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♻️ 2019



## "IF YOU COULD WRITE A BONUS QUESTION FOR A MIDTERM, WHAT WOULD IT BE?"

Welcome all to the penultimate issue of volume 140 of **mathNEWS**. We've got some fantastic articles this issue, including Professor Peter Nelson giving us an instruction manual on homebrewing beer.

In light of this week's **profTHOUGHTS** article speaking to me on a spiritual level, here are my (not so humble) craft beer recommendations, all of which you can find at the LCBO when they're in season.

**Omnipollo (brewery)** — Swedish craft brewery that gets a Toronto brewing op to make their North America releases. The Prodromus is to die for.

**Nickel Brook (brewery)** — My all-around personal favourite Ontario craft brewery. Their series of Berliner Weisse-style sours is great, but their standouts are their aged imperial stouts, in particular the Winey Bastard and Café Del Bastardo.

**Left Field (brewery)** — Small Toronto based brewery with a huge variety in their line-up. You'd be hard-pressed to find a style they haven't done.

**Elora brewing co. (brewery)** — Good mix of rock-solid standards, as well as some more experimental stuff. This year's Lodestar, a passionfruit sour, is particularly good.

**Old Tomorrow's Monty's Aged Ryed Ale (beer)** — Terrible name, but one of the most unique tasting beers I've had. Even other rye ales don't get close.

**Church Key's Holy Smoke (beer)** — Forget Innis & Gunn, this is the definitive scotch ale. Nothing too fancy in terms of flavours, just peat smoke, hops and roasted malt. But mostly just peat smoke.

**Lickinghole Creek's Heir Apparent (beer)** — One of the few American crafts you can find at the LCBO. An imperial stout with Mexican spices added in is just pure genius.

That's all I have space for. I'd tell you to crack open a cold one, but most of these recs come in bottles.

swindLED  
Editor, mathNEWS

<b>EPSILON SCREWN</b>	Prove or disprove: This statement cannot be proven.
<b>FINCHEY</b>	What is love?
<b>ZETHAR</b>	Translate the following passage: 证明或证伪: 这个陈述不能被证明或证伪。 MC is the home of the Faculty of Mathematics at the University of Waterloo. Which of the following is most likely the unabbreviated representation of "MC"?
<b>VESICA PISCIS,</b>	(a) Mathematics and Computer (b) Mad Chemists (c) Mandarin = Cantonese (d) Marry Cats (e) Minor Chord
<b>FORMER STAT 332 STUDENTS</b>	What is the Canadian equivalent of "life, liberty and the pursuit of happiness"?
<b>BEYOND META</b>	What is your quest?
<b>VARIOUS PSEUDONYMS</b>	What is the airspeed velocity of an unladen swallow?
<b>SANDWICH EXPERT</b>	What is the value of the De Bruijn–Newman constant?
<b>STAPLED</b>	The 80's was the worst decade for modern music. Explain with examples why I'm right.
<b>TERRIFIED</b>	Prisoner's Dilemma: Should you get a 0% or 100% on this exam? <i>Majority picks 0%</i> — everyone gets 70%. <i>Split opinion</i> — you receive what you picked. <i>Majority picks 100%</i> — congrats, everyone fails the course.
<b>SWINDLED</b>	True or false: you're going to complain about this midterm on reddit or Piazza as soon as you leave this room.
<b>UNSOPHISTICATED</b>	Is C++ hard?

## ARTICLE OF THE ISSUE

This week's article of the issue goes to Xx\_420SonicFan69\_xX for [Room Temperature Takes](#). It's rare that we get anything heartfelt and introspective. Having a perfect coda of a final paragraph doesn't hurt either.

Congratulations again, swing by the **mathNEWS** office in MC 3030 to pick up your prize!

swindLED  
Editor, mathNEWS

Remember, it's not shilling if they aren't paying you.

ANUJ OPAL, mathNEWS EDITOR FOR SPRING 2019  
ALONG WITH ESTHER AHN, TERRY CHEN, AND JOSH RAMPERSAD

# mathASKS 140.5

FEATURING PROF. PETER NELSON

**SWINDLED: WHAT'S A SURPRISING FACT OR RESULT FROM YOUR FIELD THAT PEOPLE MIGHT NOT KNOW OF?**

The Tic-Tac-Toe matroid, which is a particular rank-5 matroid on 9 elements, is conjectured to be algebraic, but nobody knows if it is, and if it really is then this fact would kill an old and important conjecture. This problem isn't quite simple enough to state precisely here, but it is concrete and self-contained enough that a curious **mathNEWS** reader should just google it and solve the bloody thing. You probably need to know very little about matroids.

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

Assuming I actually knew enough to teach it (I don't), I'd definitely go for something in linguistics, albeit probably on the mathy side of the subject. It would be great if someone forced me to teach it, so I'd actually learn stuff like how parse trees work in the mess that is natural language. My undergrad university didn't have any breadth requirements and the 20-year-old me liked math/CS so much that I took hardly any courses outside my faculty. I regret this, and still feel like I'm catching up — there's much more to being educated than knowing a lot of math.

**SIGSEGV: PROF. KOENEMANN MENTIONED YOU PLAY JAZZ PIANO IN A PREVIOUS mathASKS. WHAT'S YOUR FAVOURITE PIECE TO PLAY?**

The standard 'Summertime' is my go-to.

**CIX: WHICH CHARACTER IN THE BREAKFAST CLUB DO YOU MOST RELATE TO? HOW DOES IT FEEL TO SHARE THE SAME LAST NAME AS HOLLYWOOD LEGEND JUDD NELSON? DID YOU KNOW THAT JUDD NELSON STARRED IN THE LEAD ROLE IN THE ANIMATED TRANSFORMERS MOVIE THAT CAME OUT IN 1986? RELATEDLY, DID TRANSFORMERS EVEN EXIST IN NEW ZEALAND IN THE 80'S?**

Unfortunately I haven't seen the Breakfast Club, or heard of Judd Nelson. Googling him, it looks like I've also done an uncanny job avoiding seeing any of his movies. I was born in '86, so I don't remember the 80's so well, but I definitely watched Transformers in the early 90's, and I think I even had some of the toys.

**ZETHAR: WHAT'S YOUR FAVORITE PROOF OF MENGER'S THEOREM OR ANY OF ITS EXTENSIONS?**

My no-brainer answer as a matroid theorist is Tutte's linking theorem, which has a very short and pretty proof that lays bare the deletion-contraction duality hiding inside Menger's theorem. That said, applying it back to graphs to recover Menger is a bit fiddly.

**LISA SIMPSON: WILL THERE EVER BE A JAZZ TRIO FORMED BY YOU, JOCHEN KOENEMANN, AND JON YARD? WILL IT BE CALLED THE MATROID INTERSECTION?**

It's a definite possibility, although I'm not sure my bandmates would be as into that name as I would. I've played with both Jochen and Jon individually, but not as a trio — two of us have annoying instruments to transport and we all have families. Oh to be a grad student again and have weekends to spare ...

**FRODO: WHAT ARE THE DIFFERENCES BETWEEN AN AUSTRALIAN AND KIWI ACCENT? I HAVE A HARD TIME DIFFERENTIATING BETWEEN THE TWO.**

Just like you can tell a Canadian from across the room by the way they say 'about', the phrase to classify us antipodeans is 'Fish and chips'. Aussies sound more like 'feeesh and cheeps' and Kiwis more 'fush and chups'. I like to think of Kiwi vowels as very deflated compared to Aussies. (If you feel the need to approach an Australian in person to verify this, make sure you guard your personal possessions at all times — better safe than sorry.)

**FISHY: DO YOU LIKE ANCHOVIES ON YOUR PIZZA? WHY/WHY NOT?**

Yes! Because they are strong and salty and complicated-tasting and delicious. Like a number of others, I had an epiphany in my mid-twenties in which I realized how much of a fool I'd been up till that point in not liking anchovies. I just wish more other people had had the same epiphany. Deciding on what pizza to order is always such a complicated exercise in diplomacy.

**MATROID: WHY SHOULD STUDENTS STUDY MATROIDS IF THEY'RE INTERESTED IN GRAPH THEORY?**

Because matroids put into context and unify many ideas in graph theory, and can give proofs of results about graphs that are simultaneously more general and conceptually cleaner. Menger's theorem is one example; others are the correctness of the greedy algorithm for min-weight spanning tree, the Tutte-Berge formula for the size of a maximum matching, and the matrix tree theorem. Matroids also provide a great source of interesting research problems that haven't been so carefully combed over by smart people as the ones in graph theory.

