMAN

66 Well, at any rate, I guess there's no point being funny in lectures anymore since that's the last (**mathNEWS**) issue.

### ECON 101: MIKAL SKUTERUD

66 Country music is like nails going down a board.

66 …so if somebody needs a bong to smoke some pot with, they're gonna buy it from me and not anybody else.

### MATH 247: STEPHEN NEW

66 It's a Pringle curve.

### MATH 249: SOPHIE SPIRKL

66 This is terrible notation, don't use it.

### PMATH 370: BLAKE MADILL

66 It's called "eventually periodic" because—not to be sarcastic—but it's eventually periodic.

66 My wife recently convinced me to do a spin class. A spin class is a stupid class where you sit on a stationary bike and a mean old lady gets you to do way too much. I couldn't walk for three days.

66 My kids are, so far, useless.

### ECE 124: ANWAR HASAN

66 Veryhighspeedintegratedcircuit Hardware Description Language (VHDL).

66 I don't want you… to go through suffering… that I go through…

66 If you do bad on your midterm, do better.

### MATH 119: FLORIAN GIRELLI

66 Academie Khan.

66 Someone is allergic to level curves. It could be this guy; you never know.

### CS 489: YOUSRA AAFER

66 No one is an expert in C.

66 *[Pointing to recommended textbooks]* So, you are not expected to buy these.

66 How many of us write bug-free programs? All of us, obviously.

66 The best thing you can do is not have a car. Don't have a car.

66 What if after listing the files I delete the files? It's a great feature, you don't have to care about the files that you don't have any more.

66 So in this course we will be using a lot of xkcd cartoons, and they are very helpful in understanding these concepts.

### ECE 459: JEFF ZARNETT

66 There are YouTube videos you can watch instead, if you'd rather have me talking at double speed rather than normal speed.

66 Back in my day, we had to write code using ones and zeros, and sometimes we didn't have enough ones.

66 Masks! Yeah, you get the Bane treatment for this term.

66 We can do this. We have the technology.

66 There is a nonzero number of errors in the lecture slides.

66 If you're using JavaScript, just use one of the eight million linked-list packages.

66 Another idea is: spend money! Especially if it's not your money.

66 Yes, you're giving the CPU instructions, but it will do whatever it wants.

66 Making a sequential program is already hard; making a parallel program is even harder.

66 Keep in mind that product managers love having features because features sell stuff.

66 Back in the day, we had to walk to school in the snow… which, admittedly, you had to do today as well.

66 The compiler doesn't care! `const` is just a nicety to try to help you.

66 Suppose change is necessary. Change is scary, but it does have to happen.

66 When something goes out of scope, it is eligible for garbage collection, and the garbage collector will take it, crush it, and you will never see it again.

66 There is actually a cost to collecting the garbage.

66 Users don't care. They want good stuff and they want it now. In fact, they're quite unreasonable about this sort of thing.

❝ You have a node, you put it in a linked list, and when you take it out of the linked list… Time to die, Mr. Bond.

❝ There are some UNIX APIs that take unions. It is regrettable but it is a fact of life.

❝ Here's four bytes, you figure out what it is.

❝ Writing an HTML parser? Don't do that yourself. "Oh, but I can use regular expressions!" No, you can't. HTML is not regular.

❝ So I said, "Okay, I'm gonna sit down, and rewrite this thing in Rust."

❝ There is a certain kind of theory in JavaScript: if your code isn't working, just sprinkle in more `await` until it works.

### CO 485: DAVID JAO

❝ We don't want n to be too small; otherwise, things get a bit degen.

❝ I'm unsure if Tom is a standard name in cryptography: I'm only aware of Alice, Bob, Carol, and Eve.

❝ "Course evaluations" is more based than "course perceptions."

❝ $\mathbb{Z}/4\mathbb{Z}$ is not an integral domain, which tells us that 4 is not prime.

### CO 450: WILLIAM COOK

❝ I wanted to use the fewest number of words to get them to stop talking.

❝ You know why I'm doing this, because I'm gonna die.

### CO 487: ALFRED MENEZES

❝ Reasons not to take the course: A student in W18 said it's dank, meaning unpleasantly nasty.

❝ Reasons to take the course: A student in W18 said it's dank, meaning really awesome.

❝ William Tutte built the world's first electronic computer. Looks good on a resume. He didn't know LeetCode, so he wouldn't get a job today.

❝ The NSA "fixed" DES the way you would fix a cat.

### CS 341: ARMIN JAMSHIDPEY

❝ Do you know what happens when the class isn't noisy? Then I'm not happy. Do you know what happens when I'm not happy? The exam becomes harder and harder.

❝ Did I tell you that anything good comes with a cost? If you don't believe me, think of an ice-cream.

❝ The sun is shining, the birds are singing… These are assumptions. This doesn't happen in reality.

### CS 349: DANIEL VOGEL

❝ We're gonna use Chrome, so sorry if you don't like Google. I mean, they are *mostly* not evil.

### CS 350: BERNARD WONG

❝ How many search queries do you think Google runs per hour? Has anyone worked at Google? Can you tell us…? I don't know.

❝ Without protection, a lot of bad things could happen.

❝ *[Raises hand]* I think something's wrong; please kill me.

### CS 370: JUSTIN WAN

❝ Even if you think a question is easy, if you've spent over 15–20 minutes on a question [on an exam], it clearly isn't that easy to you anyways.

### CS 371: GREG WANG

❝ Subnormal numbers are really the second class citizens here.

### CS 492: DAN BROWN

❝ You've all had the experience of having your resumes dropped in the bin.

### MATH 245: STEPHEN NEW

❝ You don't have to read this chapter (Jordan Canonical Form) now, but if, say during Christmas, you don't want to talk to your family members, you can read it.

### PMATH 351: ALEXANDRU NICA

❝ Same as Neo from The Matrix, I begin to look for a contradiction.

### PMATH 945: JASON BELL

❝ I took a course in spectral sequences and looking back… I don't know what he was doing. Maybe he didn't know what he was doing.

❝ I don't think I'm ever gonna teach this again.

**PSYCH 232: CHRIS BURRIS**

66 You know, there was this old commercial of "how many licks does it take to get to the centre of a Tootsie lollipop?" Now, how many bad acts does it take to become evil?

66 We should be talking about evil, why are we talking about chair? *[Switches to evil tone]* Unless you put nails on it.

**STAT 241: MU ZHU**

66 Imagine this is a thirty-thousand-dimensional space.

**STAT 341: MICHAEL JOHN DAVIS**

66 There is sadly a finite number of Pokémon. I guess it makes catching all of them an attractive solution.

**STAT 333: PENGFEI LI**

66 I know that you are all worried about the midterm. I am worried too.

66 I emailed the TA and told them to be generous when marking. Then I emailed the TA for question 2 and told them to be very generous when marking.

# I WAS TOLD THERE'D BE PIZZA

Dear **mathNEWS** reader,

Hello. Those who conscripted me informed me that I could write absolutely anything in exchange for pizza, so I felt like I had no choice but to accept this offer. Except I feel like I need to contribute *something*, so in exchange for feeding me, they can have a list of media that I enjoyed because I enjoy pushing my agenda onto unsuspecting individuals:

- Hitchhiker's Guide To The Galaxy: always keep a towel on you
- Welcome To Night Vale: All Hail The Glow Cloud
- Spaceballs: once got me a bonus point on a quiz for a course I wasn't even enrolled in
- House of Leaves: a collection of notes from a blind man about a film that doesn't exist about a family that doesn't exist living in an impossible house that's bigger on the inside than the outside. The footnotes have footnotes have footnotes
- Fifteen Dogs: why is every book about dogs sad in some way?

Alright, that's it from me. I think I've contributed enough to society in exchange for my pizza.

Peace.

*relatively sane*

# AN ODE TO UNNECESSARY MEETINGS

I can feel my vision start to go and my youth slipping away as I stare at this Teams meeting. I'm not sure how many more times I can be told to make sure to bring my WatCard before the world starts melting away and nothing makes sense, nothing is real, everything is WatCards, you look down at your hands and they've been replaced with WatCards, "WatCards… WatCards…WatCards…" they chant.

I'm pretty sure my tombstone will read "Died from Bureaucracy", and everyone will have seen it coming because there will have been 2 meetings, 4 emails, and 3 forms to fill out confirming it.

If I'm being dramatic it's only because all of these unnecessary meetings and paperwork are infinitely more dramatic. Or maybe I just need to go to sleep.

*peacelovemath*

# 13 YEAR OLD BEATS TETRIS
## FIRST HUMAN BEATS THE CLASSIC GAME, INSTEAD OF THE GAME BEATING THE PLAYER

Hi. I'm writing to you, from 3 AM on a weeknight ignoring my academic responsibilities. I realized I could never fully capture the history and triumph of this feat in under 1000 words but I just think this is so cool and amazing to share. This made news headlines around the world. But you might be thinking…

*"How does one beat Tetris?"*

This is a very reasonable question. When the game was created in 1984 for the Nintendo Entertainment System (NES) by Soviet software engineer Alexey Pajitnov, the game wasn't programmed with an ending. *You're not supposed to win.* The player arranges falling blocks, tetrominoes, where completed horizontal lines clear and grant the player points. The game always ends in the same way—where incomplete lines reach the top of the playing screen. That was until 13-year-old Tetris prodigy, Blue Scuti, played the game until it crashed at level 157.

Now you might think "Well that isn't exactly *winning,"* but the history and efforts of the competitive Tetris community make this a truly monumental achievement, **in my non-expert opinion.**

There are many challenges to achieving such a feat. So I will provide a brief taster and recommend further resources you can look into if you're interested!

First challenge: the shapes fall faster and faster as you progress through the levels. The max speed is reached at level 29, which the creator of the game never thought people would get past. This was once considered the furthest anyone could go in the game.

Hypothetically, if you could move the pieces fast enough at max speed, you could just keep playing. But, you couldn't move the blocks fast enough by holding down the side-to-side buttons.

It was only in 2011, 27 years after the game's creation, that Thor Aackerlund achieved level 30 with a technique called "hyper-tapping" which sounds exactly like what it suggests: tapping *really fast*. Even then, the level world record never surpassed level 40. Keep in mind, hypertapping players were mashing buttons *super* fast with blocks falling at top speed and strategically placing blocks with extreme precision and little room for error.

In 2020, a player named Cheez developed a technique called "rolling" and was the first player to reach level 40. It's a multi-finger technique that involves holding down the side button and tapping the back of the controller. It allowed for players to manage top-speed Tetris much more easily, and was quickly adopted among competitive NES Tetris players. This was literally game-changing, pushing the level world record over level 100 in the span of ~2 years.

Next challenge: the game starts making weird colours.

Tetris normally has a set of 10 colour palettes that repeat. But the game was never made to get that high, so it gets stressed and starts spitting out weird colour palettes after level 138. Some of these palettes are nearly impossible to see: imagine a black block against a black background. But competitive Tetris gamers beat through these levels with sheer determination.

Next challenge(?): **crash the game.** BEAT IT(?!)

Since the game is Old, the code is Not Meant to handle high levels. At high levels, the game becomes more and more unstable, and certain triggers can completely crash the game.

In 2022, research by HydrantDude determined the earliest level a game-stopping glitch could occur is at level 155. It has a specific trigger of entering the level by clearing a single line.

So back to the achievement in the title of this article: Blue Scuti, a 13-year-old, crashed this 34-year-old game with a long history of players pushing their limits and the game itself at level 157. Long considered an unbeatable game, Blue Scuti's game was the first time in history the game *didn't* beat the player.

Further resources, all videos on YouTube:

[Overview] aGameScout's video (16:47) "After 34 Years, Someone Finally Beat Tetris"

[Overview] ErICX's video (21:44) "How Blue Scuti Beat Tetris After 34 Years"

[Code explanation] HydrantDude (1:49) "why the colors glitch out at level 138"

[Code explanation] HydrantDude (5:06) "why clearing a single at level 155 crashes nes tetris"

[Plugging my own interests as a Nerdfighter, John Green has made some insights from an anthropological perspective of how humans have gotten so good at Tetris very quickly.]

vlogbrothers's video (3:51) "Why Are Humans Suddenly Getting Better at Tetris?"

[Continuing to plug my own interests, one of my favourite podcasts: The Anthropocene Reviewed, also by John Green. He discusses the history of Tetris but also gets sappy about it.]

The Anthropocene Reviewed (0:00–10:04) "Tetris and the Seed Potatoes of Leningrad"

*heli×2*

# YOUR LIFE IS MORE INTERESTING THAN YOU THINK

This morning, two Lyft drivers canceled on me; I was headed to Toronto. One finally came, but as I stepped into the car, I was hit by a bit of a bombshell.

*"You're not going to the airport?" my driver asked.*

*"Nope, just downtown."*

*"I would never have accepted this ride."*

Turns out, Lyft pays terribly for non-airport rides, which is why Lyft was 60% the cost of Uber this morning. Regardless, I had to find a way to deal with this terrible introduction.

So, I got the driver talking, and eventually I learned he was in a tumultuous financial position. We discussed his crypto investments (??), and I must've gained back the initial trust I lost because he began to share some of his family issues with me. It turns out he was having a crisis with his grade 12 son.

"My son's biggest life problem," he said, "is that he thinks his life is way less interesting than all his friends'."

He's always studying, never traveling, gaming, shopping, or partying like everyone else. And this was intriguing to me. On one hand,, there must be bigger problems than feeling uninteresting, while on the other hand, being socially outcast or feeling separate really *is* one of those major life issues everyone needs to solve at some point in their life.

Don't we all think we're less interesting than the rest?

☙

A few days ago I was chatting with a new friend in class. Through a series of weird conversation topics, flowing from sports gambling to K-pop to pushups, we landed on self-improvement, and he had a thought-provoking idea to share.

Everyone has completed nearly everything they ever set out to do. They just forget them when they finish them.

This got me thinking, so today, I took a moment to look back on the last seven days. As it turns out, even in that short time frame, I've done a bunch of interesting things! I had completely forgotten nearly all of them. I dropped a class. I benched 135. I cooked pad thai. I got a raise at work. And I ordered a business card. Heck, I'm in Toronto right now, procrastinating my job applications.

☙

So, I think it's true. You're more interesting than you think. It's like your assignments or to-do list items: they vacate your mind the moment they're done. I encourage you to take a moment to reflect, and remember all the things you've done for yourself just in the last week.

Be proud! It's gonna be an interesting year.

*no pun    indented*

# ECLIPSE
## *GO SEE IT*

An empty mountainside, bathed in shadow. Quiet, but for the calls of a single bird. A dark sky; the sun's corona shining white around the new moon. It was the most beautiful thing I've ever seen.

This was August 21, 2017, just before 11:30 AM in eastern Oregon. A total solar eclipse.

It took twenty hours of driving to get there, for two minutes of totality. Completely worth it. Ever since, I've been looking forward to seeing another.

