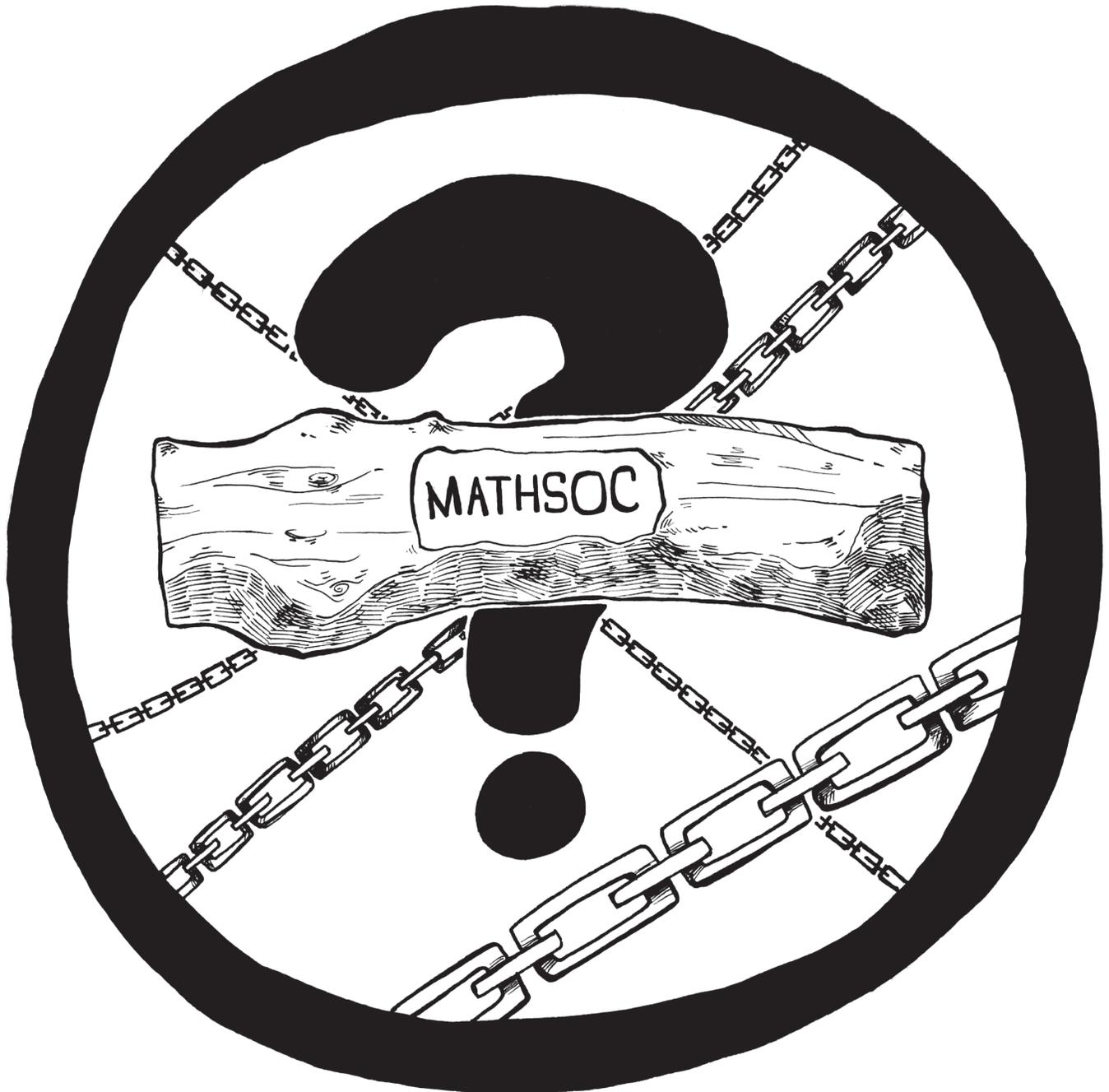


BREAK-IN NEWS: NATURAL LOG STOLEN FROM MC



**MATHSOC DECLARES WAR ON TERRORIST GROUP
KNOWN AS "ENGSOC"**

"WHEN KITCHENER-WATERLOO MERGES AS ONE CITY, WHAT SHOULD WE NAME IT?"

Hello there! Welcome to the world of **mathNEWS**! My name is unsophisticatED! People call me the **mathNEWS** EDITOR! This world is inhabited by creatures called MATHIES! For some people, MATHIES are pets. Others use them for fights. Myself...I study MATHIES as a profession.

For those of you who do not recognize the iconic opening dialogue from Pokémon Red Version, I have recently been thinking a lot about Pokémon. The newest entries in the main series of Pokémon games, Pokémon Sword and Pokémon Shield, have been released, and there has been somewhat of a controversy surrounding these games.

One of the first issues which sparked the controversy was the fact that Game Freak decided to not include the entire national Pokédex in the new games. This decision was more significant than some realize. The original slogan of the Pokémon series was "Gotta catch 'em all!" and with the removal of the national dex, this goal of catching 'em all becomes impossible.

In response to this decision, the tag #dexit was coined. This is in reference to the Brexit movement in the UK. Since the setting of the new games is the Galar region, based on real-world UK, this name was especially appropriate.

Now, I could go on about this for quite a while, but as I do not own a Switch, I have not had a chance to try the games for myself. Until I actually play the games, I will hold my tongue on the topic.

Regarding this **mathNEWS** issue, in its pages you will find an array of interesting articles on many topics. One of these is especially long, but holds a special place in my heart as a past ISA. If you are in CS246 or CS246E, I would highly recommend giving [246: A CS Odyssey](#) a read.

Lastly, in case you did not see the cover of the issue, we are now at war! Rest assured that we, as **mathNEWS** writers and editors, will do our best to document the events of this conflict.

unsophisticatED
Editor, **mathNEWS**

terrified
Editor, **mathNEWS**

| | |
|-------------------------------|--|
| BEYOND META | Keidabayou |
| BOLDBLAZER | Name it Despair to compliment the city of Hope just outside Vancouver |
| DAWDLING | Waterloo is just a bathroom, and clearly Kitchener refers to a kitchen, so Kitchener-Waterloo is a flat. |
| UW UNPRINT | West Brampton |
| DERIVING FOR DICK | Kitchener 2: Electric Boogaloo |
| WATER | California |
| SANDWICH EXPERT | Berlin |
| AUTOWIRED | Waterkit |
| FINCHEY | Cambitchloo (can't forget Cambridge now, can we?) |
| WALDO@<3.LE-GASP.CA | I feel as though I need more time to give a better answer, but Kahonktown is a pretty fitting description if you ask me. |
| XAVIENTOIS | Laurier |
| SN707 | Considering the amount of cali co-ops, something like San Francisco sounds about right to me (or some random cali city name) |
| ZETHAR | 水城, probably |
| PSYCHGIRL | Central Ontario |
| VARIOUS PSEUDONYMS | Caydubbleyou |
| TERRIFIED | West Toronto, to go along with the cities of Barrie North Toronto, Oshawa East Toronto, and Niagara Falls South Toronto. |
| CLARIFIED | North-West Cambridge |
| UNSOPHISTICATED | Lazeez-ville |

ARTICLE OF THE ISSUE

This article of the issue is a joint awarding to Epsilon Screwn and Vesica Pisces for their article [246: A CS Odyssey](#)! Just like Homer's epic, it is a thrilling recounting of the life of a CS246 final project as the clock winds down and the deadline ticks ever closer. I'll leave it up to you two to decide how to split the \$25 Conestoga gift card thou shalt receive as reward, though I would suggest a non-physical method.

Hi! I like shorts! They're comfy and easy to wear!

JOSH RAMPERSAD, **mathNEWS** EDITOR FOR FALL 2019
ALONG WITH JAMIE ANDERSON, TERRY CHEN, AND CLARA XI

DECLARATION OF WAR

FRIDAY, NOVEMBER 8TH, 2019

Harrowed Mathematic Derivatives,

We have discovered that our beloved Natural Log has been subject to a most heinous kidnapping within our glorious Fort Stanton. Rest assured we will be taking action with extreme veracity to rectify this egregious attack. In light of this, we hereby commit our forces upon the Engineering vandals and declare war on Fort Sedra-Smith. Swift justice is at hand!

Prepare thyselfes...

Your Supreme Mother Function
President of the Mathematics Society



MATHSOC

ENGSOC STOLE THE NATURAL LOG

FRI, NOV 8, 2019 AT 10:18 AM

Dear MathSoc,

I would like to inform you that the Math natural log has been liberated. Corrections will be made to the spelling of THE TOOL on the information card with the log, and the log itself will be returned to in due time. The Non-Existent Action Committee has certainly not be involved with this, as they do not exist, but if they did exist, which they do not, it will be evident soon, but it won't, because they do not exist, and thus the name Non-existent.

The case holding the log, log itself, and any materials with the log are safe, and no permanent damage will be done to the log other than the possibility of a small engraving in a non-display side of the log.

If you have any questions about the above, please do not hesitate to reach out.

Sincerely,

Ellen McGee (she/her)
President
University of Waterloo Engineering Society 'B'

SAT, NOV 9, 2019 AT 12:54 AM

Dear EngSoc,

You have taken advantage of past MathSoc executives for a very long time now. This changes today! In fact, this new administration is like no other, and we are very much looking forward to retrieving what is OUR property.

Please find attached our official War Declaration letter composed with the assistance of our newly formed MathSoc W.A.R. committee.

You have been warned. Game on...

P.s you stole the natural log from Math faculty property not MathSoc, better return it ASAP before they find out.

Good luck! - you will need it.

Samer Zumot
President | Mathematics Society
Fall 2019

SAT, NOV 16, 2019 AT 4:21 PM

Dear Supreme Mother Function,

I am happy to see that the Toolbearers have made such a lasting impression on your team that you wish to imitate them. I will have to inform them that they are being looked up too. I'm sure they will be happy to hear that, they quite enjoyed meeting your constituents at Semi Formal last weekend.