**STAPLED: DO YOU HAVE ANY MUSIC RECOMMENDATIONS? ANY GENRES WELCOME.**

The Bad Plus. They're a jazz trio (piano, upright bass, drums) that play a very eclectic mix of well-chosen covers and original compositions. They also play really loud, which is great. Their version of 'Smells Like Teen Spirit' is worth a listen. I've also been listening Jeremy Dutcher, who does beautiful things combining his operatic training with traditional first nations music.

# ON BEER, ITS DRINKING, AND BREWING

profTHOUGHTS 140.5

As a math person, I conform to many stereotypes in my interests outside math, which (shockingly) include video games and science fiction. More recently I've found a new thing to be a nerd about, which involves fewer screens — brewing beer! What follows will include a bunch of stuff about yeast and hops and grain which of course can sound jargony, but the important things to know are that making beer is easy and cheap, and that the beer you get from it can be surprisingly good. A full how-to wouldn't fit in this article, but I want to give a taste of the fun, creativity and nerdiness that homebrewing allows for.

I've brewed for a year or two now, but drinking beer has been a dedicated hobby of mine for quite a lot longer. That's definitely gotten more fun around here. When I got to Waterloo around ten years ago, the Grad House and Kickoff (in the plaza — try it!) were almost the only places that even made an effort in sourcing an interesting range of beers; however, Ontario's output was a problem. Steam Whistle and Mill St are fine for a hot day, and Czechvar is even finer, but Wellington's Imperial Stout was really the only notably good microbrew around, and its murderous 8% abv tended to be a bit much even for grad school.

The real culprit was Ontario's silly liquor laws and how they restrict imports — the US and Quebec both knew what they were doing back then, but the Beer Store and LCBO are such corporate shills and the LCBO was so disinclined to bring anything over a border that Ontario's weak output was all there was. Ontario has gotten much, much better. Even in KW there are now plenty of great breweries around — TWB and Block 3 are my picks — and good places to drink their beer, like Arabella Park. Going further afield, Bellwoods in Toronto and Collective Arts in Hamilton are both fantastic. I'm very glad that Ontario's brewers have upped their game, although I'd still love to see more beer from our excellent brewing neighbours in Quebec, New York and Michigan on LCBO shelves.

Good beer can be expensive though! And making beer yourself is really easy — in fact, the difficult thing if you're a medieval farmer is not making beer. You have to store your grain somewhere, and when it gets wet and exposed to the wild yeast in the air, it'll ferment, and you have beer — even more than taxes and Euler's equation, beer was a historical inevitability. If you're a math student that wants to make beer but

doesn't run an unwaterproofed grain silo, you'll have to artificially recreate the same conditions. At the most basic level, what you need to do is take a bunch of sugary grain water (called 'wort'), boil it, let it cool, add yeast, and let it ferment somewhere unexposed to the air and at roughly the right temperature.

Following just those instructions will give you swill and is probably unwise, so I'll break it down more. First, the sugary grain water. You can get this in a few ways, the simplest of which is buying 'malt extract' in either liquid or dry form. This is basically a malty tasting sugar — adding it to water gives the wort you need. This works well enough, but you can get much more flexibility by 'mashing', where you buy your own grain, steep it in hot water for an hour or so and then collect the now sugary water. Some homebrewers use a combination of the above techniques, combining some extract and some wort obtained from mashing before boiling. The type of grains and extract used will greatly affect the mouthfeel, taste and colour of the beer, while the sugariness level will affect the alcohol levels.

Next, the yeast. As everyone now knows, yeast is an amazing microorganism found in the air. The aforementioned medieval farmers didn't know this. The kind of yeast that reliably turns grain into alcohol comes in packets, and comes in many varieties, each with their own taste and personality. The yeast should be added to the wort after it's been boiled for around an hour and then cooled to room temperature. My former naval engineer grandfather once told me 'in brewing, as in life, cleanliness is next to godliness'. He was a serious man, and this was certainly good advice. Everything that touches the beer after it's no longer boiling should be sanitized (not as annoying as it sounds) so the yeast doesn't have to compete with bacteria in the air. Once the yeasty wort, now technically 'beer', is safely put in a vessel to ferment and sealed off, the yeast will take a week or two to bubble, eat the sugar and turn it into alcohol.

Finally, the hops. These aren't technically required, but they give the bitterness and flavours that make most beer what it is. Hops grow in temperate climates similar to grapes, and in recent years the growers and breeder have treated them more and more with the same discerning care that winemakers give to their grapes. 'Old world' hops comprise many traditional styles of hops from across Europe, giving the subtle bitterness associated with lagers the world over, and the 'New World' hops grown in the Pacific Northwest and New Zealand have given rise to many stronger taste. Even though you buy them frozen in what looks like pellets of green rabbit food, hops can give flavour notes of everything from tropical fruits to flowers to white wine to pine needles to marijuana. They are added to the beer at any time between the start of the boil, where they produce bitterness, and the end of the fermentation process, where they 'dry hop' the beer, infusing it with whatever aromas they contain. The taste of interesting hops can completely carry a beer, as the relentlessly popular IPA

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best thing that's ever  
happened to me.**

A \$100% SINCERE mathNEWS EDITOR

style shows. (Contrary to popular opinion, IPAs don't need to be bitter — hoppiness and bitterness are mostly independent variables.)

With the huge range of grain, yeast and hops available, the scope for fun and creativity is every bit as large as anything else you do in your kitchen. However, there is just as much room for the quantitative and scientific thinking that we all love. Part of brewing is keeping track carefully of temperature and gravity of liquids, and attaining the desired alcohol percentage, level of bitterness and astringency, hoppiness and colour that you want all involve complex formulas. You don't really have to worry too much about these if you don't want to — there are plenty of online calculators — but if you're like me you can get your head around them and write code. I've actually learned some chemistry and physics through this, and I now insist on my beer recipes being in monospace font.

I hope I've given some idea of the fun and romance of brewing beer. I haven't really mentioned the most obvious advantage of this hobby — you get beer! No matter how much fun it is playing Satisfactory (it really is, almost to the extent that it feels unethical to recommend it to students that have midterms and assignments to be doing), no video game or TV show will produce gallons of delicious cold beer to accompany the player through the summer. Anyone who has read this far and whose interest is piqued should look no further than Short Finger Brewing, a homebrew store that KW is very lucky to have, with helpful and knowledgeable staff that are genuinely nice to the even the most amateurish of customers like myself. Happy brewing!

Prof. Peter Nelson

## N THINGS PMC STANDS FOR

- Pure Math Club
- Pure Maths Club
- Pure Mathematics Club
- Pure MAMCO Club
- People Making Crafts
- Proving Marx's Conjecture
- Pickled Mildewy Cabbages
- Pizza, **mathNEWS**, Communism.
- Pineapple Mead. Cool!
- Progressive Manitoba Conservatives
- Plagiarizing Matrix Calculations
- Punch My Cousin
- Puréed Mango. Carbs!
- Penguin Meat Cookies
- Proud, Manly Canadians
- Publishing Mostly Crap
- Pussy Moneh Calculus

## ROOM TEMPERATURE TAKES

I'm sure most of you have heard of a "hot take." If you haven't, then I'll explain it to you! It's essentially a worldview that is simultaneously radical and holding some sort of validity or relatability. They can be on any topic. Moreover, they're kind of a meme, but also not really. For example, you can say "hot take: cats are just smaller, meaner dogs" (although that might not be valid in some people's eyes). So then, what is a lukewarm take? Well, my interpretation of it is an opinion that is pretty well known, and has some sort of validity. Overall, they're supposed to be pretty meh.

So, before getting into my room temperature takes, I first have to elaborate on how they came to be my passion. In order to do that, we first have to go to by great grandfather on my mother's father's side. His last name roughly translates to, "shoe cobbler," which shows the working class artisan origins of my family. Living in a region that often considered these roles as that of a higher social standing, my family were socially rather well to do, especially being in the majority, ethnically speaking. Slowly making the way down the family tree to my mother's family, they faced a unique combination of internal and external pressures to make it big academically. The result was eight children becoming highly capable doctors and engineers, but lacking any pop culture knowledge, and some of which are socially stunted. As economic, political, and social strain in the region compounded, they slowly immigrated to Canada. While living a comfortable life in Canada, I still feel the ghosts of my past shocking my soul, and commanding me to acknowledge the struggles my family has gone through. It's almost a personification of my shame for never quite living up to legacy. Room temperature takes remind me that, in some senses, mediocrity isn't terrible, and in fact should be celebrated for what it is.