April 8, 2024. The next North American solar eclipse. And the line of totality passes less than forty kilometers from Waterloo!

So go see it. Yes, you. *Everyone* should see an eclipse sometime, and this one's *right here*!

Yes, there's class that day. So if you're a student, skip class. If you're a teacher, skip class. (But maybe inform the students

first!) And if you're a student with a quiz that day, switch to a different class that doesn't have one.

I'm serious. A total eclipse *right here*. There's no excuse for missing it.

…unless it's cloudy. If that happens, plan a trip to Africa or Australia instead. There's a total eclipse every year and a half, but there won't be another North American one until the forties.

See `timeanddate.com/eclipse` for eclipse details.

*finegeometer*

# WATCHED SOME TV SHOWS; HAVE SOME REVIEWS

Over the winter break, I watched some TV shows, both with family and on my own. I have no idea what to write about for this issue of **mathNEWS**, but I still want pizza so you guys get another set of reviews that nobody asked for. I hope you enjoy, or whatever.

### STAR TREK: PICARD — PARAMOUNT+

Hard to talk about this one without giving spoilers, especially trying to explain what's going on, but basically our main characters begin in the past and are trying to ensure that the correct future outcome occurs as opposed to the bad future. I much preferred the back half of this season to the first half, which I felt kinda dragged on with irrelevant side plots. The last 3 episodes of this season were much more engaging in my opinion and I'm happy with where all the characters ended up.

There was definitely some good foreshadowing for the third season. According to my parents, the business card that one of the antagonists from this season got references a major player from the original Star Trek series, but I haven't seen most of it so idk about that. Overall, I enjoyed this show and am looking forward to watching Season 3 over the winter reading week.

### GOOD OMENS — AMAZON PRIME

This show is so good. Like, idk how to describe how good it is. The first season was good, but imo it had too many character perspectives to be easy to follow. This was also my experience reading the book. HOWEVER, this season of Good Omens focused in much more on our main characters, Aziraphale and Crowley, and we even got to learn about their pasts while also having an engaging plot in the present.

I feel it's important to note that I accidentally watched episode 3 prior to episode 2, thanks to Amazon Prime TV having an idiotic UI, but this actually didn't really affect my experience all that much. I didn't feel like I had skipped over anything from episode 2, but still very much enjoyed watching it afterwards regardless. I think this should definitely be taken into consideration as an alternate viewing order.

I love this show, I love the storylines, I absolutely ADORE the characters… and the ending broke me. Seriously, go watch this show if you haven't already. ESPECIALLY go watch Season 2 if you enjoyed Season 1 and you haven't gotten around to it yet (looking at you __init__).

### XO, KITTY — NETFLIX

This show only has one season, and it's literally just high school and relationship drama, but it's still fun if you just want a quick laugh. Definitely not as in-depth in terms of themes or storylines as the previous two shows, but still pretty good for what it is. The main character is fairly relatable, at least for me, and I find that's key to get into a show.

In addition, even the minor characters have their own issues going on, which helps to make the world feel a lot more real. If you're bored or have some time to kill, this is a good show to use for that purpose. You can put it on in the background or while doing laundry, and most of the time you don't really need to be watching the screen to follow what's happening.

Recommend, if only for the ridiculous love polygons, and in this case I do mean it in the actual sense of love triangles instead of love angles.

### GINNY & GEORGIA — NETFLIX

Oooohhhh boy, this show. This show. Wow, this show is such a rollercoaster of emotions. It follows a daughter & mother duo who move to a new town for a fresh start following the death of Kenny, the husband of Ginny's mother, Georgia. Ginny's story in the first season mainly revolves around her settling down and finding friends in her new high school in her sophomore year. Meanwhile Georgia's story revolves around her new job working at the mayor's office along with trying to fit in with the neighborhood moms.

However, as the season continues, it becomes clear that Georgia's past isn't as clean as she'd like people to think it is, and this is shown through her having flashbacks when put in similar situations to her past. Georgia had Ginny when she was only 15, and this both indirectly results from and indirectly leads to Georgia being trapped in abusive situations. However, Georgia is fiercely protective and would do anything for her kids, which becomes more and more apparent as the story continues. I don't want to spoil more of the plot and characters, as I really think that this is a TV show that should be experienced first-hand.

Out of all of the shows on this list, this is the one that I'd recommend the most if you can manage to stomach it. Season 2 gets a lot darker than Season 1 does, and although there isn't gore, there are definitely heavy topics that are not for the faint of heart. This show has the peculiar element of seeming outlandish when described in full, but when you watch it, it seems frighteningly possible as the reality for a lot of people. Definitely try to watch this show, but pay attention to the Netflix content warnings as they are absolutely necessary. Don't feel bad if you can't get through it all, it gets **dark** and it's completely okay if you can't or don't want to deal with the heavy themes in this show.

### CONCLUSION

I certainly enjoyed this winter break's worth of TV shows, and highly recommend all of them, even if they're directed towards different audiences. I think that everyone can find something to enjoy in all of these shows, and that you will end up loving at least one of them. Hope everyone had a great winter break, and best of luck in the upcoming term!

*sexy_software_babe*

# THE SECRET TO BEEF STEW IS LOVE AND RESTRAINT

Love because love makes everything taste better. Restraint because searing beef cubes will make you immediately think about defenestrating yourself. Yes, I know you can brown beef quickly in large batches on a baking sheet, but consider: washing baking sheets in my small sink raises my cortisol levels dramatically. On that cheery note, here's my beef stew recipe.

### BEEF STEW

Serves ~8 university students, 6–7 hours total time (1.5 hours chopping + active cooking, rest is passive)

- ~3 lbs stewing beef, cut into cubes slightly larger than you want your meat to be when you eat it
- 4 tbsp flour
- 1 tsp garlic powder
- ½ tsp paprika
- 1 tsp sea salt
- 1 tsp black pepper
- 2 tbsp cooking oil
- 2 medium yellow onions, sliced
- 6 cups beef broth (I used Better than Bouillon + water)
- ½ cup red wine
- 4 large carrots, cut into obliques
- 6 stalks celery, cut into large chunks
- 3 tbsp tomato paste
- 1 large spring of thyme (or rosemary)
- 2 bay leaves
- ½ cup frozen peas

1. In a large bowl or brown paper bag, combine the flour, garlic powder, paprika, salt and pepper.
2. Add as much beef as you can brown in one batch and toss it around so that there's an even coat.
3. Add some oil to your large pot, turn it to medium heat, and brown the pieces of beef that you coated in flour. The hotter you get your pot before you add the beef, the better.
4. Remove the beef and put on a plate when it's done (you just want the outside to be nicely seared).
5. Repeat steps 2–5 until all the beef is done and you have some nice brown fond at the bottom of your pot. In my 5 quart Dutch oven, this was 3 batches.
6. Add the onion to the pot and close the lid, letting it cook and steam until soft (stir every once in a while).
7. Add the tomato paste and stir it around for about a minute.
8. Add the red wine if you're using it, and some of the beef broth (enough to cover the bottom of the pot). Then use a wooden spoon to scrape the fond off the bottom.
9. Add in the rest of the ingredients (except the peas) plus the beef, put the lid on and turn to halfway between medium and low. If you're using a Dutch oven, let it simmer for 1 hour and then put it in a 275 °F oven for ~2.5 hours or until beef is fork tender. If you're using a regular pot, simply let it simmer for ~5 hours or until beef is fork tender.
10. Stir in peas at the end. Then cool and serve.

### TIPS

Always, always, adjust to your own taste. Don't be shy and taste your food as you go.

If you want to make a smaller portion, go ahead and halve this recipe. I really wouldn't increase the number of servings unless you have a really big pot (my 5 quart/4.7 L Dutch oven could just barely fit everything).

If you don't have red wine, just replace it with the same amount of broth.

If you're nimble with them, use chopsticks instead of tongs to turn the beef chunks when you're doing the browning step.

I used Eye of Round from Costco, and I trimmed the fat off. Eye of Round is the cheapest cut there, at $11.99/kg or $5.44/lb (though you do need to buy a ~8 lb piece). It's really lean, so you might be worried it will be tough and chewy, but do not fret if you cook it low n slow. It'll get there.

Mashed potatoes and/or ciabatta buns (also from Costco) go really well with this stew.

If you find that the broth is too thin for your taste, you can try making a 1:1 cornstarch slurry with cold water and adding it to the stew when it's still in the simmering stage. 2 tbsp cornstarch with 2 tbsp water is a good starting point. I hear a packet or two of gelatin is even better, but I've never tried.

If you don't have the spices (bay leaf, thyme, paprika, garlic powder), I wouldn't let that stop me from making this dish. You can really play around with the seasonings, and I'll bet it still tastes good with salt and pepper (or even just salt).

Make this for the people in your life that you appreciate. This is a personal rule for myself. I do not want to waste my life browning meat for people I'm just acquainted with and neither should you. Cooking is a process that can eat up a lot of time and energy, so whenever my feet ache, or wrists hurt, I remind myself that I'm doing this for myself and my loved ones. That makes things a little easier.

Based on Holly Nilsson's Beef Stew recipe.

Best served on a cold winter day! ^_^

*yummyPi*

# I HATE PIAZZA

The title really says it all for this one. I write my articles based on what I have written down in my phone in a note titled *Complaint List*. My first two articles had extensive reasoning and many bullet points. My third item is just *Piazza*, and that's all the information I have, so this one will truly be me writing from the heart.

Piazza is so bad and so dumb. It's amazing that you can take Pizza, one of the greatest things ever, and add just one letter and make it one of the worst things ever. Every term I'm on co-op I forget Piazza exists and my life is just bliss. Then the school term starts and I get an email that I've been added to a class on Piazza and it ruins any hope I had of a nice start to my term because I am immediately plunged into misery.

At the end of that day, I am once again hit with the crippling reminder that Piazza exists and I am obligated to use it when I get an email summarizing the day's posts in my Daily Digest. I don't know who thought I would want to get an email from Piazza every day (or even in 4-hour increments if you're a real masochist), but whoever they are, they are sorely mistaken. Why is that the default? I forget it's the default every term and have to change it for each class.

You'd think they would have better notification options given they have a mobile app. I don't know why anyone would ever want emails if there is an app. But here you're disappointed too, since the option everyone wants — that is, to be notified of posts by instructors and nothing else — is not an option. Your options are all of them or none of them. The Piazza team seems to think I care way more about class discussion than I actually do. Why would I ever want to be notified every time one of my glue-eating classmates asks a question?

This brings me to my next point, which is less of a complaint against Piazza, and more the users. How are you guys so dumb? The number of questions on Piazza that can be answered just by looking at the course outline or recent announce-ments is unreal. If people weren't so dumb and didn't ask these questions that they could find the answer to if they were blessed by some neuron activation in their brain, maybe I wouldn't need to turn off Piazza notifications entirely.

Another thing that I have only encountered once (thankfully), but drove me up the fucking wall nonetheless, was required Piazza participation. I had a class that required me to engage on Piazza, which is a place for asking questions. As a result, I'm punished for not having questions because I understand the material. The astute among you may think "Why don't you just answer the questions of the knuckle draggers?" This is a good idea in theory. The problem arises when *everyone else is also doing the same thing.* What you get in the end is a few idiots supplying dumb questions and the rest of the class furiously typing as fast as they can to answer it first so they get the participation marks. It truly is survival of the fittest.

Don't get me wrong, I am also very very stupid. I just go to office hours and tutorials when I am confused and I give

my questions directly to the people who have the answers, rather than posting them online. This article is not intended to suggest that I am smarter than my classmates, because I'm not. The conclusion to make is, unsurprisingly, that most UW students are socially inept and prefer to try to solve their problems online rather than in person.

Also, I know that instructors can force an email to be sent when they post something important, but what if they forget? What if they don't deem it important enough because they are assuming that I'm checking Piazza as they asked despite the overwhelming amount of bullshit it comes with? Just let me turn on notifications for instructor posts, *please.* For a university that prides itself on being technologically advanced or whatever we sure do use a lot of shitty pieces of technology as central pillars of our ecosystem (looking at you, WaterlooWorks.)

In conclusion, delete Piazza. Go to office hours if you have a question, and send me an email if something actually important is happening.

*Yamnuska*

# WOMAN IN WHITE
## *SEE: WIKIPEDIA ENTRY FOR "WHITE LADY"*

my ankle peers above the blue:

a faulty sun-dial casting impossible hours

across the angry current.

so the springtime thaw or the summer rise

is all, is all, is all.

the tender skin mottled, intricate,

with the brilliant bloom and spill of blown capillaries,

loosens into a pale nightgown over the

flesh, once left wanting,

now full and fat with fluid.

still is the woman,

seen by no-one at all,

still is the woman,

dissolve, dissolve, dissolve.

*hotfemoid*

# WORKPLACE ACCOMMODATIONS

I see an ad at the blood work clinic

Some shingles medication
The person on the screen talks about how it felt
To be sick
Like molten lava on my skin they say
Presumably a sensation no one has survived to describe
And yet we know what they mean
A burning sensation
Unbearable and beyond comparison to anything we've
(they've) felt before
I wonder sometimes if everyone feels the same thing
But the language diverges
Like what I see as pink is your green
No way to meld those two experiences

Tell me what it feels like to be you
Let me melt into your sensory
I want to know
Feelings of closeness
I can feel things I could never experience
I'm an orange melting in your gel cavern
I'm an orangutan peeling an orange staring at a visitor to the
zoo
I'm taking someone's blood in the clinic
I'm the blood sucked into a test tube
I'm quitting my job in the aisles of a faraway IKEA
Or I could be

I was up last night in bed
And I was convinced my girlfriend had sewed me a leather
dress
I knew she couldn't sew
But I had all these memories
Reality dissipates like ripples in a still pond
Could you forget if your best friend donated a kidney
Cause it seems like there's two realities and I spent equal time
in both

The needle hurts today
I dread it
A sting that I usually face with indifference
The control this disease has over my life
No matter whether I want it or not
Everyone says this blood is for the greater good
But today it feels like the greater good would have been
staying at home

Crisp my veins
Crystallize my brain
Flow cooling slowly along the skin
Pain only a brief needle poke once you melt my nerves
For the amount of time I've been thinking about it
maybe if I were to touch lava
It would feel familiar now

*Rein Dreams*

# SOME THOUGHTS ON THOUGHTS

Recently, I've been thinking about a tendency of mine to mention thoughts or observations I have to those close to me, even if they're practically unimportant, as long as they're interesting to me. The bar for bringing them up is very low if I'm not thinking about it; it could be something like, "hey, this sounds like the first note of [a song I listened to when I was in middle school]," or, "this section of cracked pavement looks like South Carolina."

I know that when I let it flow out without any control, it can be understandably overwhelming or frustrating for others, so I try to keep it in check (pretty successfully most of the time, I feel). Sometimes I forget, and something that's probably seen as insignificant exits my mouth before I realize it. When that happens, it's a bit embarrassing, but it's not too bad.