Congratulations on the formation of the W.A.R Committee! May I ask what W.A.R. stands for?

I'm glad you look forward to retrieving the log, it will require some retrieving. In the meantime, I believe you should prepare the log's display case for it's return. I personally would suggest a better lock (but then again I wouldn't know, I've never had my mascot stolen). More importantly, I've attached an updated version of the log's information card. This will help readers understand the full, true story of the log and now contains the CORRECT facts.



The Natural Log has been Mathsoc's "Mathscot" since 1980, when a group of Mathies took it on themselves to create a mascot they could parade around campus as Engineering did with **THE RIDGID TOOL**. Since its creation, the Natural Log has been a constant target of inter-faculty pranks. Stolen, lost, and vandalized many times, the log's history is riddle with periods of time which are totally unaccounted for (but for which much lore is written). It was most recently stolen on November 8, 2019, because we didn't lock the glass display properly.

-Fatema Boxwala, MathSoc President, Spring 2017

-Edited by: The Noiselessly-Editing Association of Corrections

I hope you have a great weekend!

Sincerely,

Ellen McGee (she/her)
President
University of Waterloo Engineering Society 'B'

The nth Battle of Waterloo begins — go fight!

A mathNEWS EDITOR WHO'S TRYING TO DODGE CONSCRIPTION

mathASKS 141.5

FEATURING PROFESSOR MICHAEL GODFREY

HONK: WHAT IS THE DIFFERENCE BETWEEN COMPUTER SCIENCE AND SOFTWARE ENGINEERING?

I calculate it as 16. (https://en.wikipedia.org/wiki/Levenshtein_distance).

DAWDLING: WHAT IS YOUR FAVOURITE COURSE TO TEACH, AND WHAT IS AN UNCONVENTIONAL WAY TO INTERPRET IT?

I really enjoy teaching both CS138 (the SE equivalent of CS136) and CS246, both of which use C++, my favourite programming language. Since REPLs for C++ are still a nascent technology, any way to interpret it is unconventional.

ZETHAR: WHAT IS YOUR FAVOURITE FEATURE IN C++ AND WHY?

This is pure Schadenfreude, but I kinda dig the insane complexity of the language. It makes your head want to explode! Did you know that the template mechanism alone is Turing complete? (<https://rtraba.files.wordpress.com/2015/05/cppturing.pdf>)

UW UNPRINT: HOW MANY PEOPLE DON'T LISTEN TO YOUR SLIDE ABOUT PLAGIARISM AND TRY TO FOOL YOU ANYWAY?

Sadly, several every term. These tools work very well, and are hard to fool. And if you are clever enough to fool the tool, then you are also clever enough to do the assignment on your own!

DERIVING FOR DICK: WHAT IS YOUR FAVOURITE BATHROOM ON CAMPUS?

The CS-profs-only executive bathroom on the fourth floor of DC. I love the steam room and the jacuzzi, plus the free massages (I get one almost every day after lecture). In the relaxation room, they have some nice vintage sherries too, as one does.

XAVIENTOIS: IF MIGOD WAS AN ACRONYM, WHAT WOULD IT STAND FOR?

I think you meant to say, "If MIGOD *were* an acronym". I mean, wow, the biggest change I have noticed in my career is the declining use of the subjunctive. It's a challenge that, so far, I've found hard to deal with except by rereading the book "Eats, Shoots & Leaves". It's nice to know that I'm not the only person who self-identifies as a pedant (it/its, NOT "it's"). Would that it were so.

CIX: WHAT IS YOUR BEST DAD JOKE?

What's brown and sticky?

A wet slipper!

No wait, that's the answer to "what's wet and slippery".

Sorry, I have to rebuild my indices again.

SANDWICH EXPERT: WHAT IS A FUN FACT ABOUT YOU?

When I was a baby in Montreal in the early 1960s, I was babysat by Gump Worsley's aunt. Gump Worsley is the last major NHL goaltender to play without a mask, which you can kinda guess if you look at old photos of him.

Also, once when I was 8 years old, our family stopped for lunch at Andersen's Pea Soup Restaurant, near Solvang CA. Solvang is just off the main highway between LA and San Francisco, and has a few roadside attractions intended to entice travelling families to pull off to spend money, like the Big Apple between Toronto and Kingston. So after lunch — we had the pea soup, by the way — I was duly convinced to put half a Fig Newton in my mouth and stand still inside a large cage outside of the restaurant. A black bear then lunged over and took the cookie from my mouth with its mouth. The bear was a former animal actor who had a cameo in the original version of the Disney film "Herbie the Love Bug", and was also one of several bear actors used in the series "Gentle Ben", which starred Ron Howard's brother Clint. My dad took a photo, and I have it as my Slack profile picture. While the bear's handler was in the cage all the time, and had a leash attached to the bear's head, I can't imagine someone doing this today; those darn lawyers and their "liability" concerns. The restaurant is still there, but the retired animal actor exhibit only lasted a few years. This sounds like a great idea for a song; are you listening, Katy Perry? (<https://plg.uwaterloo.ca/~migod/photos/bear.jpg>)

UNSOPHISTICATED: HOW HAS THE WAY SOFTWARE IS DESIGNED AND BUILT CHANGED OVER THE COURSE OF YOUR CAREER?

Do you know that final scene in the original version of "Planet of the Apes", where Charlton Heston falls to his knees and cries out in anger, "You blew it up! Ah, damn you! God damn you all to hell!" That's how I feel about Javascript as a compilation/deployment target platform.

BOLDBLAZER: I NEVER HAD YOU AS A PROF WHEN I TOOK SOME OF THE COURSES YOU TEACH. WHAT COULD YOU HAVE DONE TO CONVINCe STUDENTS TO ENROL IN YOUR SECTION?

Initially, I use bribes such as small candies and Dad jokes. If those don't work, then I move on to outright intimidation, such as more Dad jokes. Finally, if they are indeed made of stronger stuff, then I resort to the soft cushion or the comfy chair. I'll bet you didn't expect that!

WALDO@<3.LE-GASP.CA: WHAT HAS BEEN THE BIGGEST CHANGE YOU HAVE SEEN IN YOUR CAREER? HOW DID YOU DEAL WITH THE CHALLENGES IT BROUGHT?

See above.

TERRIFIED: WOULD YOU RATHER FACE A HUNDRED JAVADUCK-DOCUMENTED JAVA PONIES, OR ONE JAVA PONY-AUTHORED JAVADUCK?

No ponies — real or virtual — were used in the construction of the below paragraph.

JavaDuck was a fun project I invented for a CS2 course (roughly, CS136/138) when I was at naive young professor at Cornell between 1996-98. Basically, the goal was to do a lightweight parse of Java code to create Javadoc-like web pages. At the time Sun Microsystems — who owned the Java trademark — were sending cease-and-desist letters to tool vendors who used the word Java in their tool name, so I carefully called the project JDuck instead, hoping Sun wouldn't notice or care. However, I did get a nice note from the Sun Javadoc team, who said they quite liked my project. Fast forward to 2003-04 and I got a gig during my first sabbatical at Sun Labs, working on a team of four researchers with James Gosling. I wrote an implementation of the Visitor pattern — which all CS246 students come to know and love — that visited the AST nodes generated by Javac compiler; the visitor generated static "facts" about the program, such as which method called which other method, which method threw/caught which exception, etc. The idea was to be able to form complex queries from the resulting "factbase", such as "show me all methods that instantiate any class that transitively implements the Flurble interface and supports a constructor of one Boolean argument". It went so well that Sun tried to hire me permanently, but I was very happily ensconced at Waterloo by then; I think I made the correct choice because within a year or so almost everyone I had worked with at Sun had left the company.

CLARIFIED: WHAT IS YOUR FAVOURITE MEAL TO COOK?

We lived in LA when I was between the ages of 3 and 8. I grew to love Mexican food as a young kid, then we moved to Markham in 1971 at a time when tortilla chips were unheard of in southern Ontario. So my mum learned to cook Mexican herself despite the lack of ingredients available locally. When I started to cook on my own during grad school, I became more and more ambitious. My favourite Mexican meal to cook isn't that complicated: tortilla soup, followed by soft tacos of skirt steak, guac, charred green onions, and a squeeze of lime. I also do a mean Pollo Pipian, in the sense that it's pretty average.

CC: WHAT DO YOU CONSIDER A GOOD TYPE OF QUESTION TO ASK IN OFFICE HOURS?

"Single malt or a nice blend?"

ARTS101: IF YOU HAD TO TEACH AN ARTS COURSE, WHICH WOULD IT BE?

My undergrad was jointly in Pure Math and CS at UofT, but I also got a minor in Philosophy. And I took real, essay-based Philosophy courses too, not just those easy logic courses. I would love to teach a course on the early empirical philosophers; I'm a David Hume fanboy.

FUCK, IT'S ALMOST FINALS SEASON

It's coming. Looming on the horizon, a dark cloud approaches ever-more-rapidly, crackling with modulus classes and Epsilon proofs. You've made it so far across this new and foreign terrain, struggling to adapt to the hostile environment of MC and beyond, but there is still one last sinister, brooding obstacle lurking just beyond the turn of the month.

Finals season is almost upon us.

We may only be just cresting the hill of midterms now, but still, the dark cloud marches forward, determined to raze the student body without mercy.

BUT!

We shan't let it have us! We shall band together and take it on as a tribe united by thorough preparation! Side by side, we shall storm into finals with victory on our side, a left-skewed mark distribution in our collective mind's eye!

To aid in this valiant mission, TSA and MathSoc's First Year Representatives bring to your attention the upcoming MATH 135 and MATH 137 Finals Review Sessions, on Nov. 23rd and Nov. 30th respectively!

Each day, running from 10:30–4, will be broken down into multiple sessions focused on different topics, with a lunch break (including free lunch for those sticking around through from the first session!) partway through.

RSVP and find more info on the Teaching Student Association (TSA) or MathSoc Facebook!

(Holy fuck, we're so screwed.)

tired of promoting events

Ceci n'est pas filler.