On my father's side, one distant relative decided to change the course of my family's history by changing his last name. While my father says the original last name was of regal origin, he often has a flavour of embellishment, so I'm taking it with a grain of salt. He took up the name of the city he lived in, and this was passed down through my family, all living within that same city, until my father. Now him, *he* was a genius. Someone I'll never even come close to matching in intellectual calibre. But sometimes, he's kind of dumb as well, but then again, aren't we all? He came to Canada and abandoned his old city in search of my mother, who in turn thought that he moved on in life. Does this mean that I should change my last name to Toronto, or should I keep the family line? Should I try and live up to the lofty goals he set? Or should I blaze my own trail? A lukewarm take allows me to look at my goals from very reasonable perspectives.

It's been a bit, but it's time for my big reveal: milk and honey tastes pretty good.

# HIGH ACHIEVERS BATTLE #1

Ladies and gentlemen, you could have been reading any publication in the world right now, but you're here with us in **mathNEWS**. Are you ready for a student debate?

**mathNEWS** contributor Xavientois once claimed that “there’s not much to debate about the definition of an all-nighter” and then was promptly embroiled in a heated discussion, clearly disproving that statement. In this debate, we hope to shed light on the contentious subject and bring some clarity to an issue that has plagued university students since the dawn of academia: What constitutes an all-nighter? Epsilon Screwn, you have the floor.

**Epsilon Screwn:** It is not an all-nighter unless you see the sunrise. If you sleep at 03:00 or 04:00 or 05:00, you are just pulling a late night, not an all-nighter. After all, it is an “all”-nighter, not a “most”-nighter.

**Vesica Piscis:** But what if there is no sunrise, Epsilon? It could be a snowy day (Snow Day please, UW!), a rainy day (as befits the sad mood of not finishing your assignment), or more importantly, you could be stuck in a room without windows (cough cough MC), and thus have no way of seeing the sunrise. In that case, would an all-nighter require one to stay up until the next available sunrise?

**Epsilon Screwn:** OK, I will admit that that is a good point, Vesica. I will concede that my definition was too narrow. It is an all-nighter if you see the sunrise or if you are inhibited from doing so by walls, weather, or other circumstances. If you are awake—and working—at sunrise, then it is an all-nighter.

**Vesica Piscis:** I think that in order for us to continue this discussion with the term “sunrise”, it needs to be well-defined first. The sun rises at varying times throughout different seasons; does that mean that in order to achieve an all-nighter, one must retain one’s consciousness and productivity until 08:00 in the winter, but in the summer, all that one needs to do is work hard until 05:00?

**Epsilon Screwn:** Well, we cannot exactly fix a time; that will just lead to exploitation of technicalities. If, say, I defined all-nighters to be study sessions that last until 07:00, we would have to disqualify study sessions that last until 06:59. Such pedantic definitions might have a home between the pages of a mathematics textbook, but they rarely make for meaningful or useful real-life definitions. Perhaps it would be better to categorize based on context. An all-nighter requires that one begins one’s daily routine (classes, breakfast, whatever) without having slept.

**Vesica Piscis:** I respectfully disagree with you there, Epsilon. By your definition, you are disqualifying acts of staying up and working until, say, 10:00, and then going to sleep for 4 hours, as well as taking a power nap in the middle of the night, then waking up to continue working, as all-nighters. If we are taking a semantic approach, “all-nighter” does not imply anything about what happens outside of the night; in fact, it

does not even specify what was done for all night. For pure argumentative purposes, if we say that taking a nap is a form of working that helps improve efficiency, then both aforementioned examples should count as all-nighters.

**Epsilon Screwn:** Vesica, when will you stop poking holes in my definitions and start advancing your own? It is very difficult to debate with someone who has not made their stance clear. Getting eight hours of sleep certainly improves my working efficiency; would that count as “pulling an all-nighter”? Also, if you’re going to shoot down my proposed “continuous interval of work” definition, how do you get around having to fix an arbitrary time as a measuring stick of all-nighter-ness?

**Vesica Piscis:** Epsilon, the thing that you don’t get is that having an all-nighter is actually a point of merit for a university student. Whenever someone makes the claim “I pulled an all-nighter yesterday”, they are often met with gazes of admiration from their peers. For many, the university experience is incomplete without at least an all-nighter or two. This is why engineering students often look down upon students from other faculties; they can simply throw their two-digit count of all-nighters in the other students’ faces and shout “This is why engineering is harder and deserves all of your respect, you peasants! QED!” (Or whatever the engineering equivalent is. Oh wait, they don’t really have one. That’s why we know that us mathies are honestly better. Actually QED.) Your definition of an all-nighter takes away this bragging right from a large portion of the student body. Are you truly ready to face the wrath of those that will be disgraced, even disowned by their faculties? Think carefully before you speak.

**Epsilon Screwn:** What are you, a communist? Definitions shouldn’t be based off how many people they will offend, disgrace, or ostracize. They should be based on what is true and useful, not human feelings. It doesn’t matter to me how many students are excluded based on my definition. And anyway, wouldn’t it actually be a good thing to raise the bar a little? Grade inflation is a big enough problem; we don’t need all-nighter inflation as well. The bragging rights should be limited to those who have actually earned them. Let them come at me in their wrath; I will not cave to the pressure to reform my views. Would you want Galileo to recant his heliocentric model because it offended too many people?

**Anonymous Student A:** (holding a pink tie, with a menacing grin) I think this would look better on your neck...

**Vesica Piscis:** Get out of my way, I’m not done yet. *Projects Anonymous Student A onto an orthogonal path from the line of fire* What are you then, a fascist? How can you so callously say that you have no regard for the masses of people that are excluded from your ideality? Besides, how shameful of you, looping yourself in with Galileo. There is a fundamental difference between his case and yours: Galileo was right, whereas you are

not. Would you insist upon Lamarck's theory of evolution after we've confirmed that Darwin had the better model?

**Epsilon Screwn:** How can you so callously disregard the health of the masses of people you are effectively encouraging to pull all-nighters with your inclusive definition? Aren't you worried that making all-nighters easily attainable and available to everyone will result in an epidemic of sleep-deprivation and workaholism? Morally speaking, not only is it better to use a definition based on facts and logic than one based on people's egos, it's also better to use a definition that prevents casual all-nighter pulling. Also, using a broad definition devalues all-nighters. Economic inflation is a big enough prob—

**Vesica Piscis:** Honestly, if you repeat yourself again I'm gonna scream! Don't you think this whole "all-nighter inflation" idea is a slippery slope? Most people wouldn't say that they pulled an all-nighter if they slept for more than 3 hours over 20:00 and 10:00, so give those that took a 20-minute nap a break and let them say that they accomplished an all-nighter! Why would you deny them that, especially when they've worked hard for the major—

**Epsilon Screwn:** Go ahead and scream.

**Exam Stressed Students:** AHHHHHHHHHHHHH!!!!

**Epsilon Screwn:** Honestly, at this point, I'd rather hear that than hear you try to argue. Why would you want to reward weakness? Darwin and Lemarck would both tell you that university is about the survival of the fittest. Somebody who takes a 20-minute nap to recharge their batteries doesn't deserve the same acclaim as somebody who props their eyelids open with toothpicks to force themselves to stay awake, and they shouldn't be treated with the same respect (and hence reproductive advantages). If our goal is to breed the ultimate student—

**Vesica Piscis:** The ultimate student shouldn't require all-nighters to get perfect marks in every single course! I take that earlier claim back, you're no fascist, you're a spy from the Unit 731! What are your evil goals, to exterminate all the rest of the students who can't pull all-nighters?

**Epsilon Screwn:** They ... shall ... not ... pass ... *drops dead from exhaustion*

**Vesica Piscis:** Well, looks like the end result from too many all-nighters by your own definition. Kids, don't try this at home! And if you do, remember that there's no shame in taking power naps to recharge.

**Anonymous Student A:** That was wonderful! Please accept my pink tie as your laurel of victory!

**Vesica Piscis:** Uhhh, okay, thanks?

**Random Synthetic Biologist:** (on the phone) What? Breeding the ultimate student by exterminating those who

pull all-nighters to finish their work? An outrageous breach of ethical regulations! (hangs up) You must speak to the Dean of Science. Come with me!

**Vesica Piscis:** Wait what? No that wasn't me, no no no, let me go!

**Random Synthetic Biologist:** (notices body, and then pink tie) What? You even murdered a student??? This is not good. 911!!!