Why do I have this compulsion? I think that some part of me feels that it'd be sad if something interesting to me wasn't made known to other people. It feels like the thought would die with me, and it's almost tragic as a result. Taking it further, it seems like an extension of a want for my existence to have some measurable effect on the world. That's perhaps a self-centered want, but I think it's also something that most people experience. Logically, I understand that if a person is born, enjoys their life, dies, and somehow leaves no trace

on the world, they still existed and their enjoyment of life mattered. But the emotional part of me says, "if a tree falls in the forest…?" and that's the part of me that my personality is based on, of course.

On the opposite side, I think I have a high tolerance for listening to other people's "unimportant" thoughts. The reason why is probably not far from the converse of why I feel the want to talk about my own. I feel incredibly aware of the uniqueness of every individual I talk to, and of the fact that no matter how similar another person could be to my conversational partner, talking to them wouldn't be the same. It's pretty much the application of the Japanese idiom *ichi-go ichi-e* (which I wrote about in Experiencing in issue 148.5) to people rather than moments. On some level, it's an honor to talk to anyone about anything, because of their uniqueness.

Sure, a mundane topic still feels mundane. But I find that this view helps me respect others' thoughts more, at least enough to make it through what others might find unbearable, so perhaps I do get something useful out of it in the end.

*cutlet*

# WHY YOU SHOULD READ LITTLE MUSHROOM

# M3 :)

little mushroom is a post apocalyptic sci-fi totally-not-gay chinese webnovel by yi shi si zhou with incredible world-building.

### SYNOPSIS

In the year 2020, Earth's magnetic poles disappeared and humankind was nearly wiped out by cosmic radiation. Within the span of a hundred years, living creatures began to mutate and devour each other while the remaining humans, numbering in the tens of thousands, struggled bitterly in their man-made bases.

In the Abyss, home to the mutated xenogenics, there lived a sentient little mushroom. Because it had been nourished by the blood and flesh of the deceased human An Ze, not only did it take on a similar-looking human form, but a similar name as well: An Zhe.

An Zhe is determined to go to the human base to search for his spore, which had been harvested by humans. Once there, however, he faces the omnipresent risk of discovery and certain death as he tries to keep his non-human nature hidden from the Judges, whose responsibility is to inspect for and eliminate xenogenics like himself. And of all the Judges, Colonel Lu Feng is the most perceptive and merciless — as soon as he determines that someone is a xenogenic, he will execute that person on the spot.

But An Zhe's mutation goes undetected by Lu Feng's eyes, and so a tale of humans and xenogenics unfolds…

### STORY

so good. it's a depressing story on the struggle of mankind for survival in the perspective of someone with no humanity, showcasing humans' intense fight against the decaying and mutilating world around them.

### MAIN CHARACTERS

**an zhe:** littlest mushroom to ever mushroom. cutest pookie patootie. emotionally detached but also somehow more human than humans. also eats mushroom soup?!

**lu feng:** biggest arsehole but simultaneously biggest sweetheart. also a mass murderer.

it's also the Silver Award winner at the 12th Chinese Nebula Awards for Chinese Science Fiction. in conclusion, read little mushroom!

*an ze*



*aphf*
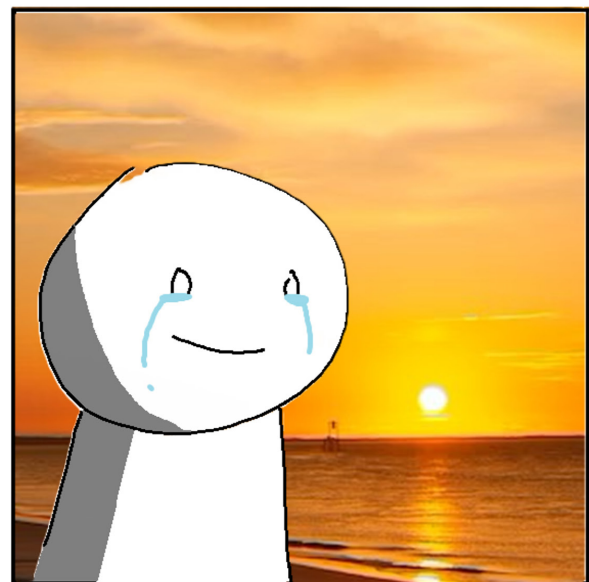
# C-- REVIEW

## A NON-MATH STUDENT'S REVIEW

*For jeff: I've never talked to you but I am always impressed by your C++ reviews. I never knew there was that much to talk about. How tf did you write 6 articles, over 14 pages, on C++?*

The existence of C and C++ implies there could be a sinister counterpart, C--. And indeed there is! After consulting with several CS students, and actual programmers with jobs, a Google search and a Wikipedia article I definitely don't understand, I present to you a *C-- review*.

C-- basically compiles high level languages into low level languages I think… It goes in between the languages that we humans (and of course ChatGPT now) write and the language that the computer actually understands. C-- is special because it sucks. Although from what I've heard about literally all programming languages is that they all suck. Maybe programming sucks in general, and I can really get behind that.

Anyways, here have a code snippet from Wikipedia.

```
/* Tail recursion */
export sp2;
sp2( bits32 n ) {
  jump sp2_help( n, 1, 1 );
}
sp2_help( bits32 n, bits32 s, bits32 p ) {
  if n==1 {
      return( s, p );
  } else {
      jump sp2_help( n-1, s+n, p*n );
  }
}
```

I have no idea what it does but any good programming language article has a snippet.

C-- is supposedly a portable assembly language. Allegedly, assembly languages can't be portable so I really don't know what's going on here. Although, as a language can't it metaphorically be taken anywhere? So really all programming languages are portable to me.

Here is where I kind of gave up on understanding what C-- is. I don't understand why a language needs to support efficient exception handling or not. I care more about the applications of the language and like what it's used for. So here are some cool things C-- is used for:

1. **Nothing**. I found nothing.

Instead, here are some fun facts that are a little bit related to C--!

- C-- is represented in ASCII instead of binary. I can really respect using something utterly crazy like letters instead of 1s and 0s to communicate! 01101110 01100101 01100001 01110100 00100001
- The final version of it was introduced in 2005, the same year a lot of the class of 2028 was born! Perhaps the creativity and intelligence of C-- was transferred to them all.
- C-- has a fork that is still used today (not the utensil I gather???) it is now used in the Glasgow Haskell Compiler, whatever that is.
- Apparently, Haskell is a functional programming language that is actually very useful! But sadly, this article is **not** about Haskell.
- According to one of the programmers I talked to, it was also incredibly overhyped… Then she found a bunch of GitHub repositories for it and I could not understand anything else about Haskell or its nebulous connection to C--.
- Simon Peyton Jones, one of the creators of C--, works for Epic Games now. Truly the most epic gamer moment.
- C-- was *actually* named then as a joke on C++; we all have the same brain.

Go forth into the world, now slightly smarted with your knowledge of niche programming languages.

*rockfacts*

# N SONGS FROM THE POST-9/11 "DO NOT PLAY" LIST

The Clear Channel Memorandum was a list of songs distributed by one of the largest radio broadcasters in the United States, composed of songs that were in "poor taste" to play after 9/11. A selection of these songs includes:

- Safe In New York City — AC/DC
- Leaving On A Jet Plane — Peter, Paul, and Mary
- Learn To Fly — Foo Fighters
- In The Air Tonight — Phil Collins
- Crash Into Me — Dave Matthews Band
- Great Balls Of Fire — Jerry Lee Lewis
- We Gotta Get Out Of This Place — The Animals
- Nowhere To Run — Martha and the Vandellas
- Spirit In The Sky — Norman Greenbaum
- Free Fallin' — Tom Petty
- Knockin' On Heaven's Door — Bob Dylan

And, of course, every song by Rage Against The Machine.

*Dick Smithers*

# MARKET TRAIL REVIEW

across the road from northfield station, there's a trail outstretched

to a market well outside the St Jacobs boundaries

(they've named it St Jacobs anyway)

the government spent three million to pave it, celebrating its release with a sign declaring

"do you love us yet?"

no one takes the trail.

ॐ

the first of its three segments walks you behind the unseen sides of the 401's supplicants

unseen but not hidden; there's nothing to hide in the undecorated concrete,

the exposed dirt. the ribbed metal, so flat, making up the warehouses' outer skin.

grass is overgrown on each side of the track, not because it is free to grow,

it is just too irrelevant to cut.

*segment rating: 5.3/10.0.*

ॐ

in the second segment, a woodlot encroaches upon the surrounding warehouses' unmanicured lawns

and distribution centers whose names you could almost make out

were branches not disrupting your customer journey

and muffling the roar of the monarch interminable, highway 85.

there's no mutexes to synchronize the birdsong, but

depth-first search may work on the trees

*segment rating: 8/10.*

ॐ

in the third segment, leafy arms outstretch revealing an open pond on the far side of the salt line

the municipal trucks will not cross

no one walks this far along the path, save for the sparrows who hop out of your way, surprised to see you

how did you get here?

beyond the pond, where one last woodlot remains

they put up a barbed wire fence once to keep you on the trail, and if you really look, you can see

its rusted memory

*segment rating: good.*

ॐ

if you decide to come back the same way, there's a dirt hill minutes from northfield station, on the west side of the asphalt path

it's surrounded by posts so high and grandiose

the satellite's eyes take note[1] of the lights atop each post, three apiece,

all twenty-four face in, to light the pile of forgotten dirt, "This is our dirt. Do not disturb."

"Those who deface it will be noted."

the dirt has since grown into a hill of wild reeds

the lights must have felt

so terribly disrespected

*molasses*

1. https://earth.google.com/web/@43.50031156,-80.54556548,345.68555368a,66.58880838d,60.0000016y,-43.10932991h,66.97960662t,0.00000119r/data=OgMKATA
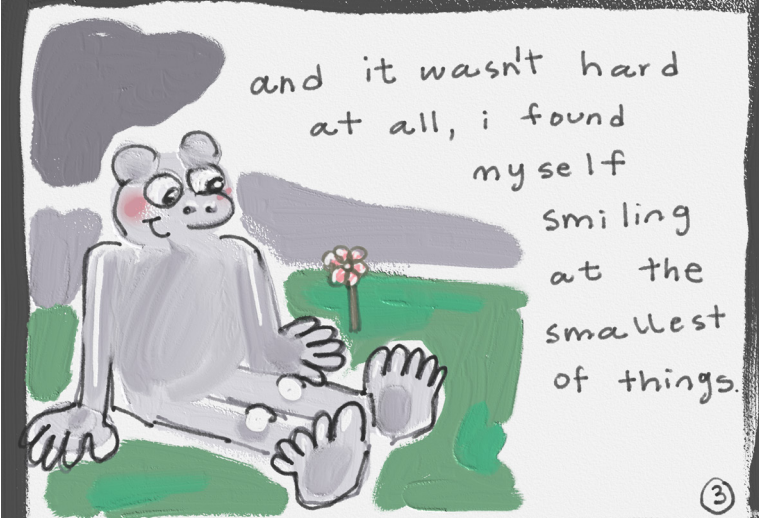
# CLASSIC UW NEW TERM CYCLE

Ah, the beginning of a new term. A time where students come to Waterloo, freeze in the cold, and realize how screwed they are for their courses.

It's me I'm students

*PlatypusGod*

# SEASONAL DEPRESSION
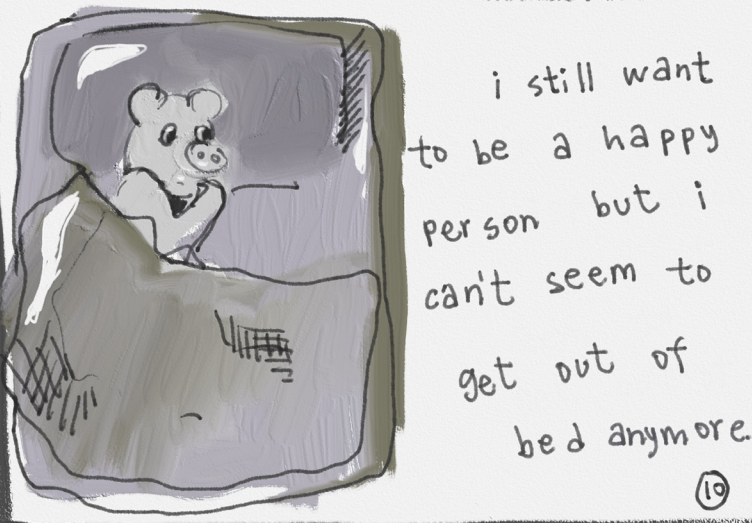
# I GOT AN AEROPRESS, SO LIKE ALL GOOD CULT MEMBERS I MUST SHILL IT

For completely legitimate reasons, I happened to chance upon a $205 Amazon.ca gift card right before Christmas break last year. One of the things I decided to use my newfound wealth on was an AeroPress XL—the patented coffee making contraption of your dreams! Or my dreams, anyway. I don't know about your dreams.

### WHAT AN AEROPRESS IS

#### A SMALL BACKGROUND ON COFFEE BREWING TECHNIQUES

Broadly speaking, there's two kinds of coffee brewing techniques— immersion and percolation.

In immersion brewing, you mix your ground coffee directly into your water, let it sit for a bit, and then filter the grounds out. The "brewing" happens as the grounds float around in the water, and then you filter the grounds out so your coffee doesn't taste powdery afterwards. This also means you can take as long as you want with brewing—you can use cold water and brew for 8 hours and get some fantastic cold brew out of any immersion brewer. The downside is that this sort of post-hoc filtering doesn't often get all the grounds out, since using a finer filter can make filtering take forever. The French press is the best-known example of immersion brewing, and it is known for its ease of use and its "filtered well enough as long as you don't drink the last sip of your cup where all the grounds have collected" coffee.

In percolation brewing, you flow your water through the coffee grounds and immediately out through a much finer filter. The "brewing" happens as the water flows through the coffee, and stops when it the water makes it through the coffee and the filter. This makes it much harder to get right, since you want your water to flow *throughout* your coffee and not form narrow channels across it that overextract a tiny amount of coffee and waste the rest of it. The reward is that you can use much finer filters, and therefore get much cleaner coffee out of it. This also means that the cold brew method I described doesn't work, since you only have a small amount of time where your coffee and water are touching. The humble drip coffee brewer, a staple across North American households, is an example of percolation brewing, as is the espresso machine. The former mostly automates away the difficulty for you, though how well it does that depends on your particular machine. The latter is notoriously hard to get right, but is extremely rewarding when you do. The Chemex is a percolation brewer that is similar to the French press in philosophy—completely manual and without any specialized tools.