A SURREALIST blackBOX

HORROR STORY COLLECTION

#1

"I definitely killed this interview! I had great connection with the interviewers and my experience was a good fit for the job. I'll just wait for the ranking tomorrow." Minion A was recalling the interview process and came up with this conclusion happily.

He waited till 7:59pm and logged into Waterloo Works.

Not ranked.

"What?! How come? I don't deserve this! Why would people laugh like they mean it if they're not gonna hire me?"

Minion A turned on introspection mode.

Is it because I was competing with a bunch of upper years?

Is it because I don't have a charming personality? Definitely not that.

Is it because my resume is a piece of garbage?

Why didn't they ask me a lot of question?

Is it the same reason why girls don't like me?

Is it because I just had a haircut and it doesn't look good?

I didn't wear perfume on that day.

Never mind. Life sucks.

#2

Minion B only has two questions left on the CS246 assignment.

She decided to do it tomorrow first thing in the morning.

She finished most of the coding within 2 hours and feels pretty.

Then she runs her code on Linux.

No result shows up due to a memory leak.

She tried to fix the memory leak for 2 more hours, then runs it again.

Segmentation fault.

+ 1 hour

Uninitialized value created by heap allocation.

+ 1.5 hour

Calling pure virtual function.

...

It's 1 am already.

She took a nap and dreamed about having the knowledge for midterm at the beginning of the week and the joy after fixing all the bugs.

She then wakes up. It's already 7am. It is impossible to finish before deadline.

Fin. #SecondYearSlump

Autowired

DAVIDSON VS. JAO: WHO WOULD WIN?

ok so all im saying is that davidson would probably absolutely demolish jao in a fight. first off, just look at him, he's ripped, he's a fucking chad, all because of his dedication to squash. what does jao have?? yeah that's what i thought. also, i don't know what jao's diet consists of, but i can GUARANTEE you that it isn't EVEN CLOSE to being as robust or healthful as davidson's hearty vegan diet. davidson doesn't like soft white bread and, in this fight, jao IS the soft white bread. especially as winter rolls in, you can bet your bottom dollar that you'll see davidson yielding his signature socks and sandals™, and anyone who's anyone knows that anyone who gets in his way sees the bottom of his sandal, NO sock. what does jao wear? dude i don't even know like, some sort of normal shoes?? and yeah i see you jao fans out there, you're all like "bUt WhAT aBoUt HiS sUpErSiNgUlAr ElLiPtIc CuRvE iSoGeNiEs?!?" like ok first, it's only been RUMORED that he has any supersingular isogenies, he probably only has the regular ones, and even i have one of those (i got it from the fridge in dc 2531). and even if he did have a supersingular one, it still doesnt even hold a candle to davidson's holy rational chalk. just watch him, he could draw a line and slip jao into one of the gaps between numbers, and he'd be GONE. he'd be flattened into zero dimensions, a point in space. honestly it wouldnt even be a fight, it's just common sense. if you don't believe me then you obviously haven't met davidson.

jeff

Pourquoi suis-je filler?

AN EXISTENTIAL blackBOX

GORDON RAMSAY IS AN ASSHOLE

Instead of my usual content of The Onion ripoffs, this article is not going to be a fake news article. No, today I am going to speak truly and honestly about something I feel very deeply about, because I think this needs to be heard. And yes, this pains me to say, because the man I'm going to talk about is a great chef and a genuinely entertaining person. But it's true: Gordon Ramsay is an asshole.

Let me back up a bit: I recently went through a medical condition that, I'm sure, many of you have experienced in your life. Yes, I was addicted to Kitchen Nightmares clips on YouTube. To the credit of whoever posts them, they are so easy to get drawn into. They're short, simple, and they all follow a predictable and comforting pattern.

First, Gordon Ramsay will be at a restaurant. He will nitpick some issue with the restaurant that you, the viewer, would probably never have noticed, but now that Ramsay has said it, you immediately agree that is a travesty to food service everywhere. Then the waiter will come by, and Ramsay will order, and the food will be brought out, and Ramsay will eat. The food will be bad, because *surprise*, failing restaurants generally have bad food. Ramsay will make the least clever joke imaginable, usually something like "<word>? More like <word> shit." (Occasionally, he will swing for "<word> it in the bin.") While this occurs, of course, the waiter will have to unveil increasingly decrepit food, and Ramsay delights in making a minimum-wage worker uncomfortable on television knowing they cannot escape or fight back.

This is the Kitchen Nightmares formula. We all know it well. Regardless of any moral judgments, it is entertaining, and so we overlook the surprisingly mean spirited way in which it happens. It was the same for me, until I saw one particular clip (<https://www.youtube.com/watch?v=Qj00e7iHECE>). In this clip, Ramsay visits a man named Mike. The first scene of the clip is Mike explaining how excited he is to meet Ramsay, and how much of an idol the chef is for him. So, Ramsay sits down, opens the menu...and he calls Mike fat.

That's right. Ramsay asks Mike, "when was the last time you went to the gym?" The cameraman treats us to the most uncomfortable laugh in recorded history, and when the laugh dies off, Ramsay *asks the same question again*, before following up with "when was the last time you had a salad?" Now, if you read the YouTube comments, people will try to defend Ramsay. "Mike was actually a bad guy," they say. "He was stealing tips," they say. *That doesn't matter*. This is literally the first few minutes of the episode. Ramsay knows nothing of stealing tips, he has not tasted the food, he has not even ordered anything, and he decides that since the restaurant is a health restaurant and Mike is admittedly overweight, that it is fine to call him fat. Later, Ramsay will accuse Mike of "staring at him" and ask him to leave while he eats, as if he's not filming a whole ass TV show as this is happening.

It was that clip that made me realize something that, deep down, I had known the whole time — Gordon Ramsay is

an asshole. Now, I know what you might say: "It's just a TV show, he isn't actually like that in real life, its all edited for the cameras." And maybe you're right. After all, when Ramsay is with his family (probably the only people it would be socially unacceptable for him to yell at) he is a perfectly fine and pleasant person, even if you get the constant sense of dread that one mistake will lead to a funeral at the Ramsay house. But that clip is just the garnish on the asshole dish that is Gordon Ramsay. You see, the real asshole isn't Ramsay's actions on the show. It's the fact that he made the show in the first place.

If you watch enough Kitchen Nightmares, you'll see that the common thread is this: *these people should not have restaurants*. Invariably, someone's marriage is failing, or a son doesn't want to take over the family business, or a family is being torn apart. Or maybe someone who is just frankly unsuited to running a restaurant has stubbornly decided to run one. And Ramsay decides the best thing for these people is to run around yelling for a bit, pay for a reno, have maybe five minutes of "Family Court starring Gordon Ramsay", and cook some nice food for them, as if they would have any hope at all of replicating it, or the fame that comes from Gordon Ramsay visiting, after he's left. He puts in three days of work and leaves.

Kitchen Nightmares preys on the gullible and the ignorant. It preys on people who somehow have not figured out that if they go on this show, they will not be the star. They won't even be the damsel in distress. They will be the joke. They will be the villain to be defeated, and the hero, Ramsay, will crack a few "one-liners" and ride off into the sunset, ready to embarrass some more minimum-wage workers who clearly have no choice but to play along. The fact that so many people signed up, even after it became clear to the general public what the show was about, is a testament how desperate these people are. Routinely, owners will be hundreds of thousands of dollars in debt, and Ramsay will happily make some TV at their expense and basically give them help you could probably give them yourself, if you were as wealthy and famous as Ramsay is.

After all, the problems on this show are rarely complex. They do not require special culinary knowledge only Ramsay possesses. If they did, the show wouldn't work because viewers wouldn't understand what's wrong. Instead, Ramsay's wise tips usually boil down to: use fresh food, stop being a weird/unstable/delusional person, don't store cooked meat with raw meat. Not exactly stuff you learn at Le Cordon Bleu.

If Ramsay really wanted to help people, why put it on TV? Why restrict yourself by forcing yourself to manufacture drama and squeeze a whole turnaround into 30 minutes of footage? Why not just go in, cameras off, and help them? No stupid jokes, no mugging for the camera, no constant stream of overdone drama noises. Tell them why their food's bad. Pay for their therapy (because most of these places are in America, you know they can't afford it themselves). Why not just do that?

Of course, by now, you know the answer. Helping people isn't the point. The drama is the point. Ramsay is the point. He gets to insult people while showing off his superiority, and we get to indulge in that deeply human pleasure of watching people fail and be destroyed. Everybody wins.

UW Unprint

THE LIFE CYCLE OF UNIVERSITY CLUBS

As someone who has been around campus for a while, you eventually start to notice the cyclical nature of many university institutions. Given the short time students actually are in university and the fact that they are on co-op half the time, most university clubs have very short memories, with students having little knowledge of what transpired prior to their enrollment. This lack of institutional memory leads history to repeat itself. And so I shall use my experience to bestow you the wisdom of past history.

Clubs go through the following N stages:

1. **The beginning phase:** The club is looking for membership and thus is very welcoming, but is not quite sure what it is doing.
2. **The golden age:** The membership is established and the club has a good sense of community.
3. **The clique phase:** The club has many in-jokes that are weird to an outsider. All the members have established friendships that extend outside of the club. Recruitment of new members falls to the wayside.
4. The (almost) dying phase. Club members are graduating. There is no new blood to replace the leaving members. At this point, if people notice the crisis and do something about it, the cycle returns to step 1. Otherwise, the club just dies.

This isn't just some hypothetical cautionary tale — this actually happened to one of the oldest clubs on campus, the University of Waterloo Science Fiction and Fantasy Club. This club was so old that it predated the organization formerly known as Feds, and had (has?) a grandfather agreement with Feds. However, despite the club's long and storied history, it became too cliquey, failed to recruit successors, and faded from existence.

This is actually a bit of problem because of the club's long standing agreements with various organizations, including MathSoc. MathSoc would like to renegotiate with WatSF&C; however, they can't as it is currently inactive. Thus, some people in MathSoc have decided that the simplest way to settle this is by reviving the club themselves long enough to renegotiate the agreement in their favour.