**Anonymous Student B:** I saw the whole thing! Show no mercy!

**Vesica Piscis:** (while being cuffed and taken away) NOOOOOOO!!!!

**Exam Stressed Students:** AHHHHHHHHHHH!!!!

A very sleep-deprived Epsilon Screwn and  
Vesica Piscis

## W APPROPRIATE TIMES TO SCREAM WUSA

- Sitting in a quiet room at the UofT campus
- Whenever you see a WUSA exec
- Whenever you see a first-year
- As an alternative to saying "hello" when you see someone you know
- As an alternative to saying "hello" when you see someone you don't know
- When you greet someone: "WUSA, my name is Walter Luther"
- When you see a friend across the street and want to get their attention
- When you see a stranger across the street and want to get their attention
- When you see a cute girl
- When you finish a set at the gym
- When you finish a rep at the gym
- When you go to the gym
- When you think about going to the gym
- When your office is on fire
- When your house is on fire
- When your car is on fire
- When you show up to **mathNEWS** production night
- When you leave **mathNEWS** production night
- When you start a **mathNEWS** article
- When you finish a **mathNEWS** article
- When you meet up with someone for a date
- When the date goes well and you go in for a kiss
- When the date goes really well and you get to their apartment
- As you climax after the date goes *really* well

# I WOULD LIKE AN ITEMIZED RECEIPT

Ah, pizza reimbursements. The driving force of our economy! Imagine **mathNEWS** without pizza. Who would even write?!

Whether we need it or not, pizza is the currency of **mathNEWS**. Its ceremonial importance and place in tradition far transcends its economic significance. The writers demand pizza. No monetary or nutritional equivalent of burritos will suffice — pizza only. Pizza turns volunteer blogging from your basement into a kind-of career. On the one hand, it guilt-trips self-selecting writers to earn their share by producing quality content ... most of the time. On the other hand, it makes it okay if nobody reads your article. But best of all, it brings writers together, to share in what they write, and to share in what they eat.

I guess this means **mathNEWS** is the best kind of socialism. Every fortnight the great gears turn, greased by the very cheese that runs through them, to ensure that the markets are controlled perfectly. Good writing flows through the editors and to the eyes of our dear readers. And hopefully, the readers have paid their fees to fund the pizza flowing in the opposite direction (and cover printing costs).

Of course, **mathNEWS** doesn't bake its own pizza (yet). We have to import it and support our local economy. This is the most precarious part of the supply chain. We send our bravest writers to face bitter cold, burning heat, and various levels of rain alike, to trek across the great outdoors and retrieve the vital substance. And when they get there, they expect one additional courtesy. Sometimes, we even add it in the comments of the order:

## I would like an itemized receipt.

And we'd add a "please" too if your text box gave us enough characters to fit it. But we were hoping the mere request would be honoured by you pushing the button on your end, to print a piece of paper that already existed in your computer system. We'll even add a tip if you want.

Alas, sometimes that is too much, and **mathNEWS** scrambles to figure out how to reimburse our brave warriors without the supporting documentation we need to do it. And sometimes it works out okay. But nonetheless, for those few days or weeks of limbo, the gears are covered with a slight tinge of filth, and everyone wonders what will come of the integrity of our system.

Pizza flows down the pipe, in the direction the writing doesn't. The itemized receipt is the paper that we wrap around

that pipe to make sure nothing drips out the bureaucratic holes. "I would like an itemized receipt" isn't a request to split the bill. It's not some convoluted coupon code. It's not begging for free pop, either. The most trouble it might cause is if you run out of receipt paper while printing it, but you had that coming anyway. We're not asking for the receipt to spite you. We're asking because we need one, so that writers can be rewarded for entertaining and informing the math student community. So that we can keep buying your pizza.

And that's why I would like an itemized receipt.

water

1. Out of the writers surveyed at the Toronto satellite production night, the majority would write without pizza. We got pizza anyway because we need sustenance if we're going to write through dinnertime.)

## RAMMING AS A MODERN NAVAL TACTIC

A long time naval tactic throughout history has been to ram the side of the enemy ship, disabling or sinking the vessel. This was the only reliable method to sink a ship until the Age of Sail. But what has happened to such a glorious and honourable tactic?

Well, my friends, you'll be glad to hear that it never left us. Throughout the ages, ramming has always been an available tool, except for the Age of Sail as it's hard to ram using the wind. Here are some examples:

- The Battle of Lissa (1866): The Austrians under Wilhelm von Tegetthoff rammed the more numerous ships of the Italian Carlo di Persano, allowing his T to be crossed in the meantime. Persano decided to ram the *Kaiser* to try and turn the tide, but the *Kaiser* was able to dodge. The *Re di Portogallo* then attempted to ram the *Kaiser*, but was counter-rammed instead.
- In 1893, the Royal Navy HMS *Victoria* was sunk by HMS *Camperdown* by ramming near Tripoli.
- During the First World War, HMS *Dreadnought* rammed *U-29*, sinking the submarine.
- In the Third Cod War, there were 55 ramming "incidents".

Needless to say, the art of the ram is alive and well. It has also played a decisive role in each and every conflict, on or off the water. The infamous quote by Heinz Guderian says it best: "Whenever in future wars the battle is fought, [ramming] troops will play the decisive role."

Send more profQUOTES.

THE ENTIRE **mathNEWS** READERSHIP



# LOW STAKE HOT TAKE: WE SHOULD HAVE A NEW FACULTY MASCOT

*IF WE WORK QUICK ENOUGH, WE CAN CHANGE IT JUST IN TIME FOR ORIENTATION!*

You're all familiar with Pinkie, I presume. Or is it Pinky? Pinkee? Whatever its name is, it's our current faculty mascot. An honest-to-fucking-God pink tie. Now I ain't saying it's *bad*, but if I'm being candid, it's pretty jackass dumb. Probably the dumbest of all of the UW faculty mascots, an' that's really saying something, you hear me? For christsakes, there are puny-ass amoebas and stone-stupid pipe wrenches out there in the mascot roster. But at least amoebas are halfway related to Science, and one can kill a six-foot-eight, 260 pound man with a steel spanner between the eyes with a lil' bit of force in the swing. Ever tried to strangle someone with one of those flimsy pink tie bitches? It seems easy, but that poly fabric gets slippery. There ain't no friction, no grip, and then the bull of a man you're wrassling with on Albert St. at 3:03 AM because you owe his boss five hundred grand in blood money throws you off onto the ground and then you become as good as dead.

Sure, ole Pinky makes for a saccharine tribute to Mr. Stanton, bless his dusty dead soul, but come on, boys — we need somethin' new. We need new life, fresh blood. The pink tie's too boring, too milquetoast. I'll just reiterate again: as a mascot, it's fuckin' dumb. Let it fucking go. Now what do we replace it with? Well hooo-eee, buckle your seatbelts and strap your stirrups, 'cause I've got a good idea for one. If we change the Math Faculty mascot to this, I tell ya', we'll steal the show at Orientation this year. All the baby froshies in the other faculties will be fallin' all over themselves to transfer into Math. With those numbers, we can effectively raze the other faculties off the face of this campus and restore glory to this college city.

Listen up, boys. Our new mascot's gotta be a bright pink silicone dildo. Realistic veiny texture; nice an' large. Pinky ain't got nothin' on this, I'm sure you'll agree. Instead of pink ties, we can hand the infants 9-inch dildos at the end of o-week. They'll call it the Cock Ceremony, which has a better ring to it. It's got good alliteration! To replace the big pink tie they hang offa' M3, we'll erect a gargantuan, 10 metre tall statue of 'Cocky' on top of MC (and by doing so, make MC the tallest building on campus). It'll be silicone as well; the size of it will afford us to add even more lifelike detail. I wanna see its goddamn hair follicles all the way from my apartment on Columbia and King. Ideally, it'd also have lights installed on its surface so that it would glow bright pink during nighttime, like a majestic lighthouse penetrating through the darkness of ocean fog.

As a final assurance to the naysayers, think about this: a dildo ain't too far from a tie. Like, just look at the MathSoc logo or something an' you'll see what I mean. It's just inherently phallic. If you replaced the logo with a minimalistic outline of a dildo, I'd doubt anyone would notice. I really think we oughta put the pink tie to rest and let the dildo take the stage. With your help, we can. Tell your friends. Tell MathSoc. Tell Stephen Watt, mister cod-cutter himself. And keep on tellin' them no matter how many threats for a restrainin' order or police intervention they make. We can make this wet dream come true, you an' I. Who's with me?