### WHAT IF WE COULD HAVE BOTH?

The AeroPress combines immersion and percolation brewing to deliver the best of both worlds—the ease of immersion brewing, and the clean cup of percolation. How does it work, you may ask? Well, let me refer you to US patent # 20060260471A1. For the normal people among us, here's a brief description:

The AeroPress consists of a plastic chamber with a paper filter installed at the bottom, and an open top. You add your water and coffee grounds into the chamber, and then close the top off with a plunger, that has a rubber seal preventing air or coffee from exiting through the top. Since the chamber is sealed, air cannot enter it to displace the water, so the water cannot seep through the filter. The water and coffee grounds are stuck between the paper filter and the rubber seal, and we have immersion.

Once you push the plunger down, it "presses" the "aero" in the chamber directly onto your water-grounds mixture. The pressure from the air forces the water to flow through the grounds and the extremely-fine paper filter, and we have percolation.[1]

It sounds so crazy, but it really does work! See below for my thoughts on the coffee formed by this method.

### WHAT AN AEROPRESS XL IS

It's like an AeroPress but fits twice the amount of liquid (20oz instead of 10oz).

### HOW I FEEL ABOUT MY AEROPRESS XL

I really like it! As I said before, the coffee really is the best of both worlds—it's a much cleaner cup than the French press I used to use, but it doesn't require the precision that something like a Chemex might.

Plus, you can keep plunging after the coffee is brewed, plunge all the air out of the chamber, and the rubber seal forces all the coffee grounds into a tight little puck, which you can just dump into your garbage can. This trivializes the worst part of using a French press—cleanup. Cleaning an AeroPress is as easy as making the puck, pushing the puck and paper filter out using the rubber seal, and then rinsing the rubber seal. The entire rest of the AeroPress will be cleaned by the seal not allowing any water or grime to remain the chamber—though I do soap-wash it once a week anyway.

Also, using pressure to force water through coffee grounds is quite similar to what an espresso machine does! Since my water is not as hot as an espresso machine (which uses literal steam), and the pressure exerted by my hand is not as high as an espresso machine, the coffee cannot be made as strong as an espresso—but it can get darn close! It's good enough to make about half the concentration of coffee as a true espresso, and that's good enough that I can make espresso-based coffee drinks like mochas at home. This, combined with the fact that my now-retired French press can be used as a makeshift

milk frother, means that I've made an unhealthy amount of mochas and cappuccinos in the past 2–3 weeks. Since we have immersion brewing, I can also do cold brews with this, but I haven't tried that yet.

**CONCLUSION**

It's so good. It's soooo good. It's so gooooood. It's sooooooooo gooooooooooooddddddddddd—

*(is dragged away by the authorities for excessive fangirling)*

*caffeinatED*

1. The reason that we can't just use an extremely fine paper filter with a French press is that without the pressure created by the vacuum seal, it would take forever to get the liquid to flow through it.

# THERE'S MONEY IN THE HOTDOG STAND

Keen readers will remember me as an enjoyer of Mark Twain. Indeed, there is one particular quote attributed to Mr. Twain that I reference often: "Whenever you find yourself on the side of the majority, it is time to pause and reflect." As I begin another term of co-op searching, I find myself, quite disturbingly, on the side of the majority.

Hundreds of students across math and engineering all fighting tooth and nail for the same software jobs on WaterlooWorks. As I wearily submit my default application package yet another time, I find myself questioning it all.

The forces that be corral hundreds—nay, thousands—of bright, hardworking young Canadians into this tiny deadbeat town and train them to be perfect little white collar engineers. But why must we acquiesce to the forces that be? Why must we follow the path that is clearly laid out to us? Be perfect little rats in this rat race?

My brothers and sisters of the math faculty, we were born to do great things! Free yourself from the shackles of the Waterloo grind and open your hearts and minds! I bring you an alternate scheme that has slowly been cooking in the far reaches of my giant intellect. I was inspired by a vision that came to me in a dream ("there's always money in the banana stand"—George Bluth Sr.). Don't spend the rest of your days slouching at some faceless megacorp; take fate into your own hands and conquer what is your birthright!

Your eyes are listless and blank, the years of grindset that have been programmed into you is hard to root out. You manage to stutter out "money" and "Herman-Miller". But comrade, there are great riches to be had and several fancy chairs to be sat in outside the all-consuming valley!

I propose to you an alternate scheme—the hotdog stand. There is money to be had in the hotdog stand, comrade! That humble profession has great hidden riches that your immense mathematical talents can unlock!

All we need is a band of rebels, a group of people who think differently, to corner the hotdog market in downtown Toronto. I say Toronto, but this scheme is universal and the opportunities for future expansion are ripe!

A cart at every major intersection and every major stadium, each with a slightly different price and a slightly different brand name, but here's the genius part—all owned by us and all above the market rate for hotdogs! Soft Torontonians who have never experienced a Waterloo winter will not think twice. Hunger will take over their weak minds and our hotdogs will sell like hot cakes! The smart ones might compare prices and pick the cheapest cart but, since every cart is our own, it all just comes back to us baby.

Now, the word that comes to mind may be "monopoly". But don't be silly—no one ever looks at the humble hotdog carts. Moreover, Canada is a country built on oligopolies and monopolies—it's simply the way business is done around here, dear reader. Think about three different grocery stores you have visited in the last year; a quick Google search will inform you that they are most likely one company. Peel back the mask of the budget telecom provider that is disrupting the market and you will find an oligopolist charging you ten times what our cousins in the south pay. So worry not, the opportunity is ripe and the risks non-existent!

We will construct optimal pricing strategies, squeeze every dollar out of the average Torontonian's hotdog consumer surplus, corner the market and reap great rewards! Reject WaterlooWorks and join me, comrade, for there is no nobler profession than the humble hotdog stand.

*John S. Street*

# LITERARY ANALYSIS OF A BOSTON CREAM DOUGHNUT

both oblate spheroids

doughnuts and the earth alike

beautiful defect

*nike*

# 1

*XUE-YAN*

I'm so fucking cute. It takes me twenty minutes to get ready in the morning, but I'm so cute. I wash my face, make a ponytail, put on clothes that come in multiple parts. Like these shirt-stays from Amazon, an elastic contraption that keeps my shirt tucked in. If you lifted my skirt I'd look like a machine down there. A ribbon is the finishing touch, a $10 piece of shiny polyester that I tie underneath my shirt collar. I look in the mirror to do this, which is tough. I have this urge to strangle myself with it.

It might not be much, but I'm new to this. A year ago I was a nondescript mass that went by they/them.

I put on my adorable loafers, lock the door, and begin the hike to MC. I hate walking. I hate the way my head bounces and how my thoughts clonk around in my brain. To pass the time, I think about how perfect my outfit is. How nicely I matched the colours. How well it suits me and my body and my round face.

I'm late when I get to MC 2065, though Ken Davidson hasn't begun lecture yet. The rows are so close to each other that I'm brushing up against everyone as I head to a seat. They're mostly guys. I hope they're all weebs, all getting horny at the slightest touch of my cute joshi kousei self.

When lecture ends, the guys throw their laptops into their bags and leave. I concentrate on putting my things in the right places, and I feel what I think are eyes burning on me, impudent thoughts about my body, deciding on whether to approach me. I think I look like Mitsuha from Kimi no Na Wa.

Though as I make my way to the door and I see them crowded around Ken Davidson, I think that likely no one has given me thought at all. And my mind is all foggy, and I can't understand any of the words they're saying. I might just fail this class…

I rush outside to the MC egg fountain and I'm standing there when a guy comes up, and he's like, "Are you from China?" and I say no. I'm Chinese, obviously, but actually, I'm Canadian. And then he's like, "I sit with you in CS 135. Can I add you on WeChat?" and I'm like, "I don't have any social media," which is kind of sort of not a lie.

I don't know how I get out of there, but I end up at STC, sitting on a tall stool by the window. I take my heavily-stickered ThinkPad X220 out of my Japanese school bag. Of course, I don't mean GitHub stickers or nerd shit like that. They're tiny purikura stickers of myself.

All the while I'm thinking, *damn, who was that guy, and do I have to avoid every single CS 135 lecture for the rest of time? Because I kind of liked that class.* I open Outlook and Gordon Cormack is telling me that a slot has opened and he's letting me enroll into CS 145.

*cy*

# COOKING ALONE

For all of my time at Waterloo last year I was fortuitous enough to be in a food sharing situation. Me and 3 of my apartmentmates (henceforth called "roommates") would go shopping and cook for each other. It was absolutely delightful. I could rely on them when they couldn't cook and they could rely on me when they couldn't cook. It worked out extra well since we have different activities but similar sleep schedules. I am no longer in that situation this term and it has made me sad. As such, I am going to turn all my gripes into a list of reasons why you, yes you, should try to coordinate with your roommates to cook and eat together.

### COST

By buying food for 4 people all at once you can take advantage of sales more effectively and economies of scale for items that go bad more quickly.

### SOCIALNESS

By eating and shopping together the apartment gets a social dynamic and you get 2+ highly available friends added to your support network.

### COOKING

While nobody likes to prep food for an hour, cooking for many people doesn't take 4 times the work of cooking for 1 person. Even if you cook a full ½ of the time I think you're still breaking even on effort.

### VARIETY

This one is the biggest point for me. Because the use of things like meats is coordinated, it is possible to buy a large variety of proteins, vegetables, and other things. Having to use things over long periods of time sucks and this means you don't have to.

### SKILL

Once you're cooking for more people, both you and your roommates will want to cook better. Variety also means that your cooking skills are more balanced.

### QUALITY

Linked with the last points, when your skill increases the food tastes better. Also, using food together means that you're eating it fresher and don't have to worry about keeping food for days. There won't be any at the end of the next day anyways.

So please, eat well for me! Talk to your roommates! You learned it in kindergarten, sharing is caring.

別

# THAT ONE THING I WANT FROM DOLLARAMA RIGHT NOW, BUT I ALREADY HAVE ONE
## CONSIDER THIS DOLLAR STORE LORE™

When I saw him, it was love at first sight. But I knew it was not meant to be.

I was perusing the aisles of Dollarama, looking for ice cube trays for my homemade chicken broth, but turns out, that's not with the other household items. Little did I know that the wrong aisle was leading me to the right direction.

Just staring right at him made me fill with sunshine, yet despair, knowing that I had to part ways. Our paths were meant to diverge, so I thought. I wanted him so badly, but the rational part of my brain told me our relationship would end up in the trash. It wouldn't be stable and I knew it.

I don't know what drew me in; was it the smile, the rosy cheeks, the spiked tips, the big eyes that looked back, or was it because he was exactly what I was searching for in the back of my mind? I have no idea, but I just wanted to wrap my arms around the nape of his neck, stare into his beady eyes and hold him in a big embrace.

Regardless, I ended up leaving that night with his friend. She was simple, classy, and practical-minded. She was what I wanted before I knew what was out there, and I already confessed my feelings to her before I saw him. At first glance, she was the stable choice, the one my future needed.

However, when I brought her into my life, she didn't want to work with me at all. I know she was holding on, but she wasn't communicating on how I can help, so she'd explode on me. I couldn't depend on her to keep it together, and we were so incompatible. The thing is, we were barely stuck together, but I couldn't break up with her. Sure, we were helpless in a cycle of pain and arguments, but I couldn't bite the bullet. We were something, at least, and we had our ups too, even though our highs always came crashing down.

Low after low, he slowly entered my dreams, then my waking thoughts. I know I shouldn't have thought of him, but it was out of my control. After all, it was a message from my subconscious. The more time I spent stalking him on Instagram, the more I realized how infatuated I was with him. He was who I wanted. The sinful daydreams kept playing and replaying in my head and I couldn't resist; I just had to find him and tell him everything.

I went back into Dollarama to search for him, and he was nowhere to be seen. I was devastated, yet relieved; I couldn't bring home a new person while my girlfriend stayed at home. Besides, the guilt and shame would kill me.

Even though I knew this was bad, I kept hunting for my beau. I kept looking for him all around, asking people and hoping I'd see him one more time. I wanted to explain the truth after leaving him so heartbroken and dejected with my belle. Of course, I also wanted to see where things would lead between us, and then maybe I could have the courage to break up with my girlfriend and have my happily ever after.

Then, out of the blue, I saw him. My heart skipped a beat seeing that familiar smile and round face glance at me, oh so tenderly. This was my moment to tell him how I felt, what I always wanted to do to him, and how I wanted to spend the rest of my life with him.

But I chickened out. I couldn't do that to her, or to him. My initial doubts came back to me again, this time with a greater force. I couldn't let our relationship bloom right after burning the other one down to ashes. Besides, I trusted my partner when I saw her, and look where that led us. She was unreliable, even though I swept her off her feet and took her home because I thought she was trustworthy enough. My trust was broken, and I couldn't let it be broken again.

And now, here I am, still imagining him with and without his pretty little outfit, knowing damn well I missed out and messed up. Yet I can't let go of my girlfriend, knowing that she's trying her best and holding on when she can, even though we're not really meant for each other.

Tell me, dear reader, do I continue dating my current suction cup sponge holder (that isn't doing much holding) or cheat on it with the flowerpot suction cup sponge holder and a flower scrub brush?

*Dollar Store Person*

# IS THERE NO HOPE

its like when im super busy during school terms and have to do outrageous amounts of work im like "damn i would be so much happier if i were on a work term bc i have so much more time and it would be better" and then when im on a work term all the minute tasks that i have feel ridiculously overwhelming even tho theyre like easy as fuck by comparison to anything and then in the rare slices of time where i actually have nothing to do i can't even manage to be happy and just sit at home and play video games and enjoy it because im super bored and depressed from lack of stimulation so its just permanently hopeless regardless of whether im normal busy or super busy or not busy ill just never be happy what the fuck

i think life is actually awesome tho and i just didnt get enough sleep idk

*nazz*

# WHICH GEMSTONE ARE YOU?

**PICK YOUR FAVOURITE COLOUR.**

1. Purple
2. Black (like your soul)
3. Yellow!!
4. Red

**PICK A FUN PATTERN.**

1. Geometric
2. Stripes
3. Triangles
4. Polka Dots

**PICK A CITY FROM ANTIQUITY.**

1. Athens
2. Sparta
3. Rome
4. Babylon

**IF YOU COULD LEARN ANY LANGUAGE INSTANTLY, WHAT WOULD IT BE?**

1. Ancient Greek
2. Greek
3. Latin
4. Arabic

**PICK A WORD TO DESCRIBE YOURSELF.**

1. Polished
2. Sad
3. Happy
4. Groovy

**PICK A GEMSTONE.**

1. Chrysoprase
2. Agate
3. Chalcedony
4. Opal

**WHAT IS YOUR NEW YEAR'S RESOLUTION?**

1. Drink less alcohol
2. More time at the gym
3. Increase your savings
4. Improve your style

**PICK AN ENTIRELY RANDOM AND UNRELATED OBJECT.**

1. Irradiated Iron
2. Moganite
3. Ferric Hydroxide
4. Iron

**WHAT WERE YOU LIKE IN HIGH SCHOOL?**

1. Preppy
2. Scene kid
3. Sports!
4. Stoner

☙

**Mostly 1's : Amethyst!**

You are an organized and high achieving individual! Congratulations on your high standards for yourself and others. Please try to chill out. Amethyst is a purple Gemstone that is a variety of quartz!