Beyond Meta

MATH MAJOR HOTNESS TIER LIST

Hello uglies. Welcome to what is really a list of majors sorted by conventional attractiveness. This does not reflect individual hotness, but rather a collection of means with an extremely limited sample size. I'm not providing any explanations because I'm clearly biased and not ready to defend my hot takes. Nonetheless, the ranks are objectively correct.

S Tier — Math/BBA (DD), CFM, C&O

A Tier — Math/Teaching, Math Phys, Applied Math, Pure Math

B Tier — Math Finance, Math/CPA, Act Sci, CS/BBA (DD), Math/BBA

C Tier — Undeclared, FARM, Computational Math, Math Studies

D Tier — CS, Data Science, Stats

Notes:

- Tiers represent significant gaps between hotness, I guess.
- Several majors are hit or miss with their hotness. This includes PMath with a hit accuracy of 70%, ActSci with 51%, and CS with 17.8%.
- C&O would be the most consistent major with their degree of hotness.
- I know 1.5 people in CFM and 0 in Math Finance, so their placements are based off of word of mouth.
- In theory, the hottest Stat major would rank higher than the least hot Math/BBA (DD) major.
- Double majors are sexy. Take the average of the two and round up if necessary. Triple majors round down instead.

Deriving for Dick

CALL FOR HELP MELTING DOWN THE RIGID TOOL AFTER TERRORIST ATTACK ON MATHSOC

After n-jineer terrorists stole the Math Faculty's natural log, MathSoc will be responding by stealing the rigid tool and melting it down into the shape of a giant tie, then painting it pink. The rigid tool is a giant metal wrench, not to be confused with n-jineers, who are themselves, rigid tools.

Protector of the Log

THE MATHSOC CANDY TIER LIST

This is a tier list of some of the most recent types of candy MathSoc puts out. As a result, this list is *incomplete*; you can help by *expanding it*.

S-Tier: Hershey's Cookies 'n' Creme Drops ("like sex in your mouth," as they say), Coffee Crisp Minis

A-Tier: Off-Brand Gummy Bears

B-Tier: Rolo

C-Tier: Fuzzy Peaches and other sour candy, Milk Chocolate m&m's

D-Tier: Peanut m&m's

F-Tier: Bulk Barn Maple Syrup Candies (breaks the Geneva Convention, probably)

This list considers factors such as surroundings, presentation, and the compatibility of the candy with tongs. Judging solely by the candy itself may yield different results.

instantpoodles

CAMPUS POLICE UNVEIL NEW VEHICLE FLEET



UW Unprint

ACTSCI STUDENT YOU JUST CUT IN FRONT OF KNOWS EXACTLY WHEN AND HOW YOU WILL DIE

WATERLOO — Math faculty sources reported to **mathNEWS** today that the ActSci student you just cut in front of to get coffee knows exactly when and how you will die.

The sources confirmed that while the unnamed student was slightly annoyed by your disregard of their position in line, they were comforted by the thought of the shock on your face as the Grim Reaper claimed you. They were further gladdened by their knowledge of how you would die, knowing it was just embarrassing enough to remove any tragic element whatsoever from your death.

They also gained great pleasure from having calculated the time of your death to the second, and were eagerly awaiting that time, knowing that only then would you face justice for your recent transgression in the CnD line.

At press time, the ActSci student had decided to consult the Statistics Department to confirm that there was no uncertainty in the date and manner of your death.

UW Unprint

N FUN THINGS TO TEST STUDENTS ON INSTEAD OF COURSE MATERIAL

- How fast they can fill in 300 scantron bubbles
- Their verbatim memorization of all your lectures
- Whether they notice you left out one word in the definition in the T/F question
- Your favourite book
- How fast they can legibly write in lectures because there are no slides
- Their ability to circle the answer that's generally pretty correct, but technically wrong, but hey don't think too hard about, it's not a trick question, unless it is a trick question
- Amount of free time to argue for part marks
- The caption in the bottom right of that figure in the textbook you wrote
- Clairvoyance
- ~~Fear~~ Respect

Totally Buggin'

AN ASSIGNMENT HAS BEEN SLAIN

A wave crashes over the bow of the sailboat. You taste the sea, but it barely registers. It's all too familiar for you to care. You're hungry. Thirsty. Cold. Tired. When the rain was falling sideways, at least you had something to drink. Now snow is falling sideways, and you can barely see ahead of you. On the bright side, you're not sick anymore. The phlegm left over from your bout of the Waterloo plague has frozen onto the deck.

That'll be a hard stain to get rid of if you reach land. You catch yourself. "*When I reach land.*" You shout it out loud to spite the waves, but you're not entirely sure about that. The creak of the rudder jeers back to taunt you, and even before you finish, another wave splashes over your face and silences you.

If there is any reassurance, your ship has traversed this ocean many times, even if you have not. It was crafted years ago by the same masterminds who perfected this perilous journey. You began that journey 2.5 months ago: Summerton to Festive Island. Why did you leave Summerton again? Everything was better back there. No waves, no snow, no Waterloo plague. Out in the open ocean, no ship ever feels sturdy enough. There are infinitely many waves, and just one vessel to get you through them all. Maybe they got it all wrong? What if this year, the storms are just a bit worse? Perhaps the rogue wave is already on its way, the one that will make driftwood of their handiwork.

And why couldn't they make the ship just a bit cozier? You'd gladly pay for it. Just a bit taller, perhaps, so you wouldn't have to worry about the monsters that wash onto deck with the waves. You can't sleep at night for fear of them eating you, so here you are, holding onto the bow of the ship with one hand, a sharp stick in the other. Sharp sticks: good for throwing, good for stabbing, plenty of them in the hold. Nowadays, you keep them only for stabbing. There's no longer any point taking out a monster at range, when there are always several more eager to take its place. You don't see any at the moment, but maybe you're not looking hard enough. Keeping track of all of them is tiring. There's always one or two that slip out of sight unnoticed before reappearing alarmingly close.

A honk in the distance wakes you up from your half-slumber. The boat lurches as the sea pulls away beneath it. Here it comes. As you tip forward, a green winged monster snaps at you from the waves with its beak. You do a double take. This beak has teeth. And it's connected to a head with seven eyes. You sigh. One thing you've learned in the past is that they're only truly dead once you've poked out all the eyes. Seven good jabs will do it, or many more if you're unlucky. You back away as it pulls itself onto the deck. It's better to fight on your territory.

The seven eyes are currently sizing you up, as you wait nervously for your fight or flight response to kick off. Lately, you've noticed that it's not happening as quickly anymore. You hope you can figure it out before you get eaten.

It's not coming.

(There's a horrible shriek in the distance.)

It's still not coming.

The boat lurches again, and you grab hold of the mast to keep from falling into the sea. This is unexpected. The sharp stick almost falls out of your hand, and it's finally enough to jump start your instincts.

You look up, and the cause of the lurch is clear. A black serpent with a binary tree for a tongue is coiled up on the deck behind the first monster, ready to strike. Only four eyes, but you've never fought two creatures of the depth off at the same time. *This is it*, you think. *It'll take a miracle now.*

Then suddenly, you see it. It glistens white, reflecting the light of a sun that does not shine where you are. It is but for a moment, but it is unmistakable. The calving ice shelves on Final's Landing are the last thing a sailor encounters before the shores of Festive Island. There, massive icebergs block the wind and waves, and many have drowned as fools for failing to steer around them. But that's a problem for another day, and you're almost certain it's not as bad as the monsters that are currently staring you down.

The end is on the horizon, and it gives you the strength you need. All that stands between you and calm seas are the two terrifying beasts that are about to consume you. You didn't come all this way to perish. You grip the sharp stick in both hands, and prepare for your last stand. You hear a battle cry (yours?), and the adrenaline takes over.

An assignment has been slain.

Characteristic of your outbursts, the next thing you remember is pushing the bloody remains of the monsters back into the sea. Your arm is wounded, your sharp stick in two pieces, but you'll live to see another day.

To see land.

water

THE MATHSOC GENERAL MEETING...

...is on Friday, November 29th, at 4:30pm in MC Comfy! If you paid your MathSoc fee at the start of the term, this is your chance to decide the future of the society, and enjoy free food!

Questions? Drop by the MathSoc office (MC 3038), or email info@mathsoc.uwaterloo.ca. See you there!

👏👏 FLAG REVIEW III

FLAG REVIEW 👏👏

What's been on my mind as of late are a lot of proposed regional flags regardless of any official status. I figure that I should keep it local and related to Canada, as allowing the choice of flags to be international instead would keep me pondering over which flags to review for a month.

Once again, the rubric I will be using is the same as last time:

The flags will be scored out of 10, with 5 of those being my holistic subjective score, and the other 5 being based on each of the 5 basic principles of flag design as defined by the North American Vexillological Association (NAVA). They are:

- Keep it simple
- Use meaningful symbolism
- Use two or three basic colours
- No lettering or seals
- Be distinctive or be related

FLAG OF CASCADIA



Cascadia is the name of a proposed region of Western North America, most often defined as the Pacific Northwest, west of the Continental Divide, and it is congruent to most of BC, Washington State, and Oregon. The three horizontal bands of blue, white, and green representing the natural features of the region. These are standard colours with no conflict in terms of harmony between the colours. The central focus of the the flag is the silhouette of a Douglas Fir tree which is also where the name of this flag "The Doug Flag" comes from. Reminiscent of the the flag of Lebanon and its green Cedar tree as its central focus, the Douglas Fir here is also used in a similar way as the tree is native to the region and is one of the more significant trees due to its size and prominence. It is a well suited symbol to use to represent Cascadia, though the only problem with it, is that it is too complicated of a silhouette to be used in a flag. Even the similarly looking Cedar tree on the flag of Lebanon is pushing its limits on complexity; the Douglas Fir here is definitely over that limit. It could tone down on its design to reduce the complexity, as no one would be able to see such small details from a distance. The dark colour also clashes with the rest of the flag; it is not distinguishable enough and may

as well be just purely black instead of a dark green. On top of that, this dark green colour clashes with the green and blue bands on the flag. The well-chosen colours become ruined by the dark figure of a tree in the middle. The white band in the middle is the only one providing any balance to the flag. If the bands were vertical instead, the flag would be well suited to not clash as it would be centred on only the white band. Despite some of its shortcomings, the flag suits its purpose and symbolism well. I'm glad the complexity is limited to just the tree. I'm just disappointed on the colour.

