

THE UNIVERSITY OF  
**WATERLOO**  
FACULTY OF MATHEMATICS

## GREETINGS MATHIES!

Hello and welcome to you, first-year Math student!

This is **mathNEWS**, the University of Waterloo's bastion of erudite thought, and official newspaper of the Faculty of Mathematics. We've been running since 1973 and publish a new issue every two weeks, usually six issues a term.

An issue of **mathNEWS** is made of a lot of different parts. After the cover is what we call the **mastHEAD**, composed of a blog-style article written by the editors (a.k.a. the one you're reading right now) and a question and answer section with our writers. This time, we've replaced the Q&A with a table of contents—this issue contains a ton of useful advice from **mathNEWS** writers and editors that you'll definitely want to come back to later in the term.

The bulk of the issue is formed from the many articles and pieces of artwork we get from the **mathNEWS** community. This **mathNEWS** Special Edition™ focuses on articles from faculty clubs and other informative articles from our writers. There is still some of the classic **mathNEWS** spirit, which is to say utter chaos. We've got low-effort articles that are derivatives of others, inside jokes, surrealist comedy, and some arguably tasteless jokes that will definitely get me a stern talking to. Surprisingly enough, we've even got a couple articles of actually interesting content. Not in this issue are poems, articles written by profs, **profQUOTES**, research papers, terrible puns, and passive-aggressive complaints about courses.

At the end of the issue we have our crossword puzzle, the **gridWORD**. Make sure to check it out this issue—it's got a new twist we think you might like (if you enjoy socialization). On the back there is the **lookAHEAD**, a two week calendar of upcoming events that mathies might be interested in. The publication date of the next **mathNEWS** issue is the highlight, of course.

That about wraps it up. We hope you enjoy this issue, and don't just shred it for your hamster's bedding. Best of luck with your new university career, and try to resist the urge to read **mathNEWS** instead of going to class. I know it's tempting.

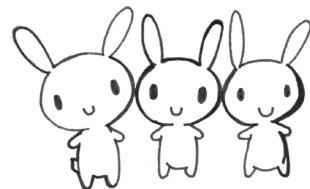
Have a great orientation week!

befuddled  
Editor, **mathNEWS**

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## Welcome to Waterloo Math!

OWEN GALLAGHER, **mathNEWS** EDITOR FOR FALL 2024  
ALONG WITH SARA NAYAR, ISABELA SOUZA,  
RIVER STANLEY, DAVID TERESI, AND JUSTIN YOUNG

## O-TEAM SEZ

Hello mathies!

Let us start off by thanking our wonderful Math Orientation Leaders. We couldn't do any of this without you. Thank you for all of the blood, sweat, and tears you've shed to help us make Math O-Week 2024 so awesome. We'd also like to thank Central Orientation for all of the support and resources they've given us.

We hope that you enjoy the activities we and others are running this week, and that you learn all about and become familiar with campus as you do so. Most importantly, we hope that through O-Week you can start building up your university social circle, and find connections that will stay with you the rest of your life (as we have!).

We wish you the best of luck with your first term, and hope that you love it here as much as we do.

Ega, Angela, Shashwat, and Nico  
2024 Math O-Team

## USE A CALENDAR

There is a certain kind of person for which the advice in this article will be completely unsurprising. They will look at this and say, "What? This guy only figured this out now?" If you read this and think that, then this article might not be for you. There's a bunch of other amazing articles in this issue. The one directly above this one is definitely worth your time.

But if you're like me, read on. This might be helpful.

In high school, there is a sort of osmosis by which you keep track of important dates like assignments and tests. Teachers will bring them up during class, your friends will discuss them with you, and since you're probably sharing almost all of your classes, even in higher grades, they'll be discussing the same tests you're taking.

Even in the first year of university, this sort of holds up. There are core courses every first year takes, and if you go to all your lectures like a good student, the profs will usually mention midterms and what have you.

However, the years wear on, and soon you find yourself taking a political science course that you don't know anyone in, and you haven't been to a lecture in weeks, and surprise, the one week you decide to check in and see what's up, they're holding a whole-ass midterm that you haven't studied for, because you didn't know it existed.

The title might have clued you in to what I'm about to recommend. Use a calendar.

When you start the term, and all the course websites are active, go through each one, open the course schedule in one window, and open Google Calendar in another window. Do that thing where you can split your monitor into two windows and just copy everything over. I mean everything. Even those five-second discussion "responses" you have to do.

Again, if you're like me, this will sound like an outrageous expenditure of time. Spending an hour and a half on clerical work? When there are YouTube videos you could be watching? (Let's be real, probably rewatching.) Do it anyway. I started this practice during lockdown and it literally changed my life.