Finchey

## A SERIES OF SUMMER HAIKUS, V140I5

### MOSQUITOES

I hate mosquitoes  
If you read my article  
You'd already know

### BEACHES

Beaches are no fun  
You will get sand everywhere  
And there's mosquitoes

### SUNSCREEN

I look at his face  
It's whiter than a phantom  
"Rub it in some more"

### INDOORS

It never changes  
All year 'round it's all the same  
But it's hot outside

### BLOOD RED

Ugly bites scratched raw  
The cherries on my sundae  
Watch the sun vanish

### NIGHTTIME

Feeling exhausted  
My legs are really itchy  
I hate mosquitoes

Finchey

## THE JOURNEY OF A GHOST [BEDTIME STORY 2.0]

I was goofing around with my friends happily until ... I fell. Uh oh, waking up in a bucket of water? Why me? I will file a lawsuit against the incompetent who built this roof. What the heck? I don't know how to swim! The least I want is my lifetime glory remaining anonymous. Somebody help!

"AAAAAAAAAAH!" Some creature just screamed for a minute and I bet it's a female human. Don't you know how exhausting to cover my ears in water? So inconsiderate! And impolite!

You have one last chance to prove your sympathy young lady. Or I will ... Oh, she's got a mop in her hand! Don't hesitate! Lift it up and I will canonize you as my new goddess for the next decade.

Alrighty, I'm outta here. You have a good life.

Months have passed ...

I ... am in the ocean? Or a giant water bucket? My son told me this giant water bucket is called the Pacific Ocean. When have I learnt to swim? Oh? I can even fly?

My assumption is ... I'm a ghost now. Finally. It's been 900 years. It's time to enjoy my retirement.

The only thing that's bugging me is I never said thank you to that warmhearted young lady. The main reason why I want to do that is because I'm bored like a dead rat. Anyway, I'll track the molecules she left in the atmosphere and leave my thank you gift quietly like a ninja. The great thing about being dead is you will never pay for transportation ever. Haha, bad joke 'cause I am a habitual fare evader.

I found her address without much effort. I sneaked in through the shadows behind her curtain but accidentally tripped myself with my tails and fell off the sill. I fell again. Maybe I am too old to move after all.

She sat straight up after hearing the noise I made. Sleepwalked through her door and logically shut it after her. Seems like I am not welcome here. What she doesn't know is nothing in third dimension can trap a creature in fourth dimension, such as a ghost. I will leave my secret gift, a letter written on a fourth-dimension plane on the sill and leave her alone. Oh, maybe a I'll give her a bonus gift with my pride and odour on it. Also because I really need to use the bathroom.

Maybe I will go to Hawaii after this trip. So long, young lady. At least you didn't scream this time.

*The rat you shouldn't have saved.*

## IN MEMORIAM: ERIC SWALWELL

Today we here at **mathNEWS** would like to say a sad farewell to Eric Swalwell's presidential campaign. As of July 8<sup>th</sup>, 2019, the California congressman, well known for being the character you get in a video game before you customize anything, has dropped out of the race for President, taking his chances of being the most powerful man in the world from probably zero percent to definitely zero percent.

Swalwell's campaign started strong with his announcement in April on *The Late Show With Stephen Colbert*, which received 197,505 views on YouTube. Unfortunately, his projections indicated that even if everyone who watched that video voted for him, he would not have won the election. Also, YouTube demonetized him, placing his fundraising operation under great strain.

Swalwell's greatest moment was during the first Democratic debate, where his impassioned speech about a new generation of leadership provided millions of Americans with an opportunity to check Twitter for highlights of the actual candidates.

In the end, Swalwell could never break beyond the imposing ceiling of "not being categorized under Other on Wikipedia". He now plans to jump into a campaign for Congress, sort of like when you quit your job to pursue your dreams and then sheepishly come back after your savings run out.

Goodbye, Eric. You were taken just soon enough. Wikipedia's looking to get rid of that Other category.

UWUnprint

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## U THINGS WUSA DOES FOR STUDENTS

- WUSA used bookstore
- Clubs
- Services
- Food and retail
- Health and wellness
- Turnkey desk
- Transportation

Source: [feds.ca](https://feds.ca)

WUSA Fan 1996

# EVERYDAY IS EGG DAY — MS. DUMPTY WALLS

They tried to put me on the cover of Oeuf, but my eggs were just too strong!

## [VERSE 1]

Every day is egg day  
Monday Tuesday Wednesday  
Boiled, Scrambled, all the way  
Thursday Friday Saturday  
Sunday is the one day  
I get on that egg lay  
Ready for it may'naise?  
Ready for it may'naise?

## [PRE-CHORUS]

I'm legendary  
All eggs and dairy  
I'm legendary  
All eggs and dairy

## [CHORUS]

Eggs eggs, what's on the menu?  
Eggs eggs, what's on the menu?  
Eggs eggs, what's on the menu?  
(cluck cluck cluck cluck)  
Eggs.  
Eggs! Eggs! Eggs! Eggs!

## [VERSE 2]

Every day is egg day  
Always eatin' poached; great!  
Want these deviled eggs, eh?  
Watch it while the yolk breaks  
Sunday is the one day  
I get on that egg lay  
Ready for it may'naise?  
Ready for it may'naise?

## [PRE-CHORUS]

I'm legendary  
All eggs and dairy  
I'm legendary  
All eggs and dairy

## [CHORUS]

Eggs eggs, what's on the menu?  
Eggs eggs, what's on the menu?  
Eggs eggs, what's on the menu?  
(cluck cluck cluck cluck)  
Eggs.

## [BRIDGE]

Sunny side? Ms. Dumpty Walls!  
Frittatas wide? Ms. Dumpty Walls!  
Crisp and fried? Ms. Dumpty Walls!  
Omelette with chives? Ms. Dumpty Walls!

## [CHORUS]

Eggs eggs, what's on the menu?  
Eggs eggs, what's on the menu?  
Eggs eggs, what's on the menu?  
(cluck cluck cluck cluck)  
Yellow, yeah! Yellow, yeah!

## [CHORUS]

Eggs eggs, what's on the menu?  
Eggs eggs, what's on the menu?  
Eggs eggs, what's on the menu?  
Yellow, yeah! Yellow, yeah!  
EGGS!

(based on the song "Legs" that Naomi Smalls performed, and an egg from **mathNEWS**)

Xx\_420SonicFan69\_xX

## POLITICAL PARTIES DO UNEXPECTED BY FUFFILLING CAMPAIGN PROMISE

This past week voters were shell shocked when a political party actually did what it said it was going to do. "I know they said they were going to do it but I never expected them to do it!" said local voter Joe. "It's just not right. It goes against the laws of nature. The sun heats, rain falls, politicians lie. When something like this happens it really makes you question the system." said housewife Karen. "I figured they were just being metaphorical. You know, using flowery language, talking about how great our lives could be if we used our resources better. I didn't think they do it!" said every man Doug. When asked if they would consider voting for the party in the next election, many cried, "Hell no! Government is all about holding up the status quo. We can't allow any radical ideas, like actually being accountable and fulfilling promises."

Beyond Meta

# SENIOR SOFTWARE DEVELOPER

Senior Software developer is a landmark in any software development career. It's not an exact point, as different companies have different expectations for what it is and when you get it can vary anywhere from the day you graduate to your mid 40's. "Senior" doesn't describe seniority over others, nor does it describe that nobody else is senior to you. Rather, it describes a point in your software development career where you are mature enough to be trusted to manage your own work. It sounds like a simple thing, but the context surrounding it is where the complexity lies.

Someone on a software development co-op might describe that they spend all their time working on their own, or that they have full freedom to decide how and what they do. Is this being "Senior"? Not quite. A full stack developer might say they get to design features and products from end to end. This is definitely more responsibility and demonstrates more maturity, but is it really "Senior"? What about a developer that architects company wide solutions with multiple microservices and allocates people to build different parts of it. Is this senior? Probably. People are being managed, platforms are being designed, and it is functionally the peak of a software development career. Really, the only way up is more people management. So where along the line did that person become senior? It lies somewhere between running a project and designing an entire solution. That marks the vague career point of any Senior Software Developer.

A key characteristic that sets Seniors apart is when you are mature enough to predict what is important to the bottom line of the business now, 3 months from now, 1 year from now, and maybe even 5 years down the road to an IPO . There is never enough time in the world to do everything, or to even do the few things you need to do the right way. What corners can be cut and what needs must be met are what keeps the business alive and your paycheck coming. Those decisions also keep your coworkers employed, so when they trust you to decide, then it is time to consider you are in the Senior phase of your career. When everyone is skilled and intelligent, the respect of your peers out-values the opinions of your management. You earn that respect by demonstrating that you understand what the business needs.

The other thing that sets Seniors apart is how they interact with others. The stereotypical lack of social skills in software development makes it the most valuable skill set and there are many simple ways to be incredibly valuable in that regard. A simple example is people who feel positive working with you will want to work with you more, so never be critical or judgemental. Be a social cornerstone by hosting parties or events, and become a weaver of the social fabric of your organization. Coworkers and managers will then look to you when deciding who should work on what. More concretely, getting two intelligent and opinionated people to work together without stepping on each other's toes easily increases their productivity by 10%. But that's not their value: it's yours. If it takes 10% of your day to improve each of their productivity by 10%, then it extrapolates to being worth double what they are.