Design Score: ★★☆☆☆

Subjective Score: ★★☆☆☆

FLAG OF LABRADOR



This flag was brought to my attention, not from a **mathNEWS** reader, but from my roommate. He and I both brought our respective flags from where we live. I brought the flag of BC, being from Vancouver, and when he said that he was from Labrador, I thought I would finally get to see a Newfoundland and Labrador flag in the wild for the first time. Instead I was shown the flag of Labrador. Labrador by itself doesn't have an official flag, but this flag has entered common use there. Similarly to Cascadia, this flag also uses the same style of non-conflicting colours, but the horizontal bands are of a different order of white, green, and a light blue, and the widths of the bands are not all equal. They represent respectively the snow, the land, and the waters of Labrador. The main symbol on the flag is a twig from a black spruce, a type of pine which is the most common tree in Labrador. The flag that my roommate had had a solid green colour on the twig, but the version Wikipedia has, appears to have some minute detailing on it. Any minute detail is pointless on a flag, and as seen on my roommate's copy, it is impractical to flag makers and such detail won't even be visible anyway from any distance larger than right in front of you. It should have just been a solid colour of green from the start. The design aspects are quite similar to Cascadia and as said before, the colours work well and the symbolism suits the flag and the region well too. However, unlike Cascadia, the creator of this Labrador flag has done well and used only a twig from their most prominent flag instead of a silhouette of the entire tree. Furthermore the

twig is on only the white band of the flag which makes it stand out better even from a distance as the colours do not clash. I am at least thankful for that design choice.

Design Score: ★★★★★

Subjective Score: ★★★★★

Once again, you are all free to submit flags for me to review. Other methods of presenting flags to me are also possible. Hang some flags by windows or whatever. If I come across interesting flags in the wild, I'd still review them. Send it to the **mathNEWS** email. I'm sure they will enjoy getting emails.

boldblazer

horrorSCOPES

To avoid overcrowding of lecture sections, the University of Waterloo is now classifying students by zodiac sign instead of program. To students now graduating with a degree in Cancer, we are very sorry. Our recurring segment **horrorSCOPES** has been adjusted accordingly.

PISCES (FEB. 19–MAR. 20)

As a Pisces your zodiac element is water. Despite this, the stars advise you not to get any in your lungs, no matter how far you think you can swim from the beach.

ARIES (MAR. 21–APR. 19)

Aries is the first sign of the zodiac, making you first in all parts of your life. Unfortunately, this includes jury duty assignments and the list of casualties caused when the defendant decided he had no chance of winning after all.

TAURUS (APR. 20–MAY 20)

As a Taurus, your sign begins on 4/20, which is cause to celebrate something which is now legal in Canada! However, you will be in North Korea, where they do not recognize 4/20 as a holiday, weed as a legal drug, or humans as having rights.

GEMINI (MAY 21–JUN. 20)

The symbol of the Gemini is a pair of twins, which accurately symbolizes and predicts your eventual downfall when your twin steals your identity, your job, your spouse, and those McCafe stickers you've been saving for three months.

CANCER (JUN. 21–JUL. 22)

Ah, jeez, there's no easy way to say this. You know how Cancer is the name of the crab symbol and not actually cancer? Well, that isn't always true. In other news, the stars believe you should start looking for a radiologist.

LEO (JUL. 23–AUG. 22)

Those with the sign of Leo are ruled by the sun, but the police won't believe that explanation when you're arrested for the bank robbery. Turns out astrological influence is not a legally recognized defense.

VIRGO (AUG. 23–SEP. 22)

The stars honestly have no idea what a Virgo even is. It says here your element is Earth? So, uh, maybe get into the dirt sciences. Gardening, ceramics? Hey, at least you didn't get cancer like the other guy.

LIBRA (SEP. 23–OCT. 22)

As a Libra, your element is air. Now, you might be thinking there's no way to have too much air. However, the stars and the National Weather Service disagree. Your lucky number is 419 km/h.

SCORPIO (OCT. 23–NOV. 21)

So, your horoscope is basically the Cancer guy's. The stars, by the way, know of no way to repel scorpions.

SAGITTARIUS (NOV. 22–DEC. 21)

Those with the sign of Sagittarius are ruled by the element of fire, putting them at natural conflict with those with the sign of the firefighter. Your lucky number is 911.

CAPRICORN (DEC. 22–JAN. 19)

In a shocking twist of fate that the stars honestly wish they had thought of, when your plane crashes and the rest of the passengers are swept away by a river, you will be stranded right next to the line on the map that bears your zodiac's name.

AQUARIUS (JAN. 20–FEB. 19)

Keep doing what you're doing.

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profQUOTES 141.5

MATH 249: KEVIN PURBHOO

- “ I reserve the right to throw whatever crap I throw at you.
- “ I'm a bit behind schedule, so I'll rush through this.
- “ I want to avoid existence as a property.
- “ I am trying to avoid existence.
- “ I have tried to do math on my phone many, many times, and it can't be done.
- “ I have thought some more about the exam, and I have nothing to say.
- “ Does anyone remember what room the exam is in?
- “ Sometimes it is useful to do the exact opposite of what you want to do.
- “ That is a lot of words, so I am never writing it again.
- “ I think that worrying about exams is an overrated thing.
- “ I am going to do something that never happens in combinatorics: use the triangle inequality, like some analyst.
- “ The thing I'm waving my hands at over there is one half of the argument.
- “ You'll notice that you know exactly what I meant by that, even though I didn't define anything.
- “ I did Kuratowski's theorem once in this class, and everyone went "what the fuck is he doing?"
- “ This is the handshake theorem for faces, which some people call the faceshaking theorem.
- “ Student: are we going to prove this?
Prof: We are going to prove everything, except the Jordan Curve Theorem.
- “ On the whole, the exams were well-done, so give your neighbours a pat on the back or something.
- “ I think the real answer to your question is that Euler was a pretty smart guy.

PMATH 351: KENNETH DAVIDSON

- “ The first property is straightforward. The proof is by staring at it.
- “ Bernstein started with $1 = (x+(1-x))^n$...well everyone believes THAT...

CS 246E: BRAD LUSHMAN

- “ A carpenter walks into his shop and asks, "Where did I leave my abstract saw?"
- “ On the other hand, before I start a civil war with math...
- “ If we're going to write a game, we of course need a class Turtle.
- “ Now we know why no other language supports multiple inheritance: it's impossible.
- “ How does C++ support it? C++ is magical.
- “ This is the part of the course where I have to practice my acting skills, that I am surprised; nay, shocked--that it doesn't work. But there is not much that happens here that I did not plan.
- “ What think we?

CS 246E: FRANK WANG (ISA)

- “ *[a picture refuses to open]* I don't know why it's not working. It even has a thumbnail!
- “ Student: Set it as the desktop background.
ISA: It works!
- “ Okay, maze generation is hard so I'm not going to talk smack.
- “ I'm just gonna shut up now before I say something wrong.

CS 241E: ONDŘEJ LHOTÁK

- “ If I write down a theorem — well, we don't do that here.
- “ I told you to believe me, so you should believe me.
- “ One cool thing about these guys is that one of them is a real person.
- “ Your job is to turn this wall of English into a wall of Scala.
- “ I'm gonna write a meme here...

ACTSC 371: ARASH SOLEIMANI DAHAJ

- “ A yield curve is...a curve that shows the yield...

CS 135: DAN HOLTBY

- “ ...We'll get the "multiplicative identity", which is what one calls itself when it wants to assert its dominance.
- “ No, apple is thing!

CS 245E: JONATHAN BUSS

- “ This letter is not an X; it's a Chi [pronounced Kai], or, if you prefer, a Hifh.
- “ How many say that because it snowed this morning the midterm should be cancelled?
- “ This is a question period. Just like in legislature, you can ask a question and you may or may not get an answer.
- “ One, two, what's the difference?
- “ But space is expensive. I only have six terabytes on my disk.
- “ Advanced math is easy. Simple math is tough.

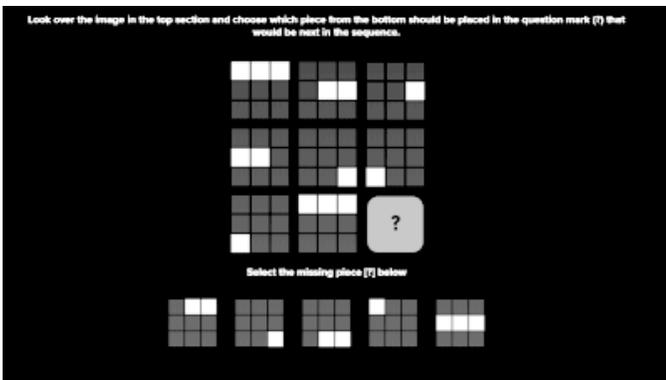
PSYCH 101: TONI SERAFINI

- “ You fit in with the curve. Congratulations, you're average!

SUFFER THIS NONSENSE WITH ME

IN WHICH I ATTEMPT TO NERD SNIPE ALL OF MATH BECAUSE THIS STUPID THING REALLY ANNOYS ME.

So, in applying to this job, I had to answer a whole bunch of logic puzzles. Most of these were reasonable, and I could usually find the pattern of the whole thing in a timely manner. The one exception, however, was the thing listed below. I stared at this stupid thing for over 5 minutes before I just ragequit in frustration and shared it with my friends so I could feel better about the fact that I couldn't figure it out. Without further ado, enjoy.