**Mostly 2's: Onyx!**

Do you need a hug? There is so much love in the world, you have to accept some into your life. You know your limits and love to exist in your safe zone. Onyx is a form of chalcedony with parallel black and white stripes, which is made of… more quartz

**Mostly 3's: Citrine!**

Keep the good times rolling =) You know how to have fun but you sometimes need to remember to take time to self reflect and plan your life out more. Try to walk the fine line between going with the flow versus living life on autopilot. Citrine is a bright yellow mineral that is another form of… uh… ummmm… Yeah, its more quartz.

**Mostly 4's: Jasper!**

You live a life of contrast but that dichotomy is inflicted by society. Embrace the different parts of yourself as a beautiful whole! You get lots of energy from spending time in nature. Jasper is a commonly red and green mineral that is another form of Chalcedony which…… is……

*More??? Quartz???????*

Wait shit! They are all quartz??????

# SWEDISH MAN LEARNS WHAT A NEWTON IS

What am I doing here? I enrolled at this school almost four years ago now, and I guess I got what I asked for. Common wisdom says you go to school to learn, and I can't say that's not what I've been doing here. I could tell you all you wanted to know about Fourier transforms or Verilog or capacitors (yes, I am an engineer writing for a math paper, sorry). But am I really any closer to knowing what I want out of life or what kind of work I want to do? If anything, I'm further away from that than I was when I started. All of my coops have been the same type of work, based on what I thought I would be good at in first year, and most have been fairly underwhelming. I can't imagine having any idea where I want to be after I graduate.

At least Martin seems to know what he's doing. People say he doesn't, but I'd give him more credit than that.

Martin has spent the past nine years trying to build a machine. What does the machine do? I don't think anyone but Martin really knows. Sure, he'll tell you the gist of it—he wants to turn a crank and have marbles fall onto musical instruments in some sort of controlled fashion—but the idea isn't really complete without Martin's vision of him touring the world with his machine and his band, which none of us will experience until it happens (or doesn't).

Martin doesn't have any engineering background or anything, but that hasn't stopped him. I don't even know if he has any sense at all of what background he lacks: most of the time when he runs into a brick wall, he'll pull out some self-help book like Atomic Habits and try to take some lessons from it, rather than approach any literature on engineering or design. He's never expressed any desire to learn more about materials science, despite often having problems with his materials; he won't concretely define his requirements even after repeatedly discovering himself buried under mounds of scope creep. Sometimes he'll teach himself one new mechanical design trick, but he seems determined to only learn one thing per week, at most.

The new thing this week? Newtonian physics.

"I have spent the past week learning basic physics concepts," Martin announces, sitting in an office chair in front of a diagram of the solar system. He explains how, rather than his previous gear ratio calculations which were apparently just based on vibes, he can design gears based on what torque he actually needs or something. Martin then pulls up a Google Doc where he's written definitions of physics concepts—torque, force, energy, power, newtons and joules and watts. He's an expert at presenting this stuff. He tells it like a story of him working backwards to figure out what basic concepts he needed to know. Everything is tied to the overarching story of the machine.

I'm watching, of course, from my bedroom, like I have for what feels like almost every Wednesday for the past seven years. It seems insane to only decide to learn the concept of torque after nine years of trying to build a complex system of wheels and gears and levers, after scrapping the entire, mostly-built machine and starting from scratch twice already, but I find myself strongly envying this guy. I didn't learn programming by cramming theory into my head every day for 5 years, but by doing stupid things like trying to make a web browser about 6 times even though by the last few attempts I realized it was basically an impossible task. Martin isn't making a machine because he wants to learn engineering, he's making a machine because he found a gear generator online in 2014 and thought he could make something cool with it. Martin has the luxury of learning at his own pace, often discovering concepts by failing at designing a component over and over, and with every lesson working towards the ultimate goal of Building Something Cool. I wish I had that.

I'm sure it's infinitely more practical to do an actual degree or something. I guess you learn all the theory here and then you start working and that's when you start getting excited about putting things in practice. I just hope all the fun won't be gone by then.

_\_\_init\_\__

# TOP N OVERRATED GUNS IN APEX

### #3: G7

Its DPS is better than snipers; however snipers have more range and do way more damage per bullet, and at long range, enemies can easily hide quickly so you'd probably only get one hit in anyways. At shorter ranges, any assault rifle can outclass the G7, despite the recent nerfs to assault rifles (which aren't as bad as players make it).

### #2: 30–30

Similar case to G7, but slightly better overall. Somehow it's one of the highest-rated guns though.

### #1: WINGMAN

Only sweats who can somehow hit more than half their shots with this gun think it's good, and assume that people who touch grass can do the same. Even then, its DPS and range are relatively low; similar to the other pistols.

_cultured Apex enjoyer_

# THE COMING GAME PRESERVATION CRISIS

You know what Fortnite is. Even if you haven't played it, you know what Fortnite is. It's a cultural juggernaut. With more than 500 million players, it's arguably the most successful, era-defining game of the late 2010s and early 2020s.

In N minutes, no one will be able to play it. Let N be a natural number that's smaller than you think.

<p style="text-align:center">☙</p>

Preserving art is hard. Preserving a video game is even harder. To archive a book for future generations, all you need to do is transcribe the words and make it available in a safe library or some permanent storage mechanism like the internet. Film is slightly more difficult, but it's not *that* difficult to digitize old film prints. Plus, once it's been preserved, there's no special requirements needed to view it. The movie plays just fine on any screen you want to watch it on.

Games are different because, as software, they're so tightly linked with the hardware they're meant to execute on. It's not as simple as translating it to a new media format or making the contents available in a different medium. Video games, particularly console games, and *especially* old console games, are designed to run on a specific piece of hardware and *only* that piece of hardware.

The original Legend of Zelda or Metroid are hugely important games in the history of the medium, but they were *only* designed to be played on an original NES. There was a limited number of Zelda cartridges produced in the world, not to mention the notorious unreliability of the NES systems themselves. Theoretically, there will come a point where we run out of functional cartridges or systems and the game becomes completely unplayable.

I imagine most **mathNEWS** readers are aware of what the solution for this problem has been thus far: emulation. While Nintendo might give me a glare for saying this, emulator developers are some of the most important people in the industry. With the advent of modern emulation software that runs cleanly and easily across all kinds of hardware, playing a game from the 80s is a lot more like watching an old film: find a copy (LEGALLY!), download it (LEGALLY!!), and play it on the screen you already own (LEGALLY!!!).

We can do this reliably for almost any console older than 15 years, and game preservationists have grown accustomed to this ease of access. Putting aside the purist nerd arguments (are you *really* playing the same game if you're playing it with a keyboard instead of the N64's terrible controller?), most people assume we'll eventually have access to every game ever made via emulation.

That complacency makes me worried. We're hurtling towards a crisis in the field of game preservation and everyone seems to be looking the other way.

The basic problem is the same: games require special hardware and software to play, the two of which are so tightly linked that losing the hardware usually means you lose the software, too. The problem now is that the hardware isn't a game console, it's the server you need to connect to in order to boot the game at all.

Almost every culturally significant game from the last decade locks a significant portion of the game, if not the *entire thing,* behind a connection to some kind of server. To be clear, I'm not talking about the trend of games using the internet to deliver new content; I'm a Destiny player, and if I complained about that I'd be the biggest hypocrite at prod night.

We're putting so much of gaming history on death's row by tying it to services that will all one day shut off. By making so much of the cultural output of the 2010's and beyond tied to these servers, we're setting ourselves up for a gargantuan chunk of our own artistic history as a culture to become completely inaccessible.

And these are just the games that are tied to fragile online services once you *download* them. What about the games that require server connections to download? Such digital-only games are especially vulnerable to this, being only available through digital marketplaces. But even physical games are at risk here. These days, most big AAA releases are too large to fit on disks. Only part of the game is loaded off the disk, and the rest is downloaded from that damned server.

By the way, one day, Steam will shut down. Your mortgage-sized collection of games will become completely inaccessible. You're on a time limit to get through your backlog. Sleep well tonight!

Think about when these online stores eventually go down. When this has happened in the past (RIP Wii Shop Channel, 2006–2019), it's happened with consoles that don't have such a codependent relationship with their shops. We haven't really felt how bad this is going to be yet.

But the worst culprit is a menace that lurks just over the horizon — cloud-based gaming. Big companies have been threatening to make fetch happen with cloud gaming for a decade now. Imagine — the dream of a gaming platform that is one hundred percent reliant on a company deciding to keep their servers up!

This nightmare scenario has already happened with Google Stadia when it shut down in early 2023. Fortunately, there were no historically significant exclusive games on Stadia, so we're cool for now.

I honestly don't know what we can do about this. If I know society at all, we won't change anything until the crisis actually starts. Find me in a decade so I can say I told you so.

<p style="text-align:center">☙</p>

Fortnite is not just a game, it's a critical cultural artifact of our time. Its impact on art and youth culture is immeasurable, and its influence on design in the medium will be felt for decades.

In N minutes, no one will be able to play it. Let N be a natural number that's smaller than when you started reading this article.

<div align="right">

*Dick Smithers*

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# 10 ALBUMS I LOVED IN 2023

Today I present to you ten records that made 2023 more bearable for me. Some old, some new. All great in their own way. Enjoy :)

*Desire, I Want To Turn Into You* **by Caroline Polachek (2023)** — Album of the year, without question. Personal bias for Caroline aside, this infectious and complex art pop project acts as a perfect successor to 2019's *Pang* and further demonstrates Caroline's ability to push boundaries and explore different sound palettes. And "Welcome to My Island" is quite the opener. Screaming fixes everything.

*Teen Dream* **by Beach House (2010)** — I wrote more in depth about this album last term but I will never stop showering it with praise and sharing it whenever possible. The record that cemented Beach House's spot in the 2010s indie scene is one that still holds up 14 years later, toeing the line between emotional highs and lows. "Silver Soul" is the band's best song. Argue with the paper.

*GLOW ON* **by Turnstile (2021)** — If 15-year-old me heard this thing, he would be covering his ears and begging for mercy. Hardcore punk is a genre I've yet to delve into deeply, but for anyone wishing to try, this is a great record to start with. Combining harsh sounds with catchy melodies, Turnstile's third album will get you dancing, or at the very least, ever so slightly headbanging.

*Grace* **by Jeff Buckley (1994)** — Gone too soon. But he certainly left behind a beautiful legacy. Jeff's first album before his death in 1997, while not only being intricately produced for its time, is intricately written, creating a haunting atmosphere that's surprisingly comforting. He was "So Real" for putting this together and earning himself the moniker of "Lana Del Rey for guys."

*If You're Feeling Sinister* **by Belle and Sebastian (1996)** — Indie pop at its absolute finest from one of the finest indie pop acts out there (who are still making music and touring nearly 30 years later; go them). If you ever need a warm hug but don't have anyone around to oblige, put this on and you'll feel better. The group also has 11 other albums to tide you over should you crave more twee goodness.

*Kid A* **by Radiohead (2000)** — Ah yes, the famous Radiohead and their foray into electronic music. It definitely paid off, even though this is probably the weirdest album on this list. The jarring transitions between rock and ambient and dance et al. start to become more palatable the more you listen. And it's not a Radiohead album without melancholia, so prepare yourself before "How to Disappear Completely." Consider this your warning.

*3D Country* **by Geese (2023)** — This album is just plain, unadulterated fun. Don't let the country part scare you; it's incorporated flawlessly into all the songs and makes for awesome lyrical theming that will not bore you with beer bottles and pickup trucks. Not much left to say really. I think the music speaks for itself.

*Get to Heaven* **by Everything Everything (2015)** — I only listened to this because I thought the cover looked cool. And I am so glad I did. This record is very blunt with its lyrical messaging in an almost violent, no holds barred manner, and this is juxtaposed by upbeat instrumentation that can sometimes be just as aggressive. It's an important album for its musical progressiveness, but also for its commentary on several historical events that took place the year it was released. Challenging for sure, yet rewarding.

*Give Up* **by The Postal Service (2003)** — The product of a collaboration between Death Cab For Cutie singer Ben Gibbard and musician Jimmy Tamborello, this indietronica record contains an overarching story about the trials and tribulations of a long-distance relationship. Set to electronic sounds described by some quick-witted Reddit user as "retro Super Mario beeps," the music describes the subsequent deterioration of said relationship with an air of hopefulness, as if better things are to come. This really is a touching listen, and Jenny Lewis' background vocals only make it that much sweeter.

*Weezer (Blue Album)* **by Weezer (1994)** — Need I say more? Weezer's debut album is packed to the brim with memorable tracks and stands tall amongst their more recent mediocre output. I am not ashamed to admit that I am a Weezerhead.

Next time: 10 Albums for Study Sessions. Catch you then ~

<div align="right">

*jimbitsgalore*

</div>

# I WISH I DIDN'T HAVE TO LEAVE

*Which is sooner, see you soon or see you later?*

See you later, I think.

*…Then this is not a goodbye, it's just a "see you later".*

<div align="right">

*leah*

</div>

# ANIME REVIEWS PART 7

## *I GOT ONE MORE IN ME*

If you're new to **mathNEWS**, this is basically my shtick now. I review anime. If you're anyone else, you're probably bored of them. I don't care.

### CLANNAD (AND CLANNAD: AFTER STORY) — 10/10

*Clannad* was, interestingly enough, not originally an anime or manga, but a visual novel. Apparently it took over 100 hours to complete all the routes, too, and yet they managed to condense it into a single show which runs for only around 18 hours. I'm glad they did, because it is really, **really** good, but perhaps not in the usual way. It seems to me that the general tendency in anime (and probably in television more broadly) is for the writing and plot to drop off in quality in later episodes and seasons, which seems to be precisely the opposite with *Clannad*. The progression is something like this:
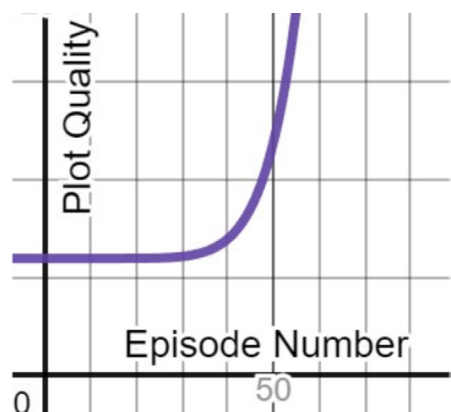


The anime follows two different storylines in tandem. The first is about the comical yet emotionally touching adventures of Tomoya Okazaki, a delinquent who skips school with his friend Youhei Sunohara. He comes off as depressed, owing to the death of his mother and the resultantly strained relationship with his father. However, he is motivated to become more prosocial when he meets one Nagisa Furukawa, who is repeating her senior year of high school due to a chronic illness delaying her graduation, and helps her to recruit members into a new club. Typical slice of life stuff, you probably get the idea.