When you can get more value out of people than they can get out of themselves, that is true seniority.

At the end of the day, it's not a race to get to "Senior" as fast as you can. It is a race to be the best person that we can be for the longest part of our short and interesting lives. So do it for yourself, and others will see it in you.

Murky Calm

## S WUSA DOMAINS YOU CAN BUY NOW

- [wusa.university](http://wusa.university), for causing mischief
- [wusa.club](http://wusa.club), for listing all WUSA clubs
- [wusa.shop](http://wusa.shop), for buying WUSA merchandise (which I would legitimately buy)
- [wusa.legal](http://wusa.legal), for the WUSA legal aid service
- [wusa.engineering](http://wusa.engineering), for the new EngSoc website
- [wusa.accountants](http://wusa.accountants), for the new SAF website
- [wusa.church](http://wusa.church), for the up and coming WUSA religion (praise be to our Lord and Saviour, Michael Beauchemin)
- [wusa.pub](http://wusa.pub), for when Bomber reopens
- [wusa.dating](http://wusa.dating), for a dating site for Waterloo students
- [wusa.singles](http://wusa.singles), to compete with wusa.dating
- [wusa.rocks](http://wusa.rocks), to be a fan page for the WUSA execs

WUSA Fan 1996

## LIMITATIONS IN HUMAN IMAGINATION

You cannot imagine a new colour.

You can never visualize an object in fourth dimension.

You cannot imagine the secretion of your saliva while eating lemon if you've never had anything sour.

You cannot imagine anything that is not based on what you have seen.

The most reliable way to reach the limit of human imagination is through mathematics. *[Editor's note: False. I have a number for another, not so legal, way, if you want ... ]*

You cannot predict how characteristics will be formed.

You never know what's in a girl's head. :)

You cannot imagine how your brain lied to you.

Autowired

# I TRIED THE 36 QUESTIONS TO FALL OUT OF LOVE (TOP 10 ANIME REDEMPTION ARCS)

If you haven't checked out the article *36 Questions to Fall Out of Love* from issue 3 (two issues ago), feel free to go check it out before reading this response to it.

First of all, I would like to thank *Steve, the Craigslist Psychologist* for creating this list. It truly put our relationship through the wringer. A couple of issues back, this inspired **mathNEWS** writer came up with the inverse of "36 Questions to Fall in Love" which were designed to make two individuals fall out of love. When my girlfriend picked up her biweekly copy of **mathNEWS**, she saw this article and proclaimed that we should try it out. While I am confident in our love, her excitement about an article designed to make people "fall out of love" was a bit concerning. Nonetheless, when she was in town, we went to one of our favourite date spots (Taco Farm) and attempted this trying challenge. The original author hypothesizes that very strong relationships will be very unchanged by this experiment, but less stable ones may crumble. Would this be the case for our year-old relationship?

Dear reader, let's do a quick overview of some questions of interest which proved especially trying. The 36 were divided into three sets of 12 questions, A, B, and C. The questions in each successive set are supposed to be more probing than those in the previous one.

## SET A:

### 6. HOW MUCH MONEY IS IN YOUR SAVINGS ACCOUNT?

The question of finances is one that has come up before in our relationship. Both of us come from decently well-off backgrounds. Neither of us have ever had to worry about having food on the table and our families are able to afford the basic necessities. However, while she has a pretty standard relationship with money, I am kind of unusual. My parents "lovingly" call me Ebenezer (not my real name). I am one of the most miserly students I know. This is something I have tried to work on, but I still find the most relatable Spongebob character to be Mr. Krabs. This question began a new conversation about money which led to some admissions about ourselves. As a result, this question led to a deepening of trust and growth of the relationship.

### 10. DO YOU VOTE IN MUNICIPAL ELECTIONS?

We went to vote at the last Waterloo municipal election together!

## SET B:

### 14. WHAT IS YOUR DEFINITION OF "FEMINISM"?

This questions was probably the most contentious of the 36. It turned out that we had the same ideas, but used different language to convey them. It took a decent number of minutes

to finally arrive at the understanding that we were talking about the same ideas using different allegories.

### 21. DO YOU WANT TO HAVE KIDS?

My answer to this question is always a matter of concern to my significant other. She is certain about wanting to have kids. While I am open to the idea, it is not something I have terribly strong feelings about.

## SET C:

### 25. IF YOU COULD BE GIVEN THIS TOMORROW, WOULD YOU RATHER HAVE A \$1,000,000,000 USD OR WORLD PEACE?

She was concerned at how long it took me to answer, but we both answered "world peace".

### 31. HOW WOULD YOU ORDER THE FOLLOWING FROM LEAST TO MOST IMPORTANT IN YOUR LIFE: FAMILY, GOD, ROMANTIC RELATIONSHIPS, FRIENDSHIPS, SCHOOL, WORK, PHYSICAL HEALTH, MENTAL HEALTH?

This took the longest to figure out because I wanted to figure it out tournament style in my head and I couldn't keep track of them all. The two most significant differences were that she ranked family first and I ranked School very high.

### 35. HER FREE QUESTION: DO YOU TRUST ME?

Yes.

### 35. MY FREE QUESTION: COULD YOU EVER PLACE YOUR RELATIONSHIP ABOVE YOUR FAMILY?

I was concerned about her answer to question 31. She values her family so much that I was concerned I could never be as important to her as her family. Let's just say that I was very relieved by her answer.

### 36. DO YOU BELIEVE THAT PINEAPPLE ON PIZZA IS HUMANITY'S GREATEST MISTAKE (IF NOT, THEN WHAT IS IT)?

Pineapple is great on pizza if it is complemented by the other toppings (like any topping).

By the end of these questions, our relationship was stronger than ever. I can see why they would be effective, though. If you ever get a chance to try these out, I would highly recommend them. They will highlight where your relationship may need more work and bring any red flags to light which may have been hidden up to that point. The trick is to be honest.

Thanks again to *Steve, the Craigslist Psychologist*.

# BUYING SOMETHING FOR 2¢ USING CASH

Ever since Canada got rid of the penny in 2012 and the rounding rules were implemented, my brain always had a nagging question. What would happen if you tried to pay for something that costs one or two cents using cash? This question has lingered in the back of my mind for over five years, and had been unanswered until recently.

On July 3<sup>rd</sup>, my dad came home after going out shopping for miscellaneous stuff, and most importantly, some fuel stabilizer. After dropping off the shopping bag, he told me to look at the receipt. At first, I wondered, "what's so cool about a receipt?" On the receipt, it showed that the one litre bottle of fuel stabilizer my dad bought cost exactly 2¢, so I asked him more about it. He said that the label on the shelf said 2¢, the price check scanner showed 2¢, and even at the cash register it showed 2¢ when it scanned. So I went to Walmart to see for myself, and take some videos of my experience finally buying something that would round down to 0¢ when paying with cash.

There I went, to the second floor of Walmart to the auto section. Indeed, there it was, next to the half-sized bottles