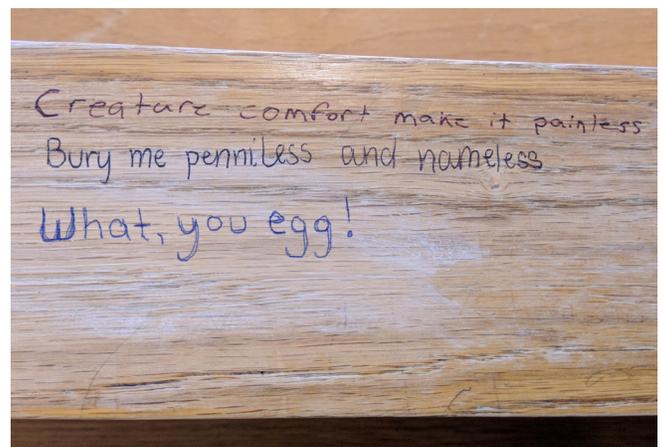


So far, the only explanation I have gotten about this question that I have found remotely satisfactorily is that it doesn't actually have a singular correct answer, and is more about how you think. This answer is not super satisfying, as this is very susceptible to guesswork — because the pattern is just garbage.

ARCHIVAL ADVENTURES IN DP 7TH FLOOR DESK GRAFFITI, PART 3

Check out issues 141.2 and 141.4 for Parts 1 and 2 respectively. Of honourable mention this issue is an extremely accurate pencil drawing of the surprised Pikachu meme that was unfortunately too faded to get a picture of. Go see it for yourself: it's probably still there, as I doubt those desks get wiped down much, if at all...

- Creature comfort make it painless
- LETS GET THIS BREAD FOLKS!!
- [in response to above] Im allergic to gluten :(
- I'm tired of STAT
- I HATE STOICHIOFUCKINGMETRY ☹️
- School is giving me a receding hairline
- Don't be a coconut
- BE A PEAR
- apple bad, pear good
- even though I don't know you I love you. I will pray for you
- Don't Give up
- Nyah eh
- RECYCLE YOUR PAIN
- I love Actsc, but it hates me
- I will become a CEO one day!
- Fuck it, I'm dropping out
- Bitch, LASAGNA
- Do or do not...-Buddha
- love this school
- I Broke up with my GF idk why?
- I can do it. I am strong!
- Kinda want to take some [CN]- atm
- Got Google!!!!
- I Hate my life
- #FreeBobbyShmurda
- Pls end me
- you can see the LRT to your left
- if you like sitting here as well you are not alone
- What, you egg!



246: A CS ODYSSEY

In the Spring 2019 academic term, Vesica Piscis and I formed a finite simple group (of order two) to work on the CS 246 final project — for us, implementing a chess engine. What follows is the log of our progress over the course of 18 days in July. Enjoy. - E.S.

2019/07/14
01:33 A.M.
SUNDAY

Epsilon Screwn

The pre-project grind has begun. The plan was to finish as much homework as possible this weekend so that we would have to work on the project. Unfortunately, the penultimate CS 246 assignment took us both longer than expected. I had hoped to finish it last night; instead I spent the better part of today chasing down compile errors and segfaults. As of now I've been done for a couple of hours and have moved on to math homework. Vesica is currently debugging the final question.

2019/07/18
02:06 A.M.
THURSDAY

Vesica Piscis

The first traces of positive progress to this project were officially made five hours ago. We were surprisingly productive throughout the earlier evening, hammering down the general details quickly. Epsilon has long since retired for the night, and a few diagrams scattered across the table are all that were left behind to get me through the first real grind session for the project. As the lights peeking through the window blinds of nearby high-rises blink into life and melt away into the darkness, I feel a peculiar lust for work take hold of me. I watch in fascination as my fingers glide across the keyboard, seemingly with a mind of their own. The night is still young.

2019/07/19
01:24 A.M.
FRIDAY

Epsilon Screwn

After promising myself that I would sleep by midnight on school nights for the rest of the term, here I am again, hunched over a study table at Vesica's place. We've finished most of the design, and she's currently putting the final touches on documentation required for the first due date (next Wednesday). I'm about to head home and turn in for the night (or what's left of it). At this point I'm having some slight difficulties keeping my eyes focused on my screen, and the classical music that Vesica is playing in the background is not abetting my drowsiness. As Sequence 4 kids, we've now been in school for almost eleven months solid. Burnout and accumulated sleep debt are starting to take their toll, and

it appears that our math and CS instructors are conspiring to bury us in long assignments. Even our highly healthy classmate The42ndRhombiDodecahedron has cracked under the pressure and started staying up until the wee hours of the morning. That two-week break after my last exam on August 15th has never looked sweeter than it does as I pack up my laptop and bid Vesica goodnight — but it appears that she's just getting started.

2019/07/20
03:41 A.M.
SATURDAY

Vesica Piscis

The victory of finishing my math homework and finally setting up the CLion build path configuration properly was short-lived as I gaze upon the chthonic monster that lurks beneath the deceptively shallow pool of thought required to fully design and implement the project. With Epsilon taking the evening off to embark on a quest for a mate, I must face this hydra alone. As I write one function, I uncover the need for another two to back it up; as I cut down one error, ten new ones shoot up. The more you understand the problem, the more you realize that you do not understand the problem.

2019/07/21
05:26 A.M.
SUNDAY

Epsilon Screwn

Segmentation fault (core dumped).

2019/07/22
02:01 A.M.
MONDAY

Vesica Piscis

Having gone 42 hours without sleep, my bed just seems too welcoming to resist, but at the same time, the project beckons to me like a Siren's song, fueling my obsession. It seems that there is no way out, but at the same time, I find myself wondering, do I truly want all of this over with?

2019/07/23
01:48 A.M.
TUESDAY

Epsilon Screwn

After spending more than 16 consecutive hours in each others' presence over the course of Saturday afternoon, evening, and night and Sunday morning, Vesica and I decided that it would be best to work separately today, lest we finally snap and begin using our all-too-durable ThinkPads as weapons. Since we had a functional interface and display, she worked

on handling edge cases — *en passant*, promotion, and castling — while I implemented her changes into the algorithm for the computer player and fixed up any compile errors. The project has consumed both of us; it's almost an addiction. I'll have you know that I am a pure math major first and foremost, but my calculus, linear algebra, and ring theory assignments are all more or less untouched due to my obsession with this game. That's a problem given that they're due tomorrow and Thursday...

2019/07/24
03:37 A.M.
WEDNESDAY

Vesica Piscis

Some have defined programmers to be machines that convert caffeine into lines of code, but in my case I suppose it would be more correct to say “machines that work overtime and convert hours of sleep into buggy code.” Over the past four days, I have slept for about ten hours in total, and so I am quite impressed in my ability to still shoot down segmentation faults as they arise. Epsilon has already been driven half to insanity by all the error messages, making random Hamilton references, such as “The Segfault of Tonight” and so on. For perhaps the first time since the project began, I am planning on retiring earlier than Epsilon for the night. I very much sympathize with his situation; it is simply too hard to even contemplate resting with three math assignments and an unfixed segmentation fault hanging over your head.

2019/07/25
04:08 A.M.
THURSDAY

Vesica Piscis

It is terrifying how used I am to setting my alarm clock and seeing that I have 3 hours and 22 minutes left before having to bid my lovely bed farewell and drag myself sluggishly to my morning class now. Epsilon has been out of action today, unsurprising given the amount of sleep he got yesterday trying to finish off his math assignments. I suppose I should try to get in as many hours of sleep now as possible; it is probably not considered proper etiquette to fall asleep during a concert, especially if you are one of the musicians on the stage...

2019/07/26
04:44 A.M.
FRIDAY

Epsilon Screwn

This evening has been demoralizing. We went from believing we had a nearly operational program to finding all sorts of baffling bugs. The deadline is sneaking up and we're behind schedule. At this point we've both accumulated far too much sleep debt, but we can't afford to take a break. What's worse, I have to go away for the weekend, which means that we won't be able to debug in the same room anymore.

2019/07/27
03:33 A.M.
SATURDAY

Vesica Piscis

After employing more conventional debugging methods, such as using gdb and a rubber duck, I have invented a new practice for identifying undefined behaviour: the Rock 'N Scroll method, which mainly consists of running the program with an excessive number of cout statements, and then scrolling through thousands of lines of text to find the exact location of erroneous output. I must have scrolled through about 80000 lines in total today...

2019/07/28
05:12 A.M.
SUNDAY

Vesica Piscis

With a stroke of luck (and of course, another 100000 lines of output that I scrolled through), the segmentation fault was finally eliminated. It seemed as if my main functions were truly free of bugs at last, but alas, when I added in the graphics display, I was gifted with more strange behaviour that has kept me up for hours. C++ apparently has an inexhaustible class of errors that it can throw at me...

2019/07/28
10:14 A.M.
SUNDAY

Epsilon Screwn

After spending a relaxing weekend with family (albeit one during which I waited with bated breath for news from Vesica on her progress with regards to hunting down segfaults), I am back in action. My mobile working station is VIA Rail train 643, Brockville to Union Station. From Union I'll hop a GO bus back to Waterloo. The code is mostly done, but I have my work cut out for me with testing and catching a weird bug with the graphical display. I only hope my putting the program through its paces doesn't reveal any more imperfections in our work...

2019/07/29
05:37 A.M.
MONDAY

Vesica Piscis

It appears that the graphics library I am using has a strong dislike for me, given its myriad of strange bugs. It is also making me feel concerned that as I was implementing a bonus feature, I noticed some strange behaviour that might also appear in some required functions that I have yet to test extensively. It would be wonderful to grab an hour or two of sleep before my morning class today, but even Github has turned against me now, with a simple upload (okay, perhaps

not so simple given that I am attempting to upload over 120 files) taking well over 15 minutes...

2019/07/30

02:04 A.M.

TUESDAY

Epsilon Screwn

It is now officially the day of the deadline, and we're mostly (?) done. I've been putting the program through its paces in the MC computer lab. It's veeeery stressful to poke into the dark corners of our code, trying to break it, and I'm a little afraid of what I might discover. So far, I've only found some annoying debugging print statements that needed to be commented out, and a couple of annoying infinite loops resulting from invalid input. Oh, and a mysterious memory leak that is related (I hope?) to a graphics library we used. At this point I should be worried about the two other assignments due tomorrow today, as well as the oral exam I have in the afternoon, but it's next to impossible to think about anything else right now.