The second, revealed only in occasional glimpses, is the seemingly absurdist tale of an unnamed girl in "a world that has ended", devoid of any other life or evidence thereof, save for a small house with a table and chair inside. She is soon joined by an apparently sentient doll that she creates out of mechanical scraps, and the two are left to ponder just how a situation as bizarre as theirs came to exist. The two narratives seem as different as can be, but the supernatural qualities of the town in which *Clannad* takes place gradually reveal the link between them.

Spoiling any more of the plot would be a cardinal sin as far as I'm concerned, so instead I want to discuss something tangential — the English dub. I am a dub-only watcher, and

some have rightly pointed out that there are a handful of glaring oddities to be found with *Clannad*'s. A small contingent of the voice actors seem unable to pronounce Japanese words in anything other than the most American accents imaginable, which ordinarily I would be able to forgive, but it's made worse by the fact that certain characters' names are routinely butchered (such as "Ryou" being pronounced as either "Rou" or "You" depending on the speaker, but never anything in between). Even so, I really liked it. A lot of the localizations were done pretty well, and the performances of David Matranga as Tomoya, Luci Christian as Nagisa, and Greg Ayres as Youhei were all spectacularly well done in my admittedly biased opinion.

As for something less tangential, I think a big part of the appeal of *Clannad* (perhaps the only appealing part for some) is its second season *After Story* and the way it portrays the cast's adult life. It's something that very few anime venture to do at all, let alone to such an extent, and it's a refreshing break from the tedium of high school. But enough of me rambling, go watch this. And have tissues ready. You'll need them.

### SERIAL EXPERIMENTS LAIN — 7/10

There was a time, not too long ago, when I would have described *The End of Evangelion* as abstract and hard-to-follow. Thankfully, that time has now passed — because *Serial Experiments Lain* makes *The End of Evangelion* seem straightforward by comparison.

To describe the show would likely take up the entirety of the word limit for this article, so suffice it to say that it involves suicide, a cyberbunk-themed club with a suspiciously large school-aged clientele, computers, an "internet" of sorts, drugs, metaphysics, a non-zero amount of paranoid schizophrenia, and a girl named Lain at the center of it all. As was no doubt the intention of writer Chiaki J. Konaka and producer Yasuyuki Ueda, the plot of *Serial Experiments Lain* is very much non-linear, frequently jumping back and forth through time, space, and layers of reality itself.

Coupled with the eerie graphics, the equally eerie (and incredibly well-done) sound design, and the overall ethos of a '90s anime, it makes for a profoundly bizarre watching experience that isn't quite like any other anime I've seen. To be perfectly honest, though, I don't think this kind of show is really for me. I like its philosophical angle, to be sure, but the arthouse-psychological-horror feel and convoluted storytelling had me more confused than captivated most of the time. But if you're into that, or are looking for the anime equivalent of a fever dream, you'd be hard pressed to find anything better.

But yeah, that's it for now. Next time, a recipe (for real).

*yalevoylian*

# WHY YOU SHOULD PLAY NIER REPLICANT VER.1.22474487139...

## THE NUMBER IS \SQRT{3/2}

NieR:Automata — there is no space after the colon, this is intentional — is a household name in most "Games with Best Stories" lists, and one of my favorite games, but I will cover that in my next article :)

Automata is a sequel to Square Enix's 2010 title, NieR. There is a little confusion to clear up here first, however. In Japan, the game was released as NieR RepliCant on the PlayStation 3, and NieR Gestalt on the Xbox 360. RepliCant was only released in Japan. In North America and Europe, the Gestalt version was released on both platforms and is simply titled NIER. Yes, there is no colon for either version, and the capitalization is different depending on whether it's one of the Japanese versions or not. I don't know why the titling is so inconsistent. In 2021, NieR RepliCant was remastered, and this will be the version I focus on. The differences between original Gestalt and RepliCant are superficial, one being that the time of the setting is different by a few years, but this changes nothing. I will touch on the rest later. The new version is considered to be a superior version of the original games. The music, audio, and visuals were redone and upgraded, and there is additional content that was well received. The name is as you see in the title of this article. The change from RepliCant to Replicant is not an error on my part. I still don't know why. I can now outline the premise of the game.

Now for the premise. You play as a teenage boy in a village when your younger sister, Yonah, falls sick with the Black Scrawl, an enigmatic and fatal disease with no known cure. Your mother passed away before the events of the game, and so you have been taking on odd jobs to buy her medicine and keep yourselves fed. Taking on jobs outside the village or traveling to other cities is risky due to the growing number and aggression of the "shades": shadowy, feral creatures that roam the wilderness. When Yonah leaves the village and gets lost in a dilapidated shrine, your character finds her, in the process stumbling upon a sentient tome that allows him to cast magic. Gathering clues from the shrine and your new companion, you set out on a quest to save Yonah from her affliction. In the Gestalt version, your character is an adult, Yonah your daughter, and it is instead your wife who passed away before the game's events. This is where the differences end, beyond Gestalt translating certain aspects to make them more "palatable", i.e., removing references to a character being gay that was in the original. This is fixed in ver.1.22... however.

The combat was not overhauled or changed much from its 2010 iteration and is somewhat dated. The hack-and-slash and magic combo is fun, but not very deep, and at times can get repetitive. It was never bad enough to upset me or make me want to stop playing, but the lack of complexity is something to note, I feel. The enemy design, boss design, and weapon and spell variety are fun, in my opinion. Where the game shines, as with most of Yoko Taro's works, is with the story. The characters are compelling, and the narrative is interesting and

novel. The game explores themes of perspective in conflicts, belonging, exclusion and found family, and even queer themes. All of this is accompanied by what I think is one of the best scores in video game music. I don't want to say too much, as I very much feel it'd detract from the experience, but this is in my top five games, though a little behind Automata. The side quests are mostly okay; some can be annoying in that they're fetch quests or the like, but the majority flesh out characters and are enjoyable in that aspect.

The dated gameplay elements will put off some, and understandably so. But in my opinion, the rest does make up for it, and there's a reason it's considered a cult classic. I recognize this is not the most glowing review, but I really did enjoy my time with this game a lot. Stay tuned for my review of Automata next issue (or the next if I'm busy, apologies to my fans <3), which will be a much more enthusiastic recommendation.

*sunrise parabellum*

# ONE-SENTENCE REVIEWS OF BOARD GAMES I PLAYED OVER CHRISTMAS SEASON

**Rococo:** It feels satisfying making prestige dresses for nobles while listening to classical music.

**Age of Innovation:** Better than Terra Mystica because you can play as riverfolk Goblin.

**Building Sword as Soon as Possible:** Flip cards and solve puzzles as soon as possible.

**Mr. Face:** Dixit but making emojis :D

**Spots:** A gambling game for dog lovers.

**Arborea:** A unique euro game with vibrant colors and mechanics.

**Godzilla: Tokyo Clash:** Become one of the four famous Kaijus to fight brutally, for the entertainment of film watchers.

**Ugly Christmas Sweaters:** Literally making ugly Christmas sweaters, because people like them.

*eralogos*

# THE EPIC HIGHS AND LOWS OF UNIVERSITY TRIVIA

Have you ever had a moment where that one random piece of info you know was actually useful?

Have you been able to answer that call to arms? Say the best words known to man, "Um, Actually"? Have the conversation carelessly stumble into this niche knowledge, so that you may gracefully dazzle the crowd with your knowledge?

Well then, you might like trivia. Trivia was made as a beacon, as the holy grail, for people chasing this high. But let this be a cautionary tale — trivia can betray you.

Trivia, on one cold, cold night in Waterloo, was being hosted at the concrete jumble of blocks we call campus. And, unlike most trivia, this trivia was, well, easy. The teams had been doing pretty well, and maybe this instilled them with a false sense of confidence. They did not know the sacrilege that was yet to come.

There were signs, of course. There were always signs. It's never a good sign when your host has the rule "I'm always right". And a few of the questions, sure, were phrased unnecessarily obtusely, like a question from a class meant to weed people out of a program. Or something. But no, true disaster struck in the second round:

> *"What was the fish traditionally used in Japanese Edomae sushi?"*

While I have been telling this story 100% clear of **any** bias whatsoever, as the author I feel the need to admit that I cannot hold myself back here. To me, though other ridiculous questions remain, this was the worst offence because it fell under MY niche knowledge. My moment to shine, to "um, actually" all the most important people in my life who happened to be at trivia.

"Um, actually," I start. "You might think it's salmon, but the salmon close to Japan was actually to dangerous to eat raw — too full of parasites. Salmon began being used in sushi in the 80s because it was brought over from Norway". Who ever said scrolling through Reddit was a waste of time? I had contributed to my team, given us a point that we could not have gotten had I not been there. I could have chased that high forever.

Unfortunately it would be cut short by finding out the answer was salmon. And that the host was pretty resistant to criticism when corrected.

The next few questions were filled with similar terrible inaccuracies and unnecessary confusion.

> *"What is the name of a food item made from fermented soy beans?"*

Well that could be anything. Tempeh? Natto? The crowd begged for clarification that would not come. And the answer? Tofu. They picked the one thing that *wasn't* fermented.

There were more, but I cannot keep you, dear reader, here all day. Perhaps this is not as painful to read as it is to experience, but still, I do not wish to be too distressing. I leave you with one more question, on the off-chance that you will, before you stop reading, understand the tribulation that we had gone through,

> *"What is a small green fruit often used in Mexican cuisine?"*

A lime? This was many a player's first instinct. The average person doesn't know that many small green fruits after all, but can recall the taste of lime in guacamole.

Oh, but the cleverer players had a better idea. How about a tomatillo? After all, tomatoes were technically fruits. And it *is* a small green fruit that literally translates to "little tomato" in Spanish. How clever, some of the trivia goers must've thought. Not everyone had heard of a tomatillo before. What fun new knowledge, truly embodying the spirit of trivia. How smart their teammates are, to have known of them.

The answer was avocado.

*Not a N\*rd*

# N MATH-BASED NAMES FOR CATS

- Pawscal
- Mewclid
- Cattor
- Germeowne
- Archimeowdies
- Alan Purring
- Hypawtia
- Mewler
- Mauss
- Mewton
- Bermewli
- Terrance Meow
- Diophantine Mewquations
- René De Cat
- Furier
- Chi Chi (Chi^2, I stole this one from Reddit)
- Principles of Meowthematical Ameowlysis (affectionately called Baby Mewdin)
- David MeowKinnon

*Battlestar Galacticumguzzler*
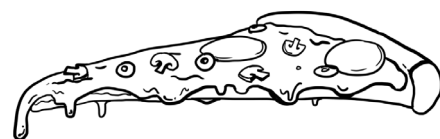
# 2

*MINGYU*

Thursdays are great. I've just the one class, CS 145, which is why I'm sitting on the floor next to AL 116. I've my ThinkPad X220 in my lap, listening to the guys talking about something called "coke", which has something to do with MATH 145. Everyone else here is taking all the advanced courses, but I'm not fond of math. I suppose that's why I haven't yet talked to anyone two weeks into the term. Or it might just be that I can't talk to people.

I'm hunched over and staring at my screen. I like to think I look just like those guys: unfashionable and a bit greasy. But I'm not a guy. As in I have breasts that I can't be bothered to tape up. Though I'm not really a girl, either.

The doors open and we all rush into the room to sit at the front. This time, there's a girl in the seat that I always take, so I sit next to her. Immediately, I notice she also has a ThinkPad X220. I want to comment on it, but I'm not sure how.

"Nice laptop," she says.

"Thanks."

I feel like I should say something more. Nothing comes to mind. Whatever. I start reviewing my notes from the last class.

"You use Ubuntu?"

She's gesturing at my laptop screen, where I have Vim open on the GNOME desktop. It makes me nervous, but whatever.

"Yeah."

"I use Arch with Openbox," she says. "It's riced to look like Plan 9 rio."

So it's true what they say about Arch Linux users. I try to smile at her. "Cool."

"You know," she says. She has this dramatic way of talking, where she moves her hands all about. "I hadn't seen a single girl here who uses Linux. Mostly they use MacBooks." She lolls her head. "I mean this is UW. We should all be hardcore Linux users." And for some reason, she's dressed like an anime girl.

"Oh," I say. "Yes, but I'm not really… a…" I can't get the last word out.

*Girl.*

It's remarkable how quickly it always comes up.

I'm flushed, and a high-pitched noise echoes through my head. She's staring at me, probably taking me in for real. I take this time to admire her some more. I don't know why she's dressed like that, but she's the kind of girl I could stare at for hours.

Then she says, "I'm Xue-Yan, and my pronouns are she/her." Very politely.

"My pronouns are vi/vim," I say.

She's quiet for a few seconds and then says, "Okay."

"Uh, n-no. My pronouns are actually… none. Don't refer to me in the third person."

Darn. I'd been sitting on those jokes for ages, but now that I finally got to use them, it came out really lame and corny. Xue-Yan just keeps looking at me. Oh, God, she thinks I'm weird. I've gotta fix this.

I do what I think is my awkward yet friendly laugh and say, "Sorry. I'm just kidding. I use they/them. Uh, do you know what vi is?"

"Yeah, of course," she says.

Right. Of course. She uses Arch Linux. She got the joke. She just didn't think it was funny… Argh!!!

Thankfully, Cormack starts lecturing now. I'm paying full attention to him and his use of the DrRacket stepper. That's all.

Of course, I'm looking at Xue-Yan too. I notice her every movement. I had thought she looked perfect: a real anime girl. But now I see that everything's lopsided. Her ribbon is twisted and uneven, her cardigan is bunched up, her skirt is crumpled where she's sitting. It makes her look even nicer.

Xue-Yan stands up to pack her bag when lecture ends, and I notice that she's short. I'm almost a head taller than her. She turns around, about to leave. I've gotta say something.
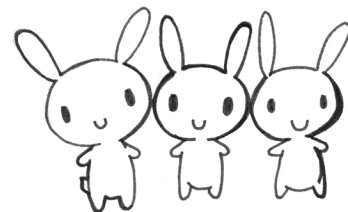
"I'm Mingyu."

She turns around, as startled as I am.

Then she pulls out an iPhone with a decked out phone case. "Do you have Facebook or something?"

"Yeah! Yeah, of course." We add each other on Facebook. And then she says, "See you next week."

Thursdays are *great*.

*cy*

# FIREBOY AND WATERLOOGIRL

*YES THIS IS PART 2 NO YOU DON'T NEED THAT MUCH CONTEXT IT'S ZUTARA FANFIC*

it doesn't take long to get petty. *he* didn't take long, so. neither does she.