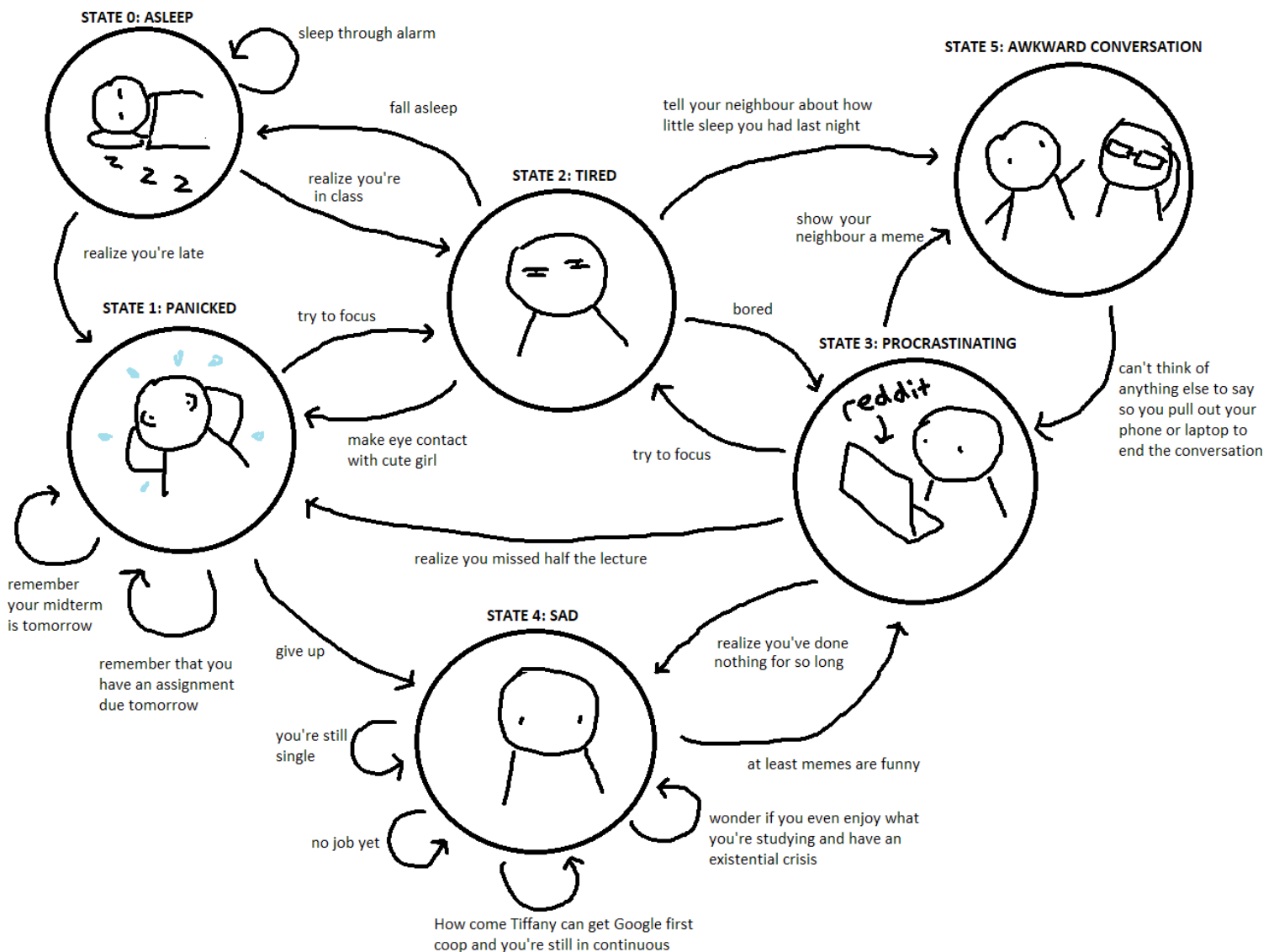
that were \$8. The price tag on the shelf actually said 2¢, and underneath, it said that it was originally \$14.97 so I picked up a bottle and went to the price check scanner. There it confirmed once again that it was 2¢ and so I went to the cashier.

After what felt like eons waiting for someone to get a 70 cent tax exemption on their 75 dollar purchase, it was finally time. The cashier scanned it. The total came to 2¢. I said that I would be paying in cash. She hesitated for a considerably longer time than I expected. She then said "uuuhhhhhh ... I guess it's free?" and gave me the receipt.

It was a success. I finally bought something that came to 2¢, and by paying in cash, the total price rounded down and I got it for 0¢.

**boldblazer**

PS: I'm pretty sure the 2¢ price was definitely an error or mistake of some kind. There is no way that that price should have happened.



## N REASONS WHY VANCOUVER > WATERLOO

More specifically on why the Metro Vancouver Regional District (MVRD) > the Regional Municipality of Waterloo (RMW).

- Trees
- Number of olympics:  $1 > 0$
- MVRD has 4 Vancouvers<sup>1</sup>, 2 Coquitlams<sup>2</sup>, and 2 Langleys<sup>3</sup> amongst the 23 members of the MVRD. RMW does not have any duplicates amongst its 7 members.
- 3 fully automated grade-separated Skytrain lines > 1 ION line
- RMW has no sea access so sadly no Seabuses
- Buses actually run frequently
- Lots of trees
- 1 treaty first nation in the MVRD > 0 treaty first nations in the RMW
- Only encountering bad drivers on only one side of the main river
- Can go skiing on the mountains then spend time on the beach on the same day<sup>4</sup>

- Did I mention there are trees and parks everywhere?
- Good sushi and bubble tea everywhere
- Good tasting water
- MVRD Total Visible Minority population  $\approx$  European Canadian population (2016 Census)
- UBC is given control of its own land separate from any other city.
- You can survive being outside in the winter
- You can survive being outside in the summer
- TREES

**boldblazer**

2. City of Vancouver, City of North Vancouver, District Municipality of North Vancouver, District Municipality of West Vancouver. Citites so nice, some we named twice, twice.
3. City of Coquitlam, City of Port Coquitlam.
4. City of Langley, District Municipality of Langley
5. Personally, I would advise to just do one or the other and not both. Unless lucky, you will end up with less-than-good weather conditions for one of the two.

## THE NEXT N WORDS OF THE NOVEL I'M WORKING ON

It's because of my shallow Christian upbringing which I've long since ditched, but when I think of angels, I think of those benevolent beings that are all pure and white. On the other hand, "goddess" brings to my mind those Greek ones that liked to fuck around with people, and also fuck. I mean have sex. If you ask me, I've got all the reasons to avoid going to any of my sister's schools, and those parents of mine should be in agreement, but against all logic and reason they made me attend the same high school as her. I don't know what really triggered her insanity to come through, but I'd place all my bets that it came from this school, and I don't know how, but I'm going to try my damned hardest to stay as far away from whatever it was as possible. That's what I'd been doing the first two years I was here, but it hasn't been going so well. By sheer luck or coincidence, I had pretty much the same teachers that she did, and not a single one of them skipped a beat when telling me how much I looked like her. Next thing I knew, they started treating me like her, too, and then having all of these expectations for me like finishing in first at the local mathematics contest, which I did, too. I did all of the things they wanted me to do and then some. I was truly stupid. I knew exactly what it was they wanted. I knew they just wanted another Evelyn, only not insane; only they were completely delusional to think such a thing could ever exist.

I thought that at least I was doing fine if I wasn't getting with the boys, and for a while that really might have been true. Then for some stupid reason, I enrolled myself in this cooking class. I guess that since my sister didn't take it, I thought it would be safe. However, it turns out that high school cooking classes are a prime place for the horny NPCs to look for mates

and practically have sex with one another. I came up with that term near when I first entered this school and discovered them screwing in the hallways, corridors, and especially stairwells. I cycled through different names, like "Normals", "Normalpersons", "Normans", "Normads", "Metronormals", but I settled on "Normal Person Caricature". I don't want you thinking I'm one of those insane people on the internet who like to hate on normal people only for the sake of being contrarian. I'm not like that. First of all, I don't hate people, and if I do, it's because I have a reason for it. Secondly — most importantly — I don't think that NPCs are all the same. That's why they are *caricatures*; that's my revolutionary idea.

cy

## A THINGS WUSA AND SHREK HAVE IN COMMON

- They both support diversity
- They are both love
- They are both life

WUSA Fan 1996

# girdCOMMENTS FIRE EDITION

So after the **mathNEWS** office fire (well, that's what the Editors told us in the email this week, and why would our ~~benevolent dictators~~ Editors lie to us?) I was reminded of how I was rudely woken up by the fire marshals setting off the building's fire alarms at 9 in the morning. Mathies are nocturnal, for crying out loud; we come out in the cool evening air of the summer at the prospect of pizza and other free food while squirreled away for the rest of the time working on yet another assignment and studying for finals. Huh? Oh yeah, studying for finals, which are just in a few short weeks from now. You're saying you haven't started? Well, I guess it can't be that much of an ask to implore you to do this **gridWORD** first, then. After all, what's the difference between starting now and a few hours from now anyhow?

It has come to my attention this issue that the **BLACK BOX** has a front pouch where *clew3* (and maybe others) have tried to submit answers to. There is a slit on the top of the **BLACK BOX** where paper entries should be slotted though, and not in the aforementioned front pouch. Thanks.

This issue I have received thrice as many submissions as usual, which was a pleasant surprise (an Editor's discovery of the pouch may also have helped). As all three submissions are correct, I shall pick a winner based on my favourite answer to last issue's **gridQUESTION**, "Where are some exotic locales the LRT has taken you?"; the responses are as follows:

- *zmxn* responded "mr goose is inescapable"
- Anonymous *Blobfish* responded "en-ca"
- *Ambrose* responded "The LRT is basically an inter-dimensional wormhole. People step in, and there's a solid 70% chance they don't step back out in the

same mortal realm. I can't even be too sure this current reality was originally mine. There's a lot more geese than I remember ... "

*Ambrose's* answer was my favourite as it shows a level of research in this interdimensional LRT phenomenon enough to give a percentage. In case you need it, welcome to Universe **KHLDAKVDQK**, and you should drop by the **mathNEWS** office at MC 3030 for your prize. Personally, I would recommend doing so before trying out any more LRT shenanigans.