There are about a dozen panicked students also in the lab. Vesica will attest to how bad my Mandarin skills are, but even I can tell that they're desperate. It makes me feel a little better about the relatively minor bugs in our program.

This project has taken its toll on everybody in the class in one way or another (except for the handful of people who had already implemented something similar in another language, or who just really have their act together. We normally belong to the latter category, but I digress). At this point, I feel like sleeping for a week straight, but I'm still pretty proud of what we've accomplished.

2019/07/30

06:32 A.M.

TUESDAY

Vesica Piscis

As I jolted awake, my heart sank while I slowly took in my surroundings. How on earth did I make it here?

A breath or two later, more of my foggy memories from the previous night came back. The Internet service shortage in my building at 2:30 am. The 3:30 walk through campus. The frenzied students in MC, the frenzied students in STC, the frenzied students in SLC. The mosquitoes, the frogs, the locked doors, the sound-sensitive lights, the random guy in a study room as I sneaked into [redacted], the jasmine tea that slowly went cold, and finally, the nap at 5:30 with an intended alarm at 6.

How on earth did things make it to this point?

In any case, it is the final stretch today. I can only hope for the best for everyone now.

2019/07/31

00:01 A.M.

WEDNESDAY

Epsilon Screwn

We're done.

We're done.

We're actually done.

There's a program that actually compiles and doesn't segfault sitting in the Marmoset Dropbox folder.

This is a moment to reflect on, I guess. Here we are, a minute past the deadline, with a satisfactory end result. This should be a moment of either jubilation or disappointment. For me it's just surreal. We both sacrificed a lot for this result. Vesica gave up copious amounts of sleep — I'm amazed she's still standing at this point. I put all of my other coursework on the backburner, including a rather important calculus test which I may or may not have bombed.

There are certainly many groups who built a better project than we did, while many others would love to be in our shoes right now. To the former: well done, guys, I take my hat off. To the latter: this is just one project in one course; you'll rebound.

Sure, there are things I would do differently if I had the opportunity to do this over again. But one thing that I would never change was my decision to work with Vesica. She was operating on what, an hour of sleep today? And a 20-minute nap sometime this evening. Yet somehow she managed to bash out bonus feature after bonus feature, making our project something to truly be proud of. It was an honour and a pleasure to struggle alongside her for the past two weeks. Somehow I think our friendship has emerged (mostly?) unscathed as well, something which was never quite a certainty.

*My bed is lovely, dark and deep
I have no promises to keep
Nor miles to go before I sleep
Nor miles to go before I sleep*

Sleep...

2019/07/31

01:42 A.M.

WEDNESDAY

Vesica Piscis

It's really over now. Irrevocably, unequivocally over.

I guess I should feel something big, but I don't really. I just feel calm. I even watched the digital clock on my laptop as it went from 11:58:00 to 12:00:00, and then 12:01:00, 12:02:00, 12:03:00, ...

I feel nothing.

Worse, I feel hollow. Empty. Unfocused. Blank.

I guess this is the last log now, and before I reached this point, I always envisioned it to be a grand finale sort of affair that truly goes out with fanfare, alcohol (or the underage Asian's equivalent, bubble tea) and a real bang, like the 1812 overture. Or at the very least, like my favourite Shostakovich symphony, where we end the suffering and struggles with a strong proclamation on the tubular bells.

I guess those deep sentiments and big words were left to Epsilon. He really has a way with bending the language to his will and summarizing everything up perfect, even addressing all of our peers. It would have been great just ending it there; after all, we would have then come full circle, with him starting off the log and concluding it. But he insisted that I write a log too, so where does that leave me?

The Ringbearer has now fulfilled his Quest, and shall go on one final journey: to the Havens.

Lord of the Rings has always been a favourite of mine for many reasons, one of which being actually depicting how heroes cope with returning home from a grand adventure to a quiet, unassuming, fameless life. I suppose I am having a Frodo moment here, except I have no cause to feel as accomplished (after all, our project does not save humanity from the reigns of a Dark Lord), and my life now is not as uneventful (Friday 9:00 a.m. final, anyone?).

For many of you reading this, my words may appear to make very little sense, with not much logical connection from sentence to sentence. Let me assure you that this is not because of my lack of sleep, or my ESL status (at least, so that I think). I am trying to describe a feeling with words, but really, until you experience it for yourself, it is very hard to visualize based on language alone.

So I guess what I am trying to say is, big projects like this will come and go, they may consume you so completely that you forget who you are outside of this project, but at the end of the day, after the high of completing a project, comes the low of having to reconnect with the rest of your life, which will always go on.

And some free advice: the easiest way to start getting back on the train is to restore your proper sleeping schedule.

...

Who am I kidding? I need to study.

Epsilon Screwn
and Vesica Piscis

ROLL-PERMU-TATION

N THINGS TO DO THE DAY BEFORE YOUR FINAL

Finals season is around the corner and the day before an exam is always the worst. Here are a few options of things you could be doing instead of studying!

- Look up ways to get out of writing your final.
- Realize you can't get out of writing and recalculate the grade you need to pass for the millionth time.
- Go through all of your pens to determine which ones to throw out.
- Fail to throw out the pens because you now have an emotional attachment to them..
- Take a walk and visit all the buildings you have never visited before.
- Find your prof and talk about anything else than what is going to be on the exam.
- Try to befriend the geese, they can't be as bad as everyone says.
- Go to the clinic due to geese related injuries .
- Write an article for **mathNEWS**.
- Decide to go to sleep — if you're gonna fail, might as well do it on a full night's rest .

Yogo

WHY mathNEWS MAKES THE PERFECT SIGNIFICANT OTHER.

If we think about it objectively, why get a significant other when you have **mathNEWS**?

- Won't ever leave you
- Won't ever judge your bad math jokes
- Feeds you free pizza every two weeks
- Never gonna give you up.

Depressed Cubic

We don't care about qualifications — apply to be mathNEWS Editor today!

A mathNEWS EDITOR WHO'S
ALREADY DESPERATE TO RETIRE

(PART 1)

OTHERWISE KNOWN AS 'HOW TO COPY SOMEONE'S HOMEWORK BUT NOT PAYING ATTENTION AND ENDING UP INADVERTENTLY MAKING CIPHERED GARBAGE'

Five weeks ago, I came across water's "How many FRSH bowls are there?" in v141i2. Reading through it, I wanted to write an article on a similar topic as I also love messing with combinatorics. It obviously didn't help that I was eating a poke bowl from Rolltation at the time.

To those who don't know what Rolltation is, it's a poke bowl and sushi burrito vendor in DC Bytes. (I heard they sell salad bowls too, but I've never seen one. Dunno, must be a myth.) Unlike FRSH (as advertised in water's article), the lines are usually longer than all other food establishments' lines combined, and the custom order wait time is still pretty bad (not as bad as the waiting in line part though).

After finishing my poke bowl, I naturally decided to tackle this location for this dream **mathNEWS** article of mine and figure out:

1. How many possible bowls are there?
2. How much will it cost to buy one of each of them?
3. How long will it take for me to eat them all?

Because why not. I'm Pikachu, after all.

Some of you are probably going "Hey, it's been five weeks since this experiment began, why are you writing about it now," and you would be hilariously correct. Looking back, this endeavor was a foolish one, and it's still incomplete, but I'll still share whatever I have with you folks.

After finishing my poke bowl that fateful day, I walked to the front of the Rolltation billboard to note down every last detail of the possible ingredients to answer Question 1 first. They are, as follows:

- 5 possible bases (Sushi Burrito, Poke Bowl w/ White Rice, etc, you get the deal)
- 7 Proteins + 1 No Protein (choose 1*)
- 12 Veggies (Choose up to 3*)
- 11 Sauces, 3 levels of intensity (Choose up to 2)
- 15 Addons (Choose up to 3*)
- 6 Crisps (Choose up to 2*)

(*There is technically no limit, but each additional topping that goes over the limit costs 50 cents extra**. Remember this when I'm attempting to answer Question 2 later on.)

(**I'll elaborate later during my answer to Question 2, but this is not always the case.)

With all these options to choose from, I'm not surprised that every custom bowl takes a long time. So I quickly pulled out my calculator and began hacking away at, and I quote water's article, "How many combinations of ingredients can we choose?"

Unlike water's English diabolical dilemma, there is no problem of "not including an ingredient" here, since the people will gladly not give you any toppings if you don't request one, and the technical definitions of a salad bowl, poke bowl and sushi burritos are still met if you have nothing but the rice or veggies. But we have a problem with the other extreme of the question, since unlike FRSH, I can request 500 scoops of seaweed salad in my bowl. And 5000 scoops of garlic. Et cetera. So if you were being nitpicky, the technical answer to Question 1 is "infinite, so long as Rolltation has the goods and you were Jeff Bezos."

So let's limit the toppings to "not allowed to have more than 1 of something." However, you will notice that by the constraints of this limitation, a poke bowl with all 15 addons on it is legal, which is still hilarious in my opinion. Also, for the sake of a theoretical argument, we will ignore realistic constraints such as the size of the bowl.

Anyways, rewriting the ingredients list, we have

- 5 bases (Choose 1. Although I'd love to see a poke sushi burrito bowl)
- Protein (7 options, choose 0-7 of them)
- Veggies (12 options, choose 0-12 of them)
- Sauces (11 options each with 3 intensities, choose 0-2 of them)
- Addons (15 options, choose 0-15 of them)
- Crisps (6 options, choose 0-6 of them)

And now, we just use combinations to solve the problem of total number of Rolltation meals possible. For instance, the total number of protein options is just the sum of $\binom{7}{r}$ from $r = 0$ to 7, which is just $1 + 7 + 21 + 35 + 35 + 21 + 7 + 1 = 128$.