"what is that." it's flat. katara's headphones are on, but it doesn't matter — she's been waiting for him. for this. and it wasn't because aang asked her to.

the sound of his voice, low and impatient, nearly trips a smile from her — it's the first time he's spoken since she'd brought in the tarp she'd spread from wall to wall, and he started sitting right there on the steps. in silence.

(sokka had given the tarp up without an argument, because *they wouldn't need it if it wasn't going to rain* — she had her thoughts on that topic too, but she was already in the middle of one fight. she didn't have time for another.)

when she looks up, the boy's mouth is pressed into a firm line, eyes pinpointed to the mass of white fur around her like he could light the whole thing on fire if he squinted hard enough. a grin threatens to split her face in half instead. "what is what?"

"you know exactly what i'm talking about," he answers, jaw clenching.

"oh, you mean appa?" she asks easily, dragging a hand through the thick fleece. "he's a sky bison."

"looks comfortable."

"a gift from a friend," she says, "way better than a yoga mat. he flies, you know."

his glare flits up to hold her gaze, and katara lets her smile slip through. that — triumph, concession — cuts what might probably be their longest conversation short, and he turns to take his usual seat; the highest step, without touching anything she laid out on the landing.

as close as he can get.

>

she taps out soon after — she'd already stuck out longer than she should've, curling into appa as she debugged her code distractedly, half an hour after she'd planned to leave. the shift in his attention is heavy on her as she packs away her things, and katara ignores it.

she knows full well why he's watching her. she brushes a hand over one of appa's padded horns and also knows that he won't get it.

"see you tomorrow," katara declares, stepping past him for the door.

his head jerks up. "aren't you forgetting something?"

she pauses over the steel handle. "oh. right, thanks." she turns and trails her fingers through a few dark strands of hair hanging over his forehead, sweeping it away from his face — he doesn't move as she approaches, doesn't flinch away. he lifts his chin to watch her instead, blinking rapidly. "see you tomorrow."

the cloying sweetness in her tone loses its edge somewhere along the way.

it doesn't seem to matter when she stumbles back into the stairwell only minutes later, his scowl visible without raising his eyes from the screen, a frown held intact through a long-suffering sigh.

"what *now*?"

*now* this has to be the most they've ever spoken. "the doors — the elevators. they're off."

"did you know you spend most of your time in a stairwell?"

"did you *check the time*?" she shoots back, voice rising, "it's past twelve. that's after hours. dana porter's closed."

for all his disruptions and — surprisingly deep — croak of a laugh, it turns out that he's been quiet when he wants to be. because it's not enough that his strides are longer than hers, the boy makes it *known* too, navigating each twist around the handrail with pounding footsteps and swift ease.

(he beats her around every single corner.)

katara can hear him swearing when she gets to the main floor, the set of doors at the front rattling as he pushes against them fruitlessly. they push back, glass and automatic and sealed tight with another pair shut behind the vestibule.

"i really don't think that'll do anything."

he tenses for a moment, casting a glance over his shoulder before he returns to the task. "can't hurt to try."

"it's automated. they've got electronic locks."

"still can't hear any of your bright ideas, princess."

on cue, the lights above them flicker and shutter off.

"*look*." she raises her phone — the screen rarely glows enough to read in the light of day, but now, surrounded by creepy shelves and dim reflections, it works just fine. "they only answer the phone during library hours. it's same thing with their email, and their chat is offline. if i was a librarian at a

university full of annoying students, i'd be off to bed. so that's what i'm going to do."

"you're giving up?" he lets go of the doors, peering down at her. "that fast?"

"nobody said *that*," she huffs back. he's not exactly wrong — she wouldn't be this nice to him either, on a normal day. "they'll open back up at eight in the morning. in the meantime, i'm tired, my friend loaned me a very nice pillow waiting for me upstairs, and it's big enough for more than a nap. do whatever you want while you wait. or break the doors and pay for it. your choice."

she whirls away.

"wait." it's quick. instinctive. her move is slower, but she listens. "what's your name?"

she tilts her head. "a little late for that, don't you think?"

"i just — " his exhale is harsh in the sunken silence of the library. "i don't like being here alone. my mom — she used to — she loved it here. donated to it and everything. i don't like being alone here."

she looks at him, suddenly soft and stubborn still, silhouetted by starlight through misted glass. familiar, in the subtlest, simplest way. "i lost my mother too," she says finally. then, "i'm katara."

somehow, his eyes gleam brighter in the dark.

"i'm lee."

*big a*

# INTERVIEW PREP

I've recently been helping my brother prepare for university admissions interviews. It's interesting watching "mini-me" going through the same steps and making the same mistakes I made. Except I didn't have a wiser older brother to point things out.

Where does my wisdom come from anyway? Co-op interviews? It's not like the university is trying to hire you. And yet, somehow the advice is all the same.

### SET A CONCRETE FINISH LINE.

Especially the first time, interview preparation can feel like an infinite task. And that is true, but thinking of it this way gets in the way of getting it done. At some point, you need to get on with life. Maybe that's after some number of practice questions. Maybe you're preparing in the shower and need to finish before the hot water runs out. Or maybe it's when your mentor says you're ready.

### PRACTICE GOOD STORYTELLING.

In business lingo you might hear this get called the STAR method, but that's prescriptive. Learning the STAR method is a good way to start, but you should eventually be comfortable enough to depart from the format when you feel like it.

### RECORD YOURSELF TALKING AND THEN WATCH IT BACK.

You might catch mannerisms that you don't realize you have. Things to look out for include word choice, speed, eye contact, and what you're doing with your hands.

### YOU KNOW EVERYTHING ABOUT YOURSELF, BUT THEY DON'T NEED TO.

If you (like me) feel the need to include every detail, practice suppressing that urge. It can improve the flow, and often the details don't help your case at all. (Of course, there's a balance here. Twisting the story by omission is just as unethical.)

### ALWAYS SPEAK WITH AN AUDIENCE IN MIND.

Put yourself in the interviewer's shoes. What do they want? If you think they could have concerns about the rest of your application, you might want to address it in your answers.

### COME PREPARED WITH QUESTIONS TO ASK IN RETURN.

You can do much better than the default ("day in the life") question. Assume that you will be silently judged if you ask something that can be answered by doing basic research. That is, coming up with meaningful questions automatically forces you to do a good amount of research ahead of the interview. Thus, it is useful to prepare questions even if you know you will not get to ask anything.

### BE GRATEFUL.

Even if you think it's a waste of time, your interviewers are presenting you with an opportunity. Act happy to be there.

☙

Sitting here, looking back over that list, I think it reads like a bunch of common sense. But there was a time when it was not so common to me. If you're a sweaty Grade 12 student reading **mathNEWS**, or a first-year student gearing up for your first ~~Hunger Games~~ WaterlooWorks main applications, or a seasoned industry veteran caught in the massive post-holiday layoff at *[insert company here]*, I hope you find something here as useful as my brother did. And of course,

### REMEMBER THAT LUCK IS A FACTOR.

Don't beat yourself up if it doesn't go well. Good luck!

*water*

# N NOTES ABOUT CS 452

CS 452 is known formally as Real-time Programming and informally as The Trains Course. I took it last semester, Fall of 2023. It is often hyped up as simultaneously enlightening and hellish. Here are a few notes from me about the course:

- The course has lectures. 3 hours per week, like all other courses.
- The course has a final exam. It's a 24 hour take-home final exam. It's pretty easy.
- The instructor is lenient with issues in your code. Even if your thing only works 33% of the time, he will give you an 8/10.
- The course takes a lot of time. Somewhere between two and three times the average CS course. You will likely need a lighter course load to compensate, either by taking birds or by taking fewer courses.
- There is very little theory. There is nothing conceptually difficult in the material. The lectures are mostly about discussing practical problems that arise in the assignments. Most of your brainpower will instead be expended debugging abstruse bugs in your code.
- The assignments, together, form one big implementation project. You essentially start from scratch; the starter code is a negligible 200 lines compared to our final 16,000. Each assignment builds off the previous one, which means bugs and design issues carry over.
- The hardest part of the course is that it's programmed in C with most of the standard library unimplemented. That means no strings, no I/O, no syscalls, no memory management. You have to implement all of that yourself. In particular, there is no `malloc()` and there is no `free()`. You either write your own heap functions, or do everything in static and stack. Our biggest time sinks came from weird memory problems that were difficult to trace and hard to replicate.
- The first assignment involves the trains, but from then on there is a period of about a month and a half where you don't touch the trains at all. Instead, you spend that time working on a microkernel for the Raspberry Pi. This part of the course feels like an extension of CS 350. The subsequent month has you building a train controller on top of this kernel.
- The microkernel portion of the course is lighter in coursework than the later train control portions of the course. There were people in the lab at 5am on some of those later deadlines.
- Other than the first assignment, the assignments are done in groups of two.
- One of my classmates was working alone while also taking CS 488 — Graphics. That guy's amazing. He's going to grad school.
- I made an anime logo for our kernel for shits and giggles (next column):



So, do I recommend the course? Not really. The fact that there are both kernel and train control assignments means that neither gets enough time in the limelight. I would have preferred a course entirely about the kernel, or entirely about the trains. As well, there was a lot of annoying time loss from programming in a stripped down version of C. I finished the course feeling like I hadn't gained much other than a little kernel programming experience and a lot of ironic prestige.

*snowdozer*

# REASON TO WRITE

I went to production night for the first time today. Looking around the room, I thought, "Why do all these people write for math**NEWS**?"

Because they have something they want to say? Because they were dragged here by other people, and it would be awkward to not write anything? To make friends or have a laugh with already existing ones? Or for other reasons? *[Editor's Note: It's the pizza.]*

I don't know, and I am too shy to ask anyone. But I wonder if anyone found their own meaningful reason to write and gained something valuable from this.

*writer*

# N

- 

*normalparameters*

# MILD INCONVENIENCES OF LIVING IN A DORM

- dishes
- dirty toilet
- random flies (who put a mob spawner in my room)
- random toenails on the floor
- white cum stains on the sofa (parting gift from previous roommate I suppose)
- dishes
- dishes
- Two of the four stoves in my dorm don't fucking turn on. And guess what, it's the two big ass stoves too. Like, nah, god could've disabled the two small stoves but nOOO, he must've saw my lecture attendance rate or something because this is *not it.* At the very start it was working fine, but then after a month of using it, shit began to turn south. From that point on, it only turned on 44% of the time; the other 66% *[Editor's note: that's 110%???]*, I had to smack it really hard with my wok until it magically worked. I knew this would not work long-term and, to my dismay, it completely stopped working 2 weeks later. *"But wait, shriveledballs77, don't you have 4 stoves in total? Can't you use the other two smaller stoves?"* Ain't no way you just asked that. I always knew profs lied when they said there are no bad questions. Let's put this into perspective, right? I have to cook stir fry or pork belly or whatever the fuck is in my fridge and still unexpired (optional) IN A WOK ON A TINY PEA-SIZED STOVE — THAT SHIT DON'T CUT IT MAN. THAT MICROSCOPIC HEAT TRANSMITTER CAN'T EVEN COOK AN *ICE CUBE.* HOW AM I SUPPOSED TO BE ALIVE IN MY DORM? Alright, that's bad enough, so my roommate called management over to fix the stove. When I was notified of this tremendous news, my eyes lit up, my toes pointed up, and my balls were throbbing. I go to the stove in excitement, and guess what happens? It doesn't fucking turn on. What in the flying fuck did the management do? Stare at it? Piss on it? Idk what L rizz they got because shit still isn't TURNING ON. So now what? Not all stories have a happy ending; this is an ongoing plot; I live in misery.
- dishes
- having a small trash can (it fills up so fast 🗑)
- no elevators and living on 4th floor
- throwing the trash out (4th floor and no elevator)
- charger not long enough
- unwashed dishes in the sink
- dishes
- dishes
- stove catching on fire
- dishes
- dishes

*shriveledballs77*

# HOW TO PLAY W+M1 PYRO

**Step 1:** Locate the w and left mouse buttons.

**Step 2:** Hold down the w and left mouse buttons.

### ADVANCED

**Step 3:** Join cp_dustbowl (ideally last point, red team, first spawn).

**Step 4:** Find a friend who is willing to hold down the left mouse button on you as medic.

**Step 5:** Equip the phlogistinator.

**Step 6:** After holding down the two buttons, take a break to coordinate a play with your medic.

**Step 7:** Press the right mouse button.

**Step 8:** Have your medic press the right mouse button.

**Step 9:** Hold down the w and left mouse buttons, ideally in one of the many cramped, tiny, shoebox tier hallways that make up 75% of the map.

**Step 10:** Turn the shoeboxes into baking ovens.

### OPTIONAL

**Step 11:** As you will inevitably receive many mean comments in chat, be sure to add fuel to the fire by engaging with inflammatory online colloquialisms such as "mad cuz bad", ":^)", "ggez", and ":3".

*warrior1rules*

# N OBJECTIVELY HORRIBLE ALTERNATIVES IF I DON'T GET INTO GRAD SCHOOL

- Join the Navy
- Take the MCAT
- Move to Rojava and join the YPG
- Get a Software Job: become a CRYPTO BRO YEAH
- Adopt 32 cats
- Become a Russian honeypot
- Work for a non-profit
- Pursue a career in the Church
- Move to Fort McMurray
- Work at Pizza Nova
- Become a pro e-sports gamer
- Start a podcast

*RapidEyeMovement*

# RANKING THE NUMBERS FROM 1–10 FROM 1–10
### *INSPIRED BY THAT ONE TIKTOK I SAW*

1. 1—one is neither prime nor composite (only number other than 0 to be so); it is the lowest squared, cubed, etc. natural number; it is the first natural number (math is correct on this, computer science is wrong); it is a divisor of every number; it is the only number to have only one divisor; it is the only number in this list to not appear in a deck of cards (that's an ace, not a one); need i go on?
2. 2—two is the only even prime number; any multiple of two is even (i love even numbers); $2 + 2 = 2 \times 2 = 2^2$; two is the base of the binary system (that one's for you, computer scientists); two has two homophones.
3. 4—four is the lowest perfect square aside from one; it is the answer to $2 + 2$, $2 \times 2$, and $2^2$; four has four letters; when i was younger i loved the never-can-tell game "four is cosmic"; it is the smallest composite natural number; the four colour theorem; four seasons.
4. 6—six is the lowest perfect number; it is the only number to be both the sum and product of three consecutive positive integers; it is the multiple of the two first prime numbers, which makes it especially fun when it is the factor of another number (like 24, what a great number); six is the number of sides on a die; i just saw Six the Musical and it was good.
5. 3—three is the first odd prime number; it is featured in the fibonacci sequence; three strikes you're out; third times the charm; this is the third math**NEWS** prod night i was able to attend; three is the closest integer to pi.
6. 9—nine is a perfect square; the digits in multiples of nine sum to nine; it is the number of planets in our solar system (pluto ily you're still a planet to me); it is the highest single-number digit; it is the sum of the first two cubic numbers ($1 + 8 = 9$).
7. 5—five is easy to count and multiply with; most people have five fingers on each hand; five senses; typically five vowels in english (sorry y); it is featured in the fibonacci sequence.
8. 10—we use base 10 for our numbers; ten is the sum of the first three primes; capricorn is the tenth astrological sign (i HATE capricorns); we have ten fingers.
9. 8—eight is the lowest cubic number aside from one; it is featured in the fibonacci sequence.
10. 7—seven is an uninteresting prime number (prime numbers are so aggressively mid); it has the highest probability of being the sum when two six-sided dice are rolled.