Submissions to this issue's **gridWORD** can be done electronically to [mathnews@gmail.com](mailto:mathnews@gmail.com) or physically into the **BLACK BOX** (via the slit) situated outside the Math C&D by 18:00 on July 22, 2019. Submissions should include a name (to affirm yourself to the Editors should you win), and may optionally include an alias which you will be credited under, an answer to this issue's **gridQUESTION** "What is your foolproof plan to ace every final exam?", and the filled out grid. One (1) submission with the most correct grid shall be considered for a prize, and in the event of a tie for the most correct submission, I shall pick my favourite answer to this issue's **gridQUESTION** as the tiebreaker.

Hopefully as the term winds down to its *dénouement* one does not become too overly stressed by life's inconveniences and roadblocks. Take the time to chill, do a **gridWORD**, and recharge. Tune in next issue to see who wins a prize!

Zethar

## ACROSS

- Jazz phrase
- Prompt
- Cold shower?
- Form of ether
- Confusion
- Worse, as excuses go
- Pupa
- A Gala, for example?
- Sweet potato
- Keats piece
- African antelope
- Hired hands?
- Dough dispenser
- Miff
- Abate
- Church demesne
- Scrape
- Scottish Gaelic
- Transcended
- New frosh incoming
- Hoodoo ornament
- Post or transport by relays of men or horses stationed at intervals
- Be mistaken
- Let go
- Known for his conceits

- Dutch cheese
- Tack on
- $\{v \in V \mid L(v) = 0\}$ ,  $L : V \rightarrow W$
- Small birds
- $X \ 49A \ 53A = S(X)$
- Unagi
- Internal purge?
- Bluff concealer
- Leveled
- Noble
- Winged
- Racing vehicles
- Roster abbr.
- Egyptian snakes

## DOWN

- Salvage
- Asthmatic's device
- Prepares (a disk)
- Wing it?
- Sun protection?
- Light
- Action film staple
- Latin "thing"
- Lambaste
- Northern Scandinavians

- To form a jury
- Thin and slippery
- Handled
- Early course
- Take a shot
- Mission
- Made to fit
- Called
- Disemboweled
- Night before
- Aida and Elektra
- Passion
- "The Lord of the Rings" figure
- Smoke alarms, at times
- The smallest infinite one is omega
- Swing
- Toughens glass
- Patella
- Retailers
- Does in general?
- Played charades
- Toll
- Small fry
- Vegetable in 18D
- Letter #16
- Kind of bran
- J.F.K. regulators



# haltingPROBLEM

## THE KING'S PARTY

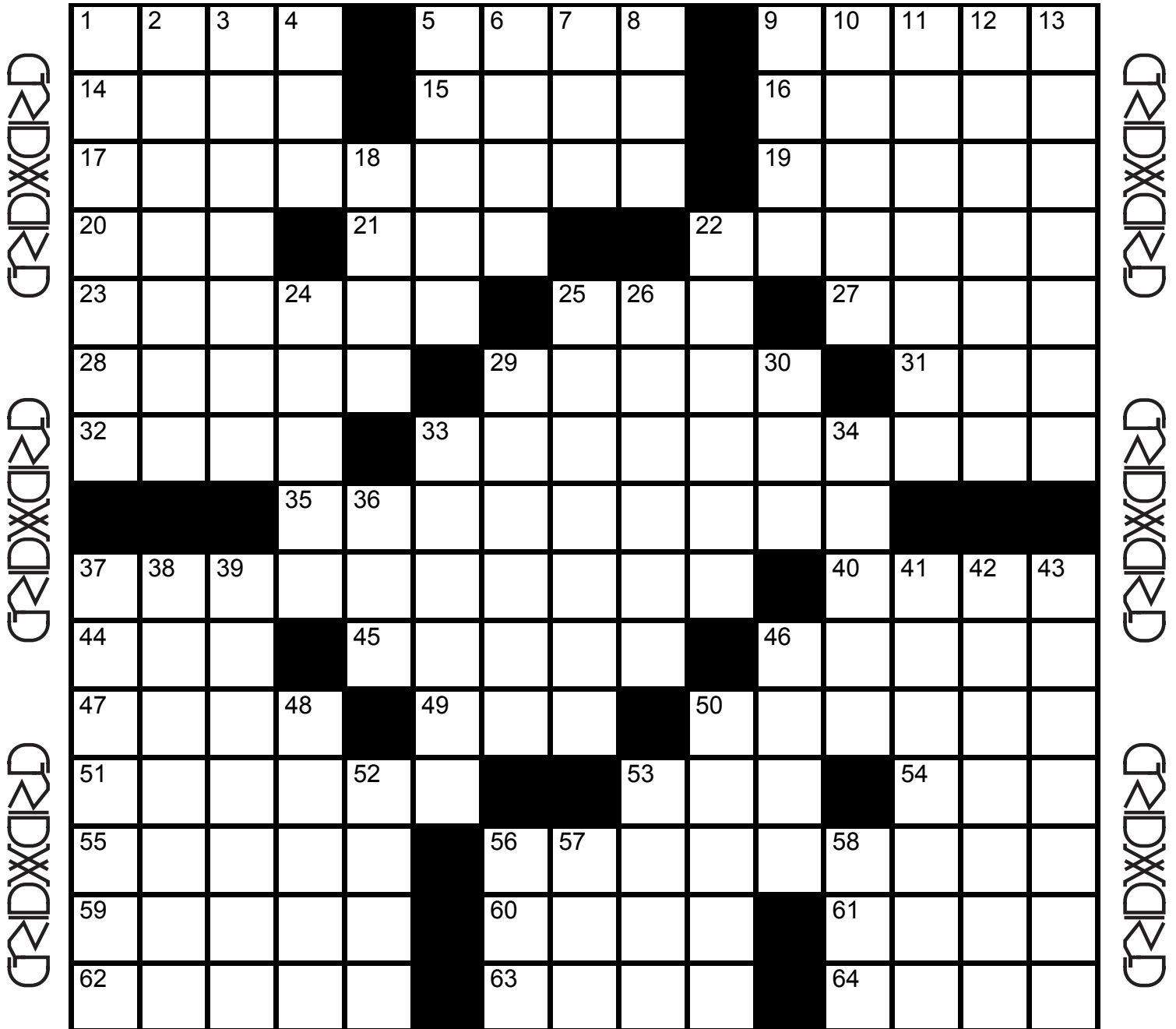
haltingCOMMENT 140.5

The king is throwing an extravagant party, inviting his entire court, and plans to serve 1000 bottles of wine. However, he has learned that one of the bottles is poisoned. The king is both greedy and hedonistic, and doesn't want to waste any more wine than is absolutely necessary, so he refuses to just throw away more than a single bottle, though he is willing to let people take sips of wine for the sake of testing it. Thankfully, he has 10 prisoners he doesn't mind killing, and just enough time for the poison to take its effect once before the party, with a few hours to spare (i.e. giving one prisoner a sip from

a bottle of wine every day for 100 days is not a valid solution). How can the king successfully deduce which bottle of wine contains the poison and dispose of it before the party?

This puzzle is brought to you by the UW Puzzles & Brainteasers Club, who meet every Friday at 6 p.m. in QNC 1507.

UW Puzzle Club



# lookAHEAD

SUN JULY 14

National Mac & Cheese Day

MON JULY 15

National Tapioca Pudding Day

TUE JULY 16

Drop with WD period ends.  
National Corn Fritters Day

WED JULY 17

Drop with WF period begins  
Fall 2019 class schedule and add/drop appointments visible in Quest

THU JULY 18

National Caviar Day

FRI JULY 19

National Daiquiri Day

SAT JULY 20

National Strawberry Rhubarb Wine Day

SUN JULY 21

National Junk Food Day

MON JULY 22

mathNEWS 140.6 production night  
Fall 2019 add/drop appointments  
National Penuche Fudge Day

TUE JULY 23

Fall 2019 add/drop appointments  
National Hot Dog Day

WED JULY 24

Fall 2019 open add/drop begins  
National Tequila Day (to tide you while Quest is down)

THU JULY 25

National Wine and Cheese Day

FRI JULY 26

mathNEWS 140.6 published  
National Coffee Milkshake Day (to help with your hangover)

SAT JULY 27

National Scotch Day

## LAST WEEK'S gridSOLUTION

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

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UW'S BASTION OF ERUDITE THOUGHT SINCE 1973

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