Repeating this procedure to all other ingredient lists, we have

- 5 bases
- 128 options for Protein
- 4096 options for Veggies
- 529 options for Sauces*
- 32768 options for Addons
- 64 options for Crisps

(If you're wondering either from water's comment in v141i2 or from here why all non-sauce are powers of 2, a hint is to think of Pascal's triangles and symmetry)

(* Sauces: 1 option for no sauce + 11 options for 1 sauce * 3 intensity level + 55 options for 2 sauces * 9 possible intensity level combinations for 2 sauces = 529 options)

In total, the total number of possible unique no-double-ingredients meals from Rolltation is the multiple of all values above, which is 2.9×10^{15} meals.

Now that we know just how many bowls this is, and you're probably feeling like this is a dry repeat of v141i2 (which, honestly, this kind of is, but this is a ridiculously long article so I was forced to cut it in two so people don't get bored/overloaded by my adventures of sushi burrito/poke/salad bowl eating), so I'll get to the second and final part of this series that features the exciting mathematical analysis of cost of this endeavor, time required, and what happens when you attempt to overload your burrito!

...in v141i6.

Until then, have fun dwelling over nearly 1.2 petabowls of poke, 1.2 petaburritos and 0.6 peta-salad bowls!

Pikachu.exe

GOD COMES OUT IN SUPPORT OF GAY MARRIAGE

HEAVEN — A seismic shift in the political landscape of the afterlife occurred today when God, 1st and current Ruler of the Universe, came out in support of same sex marriage at a surprise press conference held in front of the Pearly Gates in Heaven.

"My position on this issue has evolved," the Lord said, flanked by Saint Peter, Director of Heavenly Customs and Border Protection. "Gay citizens of Existence deserve the same rights as anyone else, and that includes the right to marry. While in the past, I have opposed same sex marriage, times have changed, and sentient beings elected a divine government that listens to them and responds to their concerns. Today, I hear you, and I am delivering on that promise."

While many observers were shocked at this sudden change in stance, rumors of the policy shift had been moving through the halls of the afterlife for weeks beforehand.

An anonymous angel source described high-level discussions in meetings with God and His top advisors. "The fact is, we were just getting killed out there," the angel disclosed. "We ran the numbers, and in most places we were way underperforming our results from the 1000 election. Not just Earth, Alpha Centauri, the eight mirror dimensions, everywhere. Even among some parts of the base, we were polling below Satan. That's when we knew it was time for a change."

Indeed, leaked documents from God's campaign team showed focus groups increasingly pointing to His position on same sex marriage dragging him down in polls for the upcoming 3000 election. In fact, the only issue more important to focus group participants was masturbation.

In an effort to quickly change His image, God also announced wide-ranging anti-discrimination legislation. "In the next 100 days," He pledged, "I will pass a law forbidding the summoning of hurricanes and other natural disasters towards suspected hotbeds of gay marriage." God also promised that any future judge He appointed to the Supreme Court of Existence would be committed to overturning the court's decision in the landmark case *The Corporation of the City of Sodom & Gomorrah v. The Department of Fire and Brimstone*.

Despite the wide public support for this move, the Lord also faced some tough questions. After being asked about potential

amendments to the Bible, He hesitated momentarily, before replying: "As you know, any amendment to the Bible would require the support of two-thirds of the angels and demons and a referendum for all of Creation, and I think that's just not what sentient beings want right now. When I was elected in 1000, I swore to fight for the real issues, like ensuring the afterlife remains solvent past 2035 and reforming our antiquated, loophole-ridden tithe system."

God continued, "Right now, I'm focused on fighting lobbyists from the big tithe preparation software companies to streamline the collection process, and funding the Internal Tithe Service so we can crack down on tithe evasion by the wealthiest one percent of all beings in Existence. Beings like The Immortal Lord of The Sixth Mirror Dimension and Jeff Bezos must pay their fair share." However, the Lord said He would consider reopening a possible Biblical amendment should He win a larger majority in the House of the Afterlife after the 3000 elections.

Meanwhile, the other side of the political spectrum responded predictably. Immediately after God's press conference, Satan addressed supporters from his demonic throne. "I have been a supporter of gay marriage since the beginning," Satan said. "I have been a supporter of gay marriage since the beginning, and only now, when it's politically convenient, does He come out in support? This is just one more example of God's weak leadership. Let's not forget His unclear stance on slavery and pork products. And what about the clear nepotism He showed in appointing Jesus, his own son, to one of the highest ranking positions in the afterlife!" Satan then continued his recent calls for a bipartisan Heaven-Hell investigation into the Lord's administration, an initiative that continues to stall in the Heaven-controlled House of the Afterlife.

At press time, God deflected these attacks by indicating He would also begin looking into loosening regulations on abortion.

UW Unprint

SEASONS' GREETINGS

gridCOMMENT 141.5

Seasons greetings to all ye who braved the winter wonderland and wend Waterloo whence. In this time of cold it warms the lump of ice masquerading as my heart ever so slightly that I had received seven submissions to last issue's **gridWORD** despite the abysmal quality that I think I had output. I have tried my best to remedy that this issue, but mayhaps I only made the issue worse by forcing the target of my inspiration into it. Only time will tell. If it's too hard, blame terrified who said that "maybe you made the grid too easy" when he was handing me the submissions this issue.

I will also at this juncture yield this iron throne of **gridMASTER** yet again, for there be another who wish to try and fill the sabatons of this lofty position. I, for one, would like to see another occupy this lonesome peak for a longer period of time than the last person who tried to take over. Bah, green tyros scrambling for greatness fail more often than not, but 'tis better to have tried and failed than not. I hope everyone gives the new ~~sacrifice~~ **gridMASTER** a warm welcome.

On to the aforementioned seven submissions, of the correct submissions, my favourite answer to last issue's **gridQUESTION**, "What is something I should be inspired by?" is the poem submitted by axiom:

Behold the beauty of the majestic goose
 Watch as it takes wing
 Fly, fly, majestic goose
 And don't come back till spring

Please drop by the **mathNEWS** office when the editors are there to pick up your prize. In no particular order, the other responses are as follows:

- Rubber Soul, "The indominable spirit of the goose"
- 09-15-00, "If I knew the answer to this, I'd be a lot better off."
- Austin You, ""
- Teethgang, "You should be inspired by the beautiful snow" (actually helpful, but sorry you weren't most correct!)
- Math123, "Be inspired by learning something new."
- Mel, "I cant think of a funny answer to the gridquestion, but I think you should be inspired by me submitting anyways, as sometimes we need to just do things even if they're not going to be perfect"

Submissions to this issue's **gridWORD** should be made either physically to the **BLACK BOX** outside the Math C&D in MC or electronically to mathnews@gmail.com by 18:00 December 2nd, 2019. Submissions should contain your name, (and optionally a moniker to be credited under), your solution, and your answer to this issue's **gridQUESTION** (of which the favourite answer of the new **gridMASTER** shall be the tiebreaker in the event of tie for most correct). This issue's **gridQUESTION** is "what advice would you like to give to our incoming **gridMASTER**?"

May we meet again in the future.

Signing off (again),
 ZETHAR
gridMASTER
 v131i3 – v137i1, v139i3 – v141i5



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

ACROSS

- 1. Knight Commander of Bath (abbr.)
- 4. Test
- 9. Offroad bicycle (abbr.)
- 12. Scot's denial
- 13. Stereotypical daytime television [2]
- 15. PMATH 370 prof
- 16. Laudation
- 17. Foes
- 19. Port
- 21. Logging anchor points
- 23. See 32D
- 24. Scots variant of "third"
- 25. Darkens
- 27. Deck (out)
- 28. Famous asylum in Gotham
- 30. Consoled
- 33. Fabric dying method
- 35. Starry Night painter
- 36. Antares, e.g.
- 39. Minimum
- 43. Imperial force unit for short
- 44. Cupid, to the Greeks
- 46. The obnoxious plural of a keyboard
- 47. PhD candidates
- 49. $S(0) = 1$
- 51. With 54A, December 21st
- 54. With 51A, December 21
- 55. Typicalness
- 57. Honeyed drink
- 58. Hardened
- 59. N.S. clock setting
- 60. New Zealand parrot
- 61. French tiger
- 62. Aves.

DOWN

- 1. Stoneworking tool
- 2. Vehicle bay
- 3. Ophrys
- 4. According to
- 5. Rose
- 6. Successors to nisei
- 7. Gorilla
- 8. 3
- 9. With 32D, a greeting
- 10. Sacrifice
- 11. Phillipine city
- 14. Burmese cent
- 15. Plantain lily
- 18. Beef cuts
- 20. A type of ex?
- 22. Urban haze
- 26. Untidy one
- 29. Spouse
- 31. Opens
- 32. With 9D, a greeting
- 34. Blackens
- 36. Formerly Andropov
- 37. Postscript
- 38. Spirited
- 40. Least difficult
- 41. Snow tracked vehicles
- 42. Beat
- 43. Black bird
- 45. Sea-duck
- 48. Narrow streak
- 50. Glasgow's river
- 52. Light is a particle of this (abbr)
- 53. Flat floater
- 56. Wreath

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lookAHEAD

SUN NOV 24

MON NOV 25

TUE NOV 26

WED NOV 27

THU NOV 28

FRI NOV 29

SAT NOV 30

MathSoc General Meeting:
4:30pm @ MC Comfy

MathSoc W20 general
elections

MathSoc W20 general
elections

SUN DEC 1

MON DEC 2

TUE DEC 3

WED DEC 4

THU DEC 5

FRI DEC 6

SAT DEC 7

mathNEWS 141.6
production night 🎉

Last day of classes
CS 246 final project due

Drop with WF ends

mathNEWS 141.6
published
Exams begin 📅

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We need more editors for the Spring 2020 term (and beyond)!

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Nope! We'll train you. 😊

If you're interested, please email mathnews@gmail.com and we'll figure things out from there.

Peace out,

The **mathNEWS** Editors

LAST WEEK'S gridSOLUTION

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ISSN 0705-0410 UW'S BASTION OF ERUDITE THOUGHT SINCE 1973

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