*anteater*

# MY MELODY FUN FACTS
### *IN HONOUR OF HER BIRTHDAY BEING ON JANUARY 18*

1. My Melody's full name (マイメロディ, Mai Merodi) is frequently shortened as My Melo (マイメロ, Mai Mero).
2. She was born in the forest of Mariland.
3. She is a Capricorn, born January 18th.
4. Her favourite food is almond pound cake.
5. In her original debut, she portrayed Little Red Riding Hood, hence the red (sometimes pink) hood, often with a bow or flower on the right side.
6. My Melody has a younger brother named Rhythm, who she loves dearly.
7. She enjoys baking cookies with her mother, who also enjoys doing crafts.
8. Her father is both gentle and strong.
9. My Melody's grandma made her hood and is knowledgeable about many things.
10. Her grandfather is also adventure-loving.
11. Her best friend is a mouse named Flat who is a bit shy.
12. She also has another friend named Piano who is soft, kind, and girly.

*cherry* ♡

# GUESS I HAVE TO DO WORK NOW

And that means I have to go somewhere
where i'll be alone
away from y'all
just me
and myself
alone
doing work
in the company of no one
lonely lonely
working away
that's me

see y'all

χ

# A CS MAJOR'S WET DREAM

Factorio

Play and find out

0.423

# ASKING THE mathNEWS EDITORS A QUESTION

### ASKING THE mathNEWS PANTHEON VERY NICELY…

**Q:** Hypothetically, for the sake of argument, I am on a co-op term and I wish to write for **mathNEWS**. Am I legally able to do so, and more importantly consume pizzas with thyst at thee gatherings?

- classifiED: yea sure if you submit an article
- evaluatED: yes
- befuddlED: i mean that was what i was doing last term so if you write an article yeah
- awED: of course thats totally allowED. my first term as editor? co-op
- distractED: yeah
- caffeinatED: do what? you can if you have written an article

**In conclusion:** Although the Editors answer gracefully, we must remember they are PASSING GODS with infinite compassion, and are probably helping me save face. Thus it is most likely that if I, a mortal being, were to try the patience of the omnipotent and attempt to acquire sphere-shaped delicacies, I, Andoiii, would be smited on the spot, dragged to the gallows, and then be unceremoniously dispatched by the pet dragons.

This is the only valid interpretation.

*andoiii*

# SNOWLESS

I was visiting family on a snowless winter break when I realized how strange that felt.

A snowless break. I'd never seen that before.

Maybe it won't be so strange now…

*terminal*

# PAC AFTER NEW YEAR'S

jesus christ do not go to pac this week it will smell worse than any advanced math class, and also have fun trying to get a benchpress

**what to do instead**: just wait a week lol all the new year reso-lutionists' commitment issues should settle in

*shriveledballs77*

# WATCHING MARVEL MOVIES

Before October 2023, I hadn't watched any of those "superhero" movies. I never had any interest. The only exceptions were *Deadpool* and *Deadpool 2*, only because someone convinced me that he was not like the other superheroes. It did end up being different than what I expected and I really liked the character. Ryan Reynolds did a great job. However, it still didn't give me enough motivation to try watching the Marvel movies, for example.

It took until getting a partner who really likes the Marvel Cinematic Universe for me to finally start watching those movies. Plus, movies make for an excellent excuse to be over at someone's place. Thus, we started off with *Iron Man*, released over a decade ago, and in the span of 3 months, we made it all the way to *Black Panther*.

There's a certain charm when you watch a movie years after its release, such as nicknaming the *Guardians of the Galaxy* character Peter Quill, played by Chris Pratt, as "Mario". By the way, that is not the only nickname I created.[1]

My partner was also really good at keeping secrets whenever I asked questions about the movies. I really was kept free from all sorts of spoilers, not only just throughout the years. Too often after a movie, I yelled, "You were keeping *that* a secret this entire time?!"

Then came *Avengers: Infinity War*, which we watched together on New Year's Day. The only thing I knew came from memes, so every time a "meme scene" came up, I got super hyped. It made the movie so much more enjoyable.[2]

After the movie, the first thing I asked was the time between the release date of this movie and *Avengers: Endgame*, to which the only thing I had to say was how I could not believe people had to wait an entire year back then for the conclusion. *[Editor's note: It was pain.]*

I can't believe I've become super hyped for a Marvel movie. I can't wait to watch *Avengers: Endgame* soon. I can only imagine what it was like in theatres on release day.
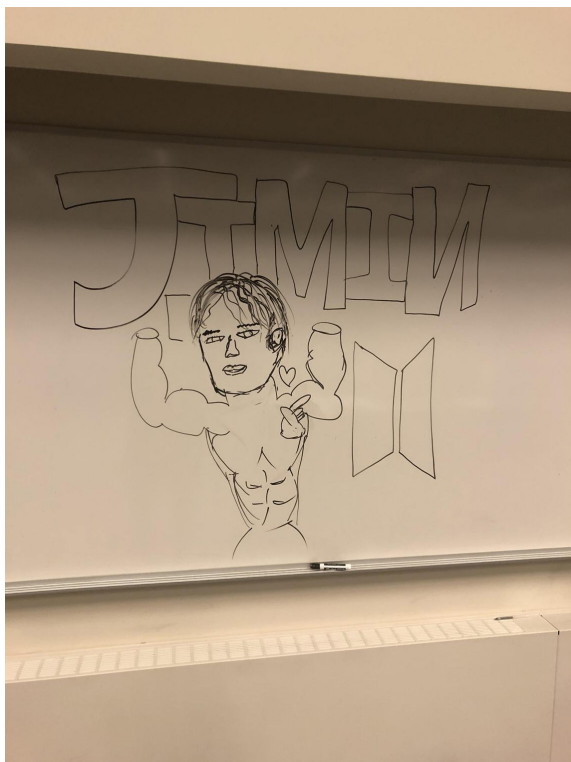
*boldblazer*

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1. For example, I also gave Mjölnir the nickname of Myonyo~ :3
2. "OMG! They said the thing!" — Me, 2024
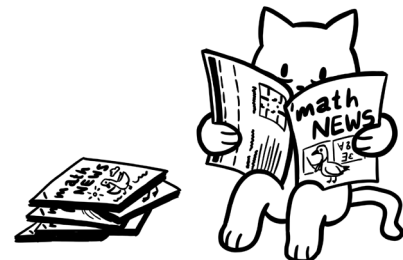
# WHOEVER WALKED IN ON A MUSCULAR DRAWING OF JIMIN, THAT WAS ME

### FOLLOW ME ON INSTAGRAM, MY ARTWORK NEEDS CLOUT COMPENSATION



Imagine you walk in to M3 classroom, about to pull off a beautiful study session. You pull up your STAT textbook, about to review some normal distribution problems. You're bored to death, basically about to end yourself from the boredom. Is this really the university dream you have been dreaming of? Is the pathway to becoming a great mathematician really worth the pain and boredom? Would it be better to just masturbate in the DC library washrooms? Suddenly…

You look up…

You see a strange man, who's 6ft btw ladies, approach the whiteboards of M3…

"Oh, he's going to practice some questions," you thought…

He starts drawing the sexy facial bone structure of a familiar face. Your eyes starts wondering what it's laying upon, your brain wonders what this sexy man could be drawing. He finishes in the fine details. The hair, the eyes, the big juicy muscular muscles, the abs, it's all clicking now.

You climax.

It's him, the hottest, most finest man to ever exist, drawing a picture of jimin.

Suddenly, a creative burst of energy strikes through your entire body. What was boredom is transmuted into a bolt of motivation, determination, and optimism in life. You breeze through those math problems as though they were from ARBUS. You start an online business that makes $100k a month. Your testosterone triples instantaneously like a limit definition of a derivative. You score 99 on all your courses. You get all the bitches god had to offer. All thanks to that one sexy man's drawing of jimin located at M3 on December 9, 2023.

You're welcome.

*shriveledballs77*

# I GOT A SUNRISE ALARM CLOCK, SO LIKE ALL GOOD LIFESTYLE HACKERS I MUST SHILL IT

For completely legitimate reasons, I happened to chance upon a $205 Amazon.ca gift card right before Christmas break last year. One of the things I decided to use my newfound wealth on was a sunrise alarm clock — a clock that, starting from thirty minutes before your alarm, slowly ramps up the brightness of a room-filling light, emulating a sun and making you wake up in brightness, in case your room doesn't get morning sunlight for faces-west reasons, or is-situated-in-a-polar-latitude-during-winter reasons.

Get one. It made waking up in the dark winter mornings so much easier. Trust me, you won't regret it (except in the mornings when it wakes you up). Also, protip: set your sunrise clock to be a minute or so behind real time, and don't remove the morning alarm on your phone. This makes it so that the phone alarm mostly wakes you up, and then the crushing realization that this bright object next to you is about to start ringing in a minute makes you stare at it in despair, which wakes you up even more, and then it starts ringing, and that wakes you up completely. 10/10 works every time.

*tendstofortytwo*

# mathNEWS ARTICLES ARE DUE TUESDAY AT 10 AM

### BUT CO-OP JOB POSTING APPLICATIONS ARE DUE TUESDAY AT 9 AM

Whichever shall I do?… *[Editor's note: ☻ ]*

*Whole Number Haver*

# GRIDWORD

## CHIPI CHIPI CHAPA CHAPA GRIDY GRIDY

### gridCOMMENT *154.1*

hello gamers!!

welcome back to the W24 volume of **mathNEWS**, and thus the W24 volume of **gridWORD** :0

i am happy to be back again as your resident **gridMASTER**, although it will unfortunately be my last term holding the title. i hope to see the usual people once again, along with some noobies who enjoy a good **gridWORD**!!! :))))

given this is my last term, the **mathNEWS** team is thus seeking a new **gridMASTER** for future terms. that means some lucky person will be my **gridWORD** protégé and carry on **gridWORD**ing in my stead. i'll help you get set up and learn

how to **gridMASTER** too!! if you are interested, please email me at lbatson@uwaterloo.ca to explain your interest! :0000

otherwise, this **gridWORD** is in the theme of the **new** year and, as such, i ask as this issue's **gridQUESTION**: "what is your new years resolution?"

please send **gridWORD** solution along with **gridQUESTION** answer and your pseudonym to mathnews@gmail.com by january 29th at 6pm.

have a great semester y'all!!!1!!1!1!!1!11 :)))))))

*Wink wonk*

### ACROSS

1. Tower site
5. Invitation letters
9. Tendon*
14. Like one notorious Pure Math chair*
15. Great Salt Lake state
16. Rank
17. Opponent
19. Beginning
20. Make stuff up
21. Poetic time of day
22. "Send help!"
24. Many, many moons
25. Spanish hands
27. Results of blizzards
30. Written in fact
35. A type of log from an evergreen*
38. Saffron sources
39. Elevator inventor
40. Instant
43. Bubble
44. Star in Cygnus
46. Utah Beach locale
48. Partaking the odour of a rodent, say
51. Green land?
52. Security problems
56. Congeal
59. Stitch up
60. "Sesame Street" watcher
62. Chain letters?
63. Moves quickly
65. Arrangement of things
68. Block house?
69. Brain wave
70. Colorful salamander*
71. Entree to the Internet
72. Genesis garden
73. Yellowfin, e.g.

### DOWN

1. Hymn
2. Kind of ink
3. Evening hour
4. Leave dumbstruck
5. Con
6. Represent
7. Alt. spelling
8. Medicine, especially a cathartic
9. Like a jerk
10. "___ say!"
11. Back of the neck
12. Canyon sound
13. Withdraw gradually
18. Go to seed again?
23. Frequently, in poetry
26. Ego
28. Electoral districts
29. Potassium ___ (food preservative)
31. "___ so fast!"
32. "High" time
33. Battery contents
34. Easter flower
35. Pea holders
36. Big-ticket ___
37. Supreme Court count
41. Where to park a parka?
42. "To ___ is human ..."
45. Open up, as a flower
47. A small Mediterranean island
49. Anger
50. An east coaster, slang*
53. "Farewell, mon ami"
54. Famous
55. Father Christmas
56. Self-stimulation, abbr.
57. As a result
58. "I ___ you!"
61. Gulf war ally
64. Boot part
66. Uneven?
67. Explosive inits.

| SUN JAN 21 | MON JAN 22 | TUE JAN 23 | WED JAN 24 | THU JAN 25 | FRI JAN 26 | SAT JAN 27 |
|---|---|---|---|---|---|---|
| Squirrel Appreciation Day | Cycle #1 interviews begin | | Beer Can Appreciation Day | | Tuition and fee refund deadline—100%<br><br>Drop deadline<br><br>boldblazer's birthday 🎂 | |

| SUN JAN 28 | MON JAN 29 | TUE JAN 30 | WED JAN 31 | THU FEB 1 | FRI FEB 2 | SAT FEB 3 |
|---|---|---|---|---|---|---|
| | **mathNEWS** 154.2 production night<br><br>Spring 2024 course selection begins | Shop at Math C&D Day | yaD sdrawkcaB | distractED's mom's birthday 🎂🎂🎂🎂 | **mathNEWS** 154.2 grows up and leaves home<br><br>Groundhog Day | |

# AN ACTUAL TOUGH gridWORD (SOLUTION)

I don't even need to check with the editors to see if anyone submitted a solution since I know this bad boy from 153.6 was impossible.

|   | ¹S | ²A | ³L | ⁴E | ⁵T |
|---|---|---|---|---|---|
|   | ⁶O | I | L | E | R |
|   | ⁷I | S | O | R | E |
|   | ⁸F | L | Y | I | N |
|   | ⁹S | E | D | E | T |

*aphf*

# SHE X ON MY Y TILL I Z COMPILATION

- she endofunct on my category till i monoid
- she Cau on my chy till i Schwarz
- she delta on my epsilon till i converge
- she iterate on my function till i orbit
- she commute on my groups till i abelian
- she cdr on my list till i empty
- she dynamics on my system till i chaos
- she partition my interval till i integrable
  *[Editor's note: oh come on, you almost had it]*
- she instantiate my template till i compile
- she Banach on my Tarski till i paradox
- she `delete` on my pointer till i `Segmentation fault (core dumped)`
- she use on my joke till i unfunny
- she 4 on my 2 till i 3

*anon*