First, the obvious benefit: you know when things are! Yes, in first year, most math courses boil down to "hand in assignment before Tuesday night," but there are still midterms and electives to contend with, and weird one-off date changes when the gamers occasionally rise up on Piazza. Even better, your calendar lets you know when *everything* is, all in one place. This lets you plan out what to work on next without clicking through all five of your course pages, all of which, of course, store information on due dates in a different place.

However, there is a more subtle advantage. It gets easier to trick yourself into doing things. When you create your assignments on Google Calendar<sup>1</sup>, make sure to set them as tasks, not events. Why? Tasks have this big "Mark Completed" button that checks off the task and crosses it out. This triggers that primordial part of your brain that responds innately to checkmarks, giving you great pleasure when finishing tasks. Going to your calendar to check them off also exposes you to upcoming tasks, so you have no excuse for not doing them.

You might be thinking after reading that, "Sounds like a good idea, but I've never missed anything important before, so I don't need to do this." That's what I said, too. The fact is, if you're at Waterloo, you're probably pretty good at school. This lets you paper over all kinds of things with brute force. If you don't really need to study, it's okay if you're surprised by a test the day you have it.

But, this is like fixing a leak in your boat by getting rid of the excess water *really* fast. It doesn't matter how fast you are, the boat is eventually going to sink. Just plug the leak now. Use a calendar.

UW Unprint

1. If you don't use Google Calendar you're going to have to translate this advice into your calendar of choice. The key part to carry over is the checkbox.

mathematics  
NEWSPAPER

# MATHSOC SEZ

Hello mathlings :) Congratulations on starting your journey at the University of Waterloo, and welcome to UW Math! We're from the Mathematics Society, better known in these parts as MathSoc.

## WHAT IS MATHSOC

MathSoc is the student community that represents and promotes the interests of undergrad mathies. That includes **you!** As an undergraduate math student at UW, you are automatically a MathSoc member! The Society does many things, both directly and indirectly, that help improve your undergrad experience.

## STUFF MATHSOC DOES

Your MathSoc fee is responsible for running all the student clubs under MathSoc, and many services. This includes:

- Your favourite clubs such as the Computer Science Club and Pure Math Club (and many more)
- Your favourite Coffee and Donut shop located on the 3<sup>rd</sup> floor of MC
- A whole host of events, like Pi Day (free pie, pi recitation contest, and pie-ing MathSoc execs!), Board Game Nights, Party with Profs, résumé critiques, exam review sessions, free food from Welcome Week, and more!
- Cheap printing and photocopying!
- A textbook library and an exam bank!
- Board game rentals from the largest collection on campus!
- Lockers to store your stuff! (high school throwback no way)
- Faculty-approved calculators for the best prices on campus!
- Cool Math novelties, like stickers, old pink ties and shirts to show off your Math spirit! We even have a shirt that's banned from exams.
- Free candy and other snacks in the office!
- Academic advocacy to faculty and administration!

## HOW CAN I GET INVOLVED?

Getting involved in MathSoc is a fantastic way to make new friends outside of class, get involved in the campus community, and part-take in rewarding work to improve student life for yourself and your peers.

As a volunteer-run organization, MathSoc has plenty of volunteer opportunities available! We are all volunteers here. You can volunteer to help maintain our website, manage our office, maintain our finances, organize events, advertise events, and much more! Check out <https://mathsoc.uwaterloo.ca/volunteer-at-mathsoc/> for all of our available roles, or let us know if you have unique skills to contribute! If you're interested in student governance and advocacy, you can join

our Council or Board of Directors. Look out for the first-year representative election at the beginning of the term!

## PREZ SEZ

Hi, we're Awab and Rem! We hope you're excited for your time at Waterloo. MathSoc has a whole host of plans in store to improve student life at UW Math and build a community that you can call home. Follow us on Instagram, join us on Discord, and keep an eye on the posting boards around the math buildings to stay updated on fun events and opportunities.

We understand that finding friends in UW Math is harder compared to other majors. We've all been through the struggle! As such, don't feel shy to walk into club rooms on the 3<sup>rd</sup> floor and introduce yourself to members. Don't feel nervous to attend events and converse with other mathies. Don't hesitate to come to **mathNEWS** production nights and banter with the other writers. We are very sure you will find someone with your interests as the math community is very diverse!

Starting your university journey can be scary. The courses are hard, things are different than what you're used to, and you're living away from home. Through all this, know that we're here to help you in any way possible. Reach out to us for anything.

We also have a section on our website dedicated to resources for Math students, including co-op advice, tips for picking courses, links to other campus resources, mental wellness resources, and more. You can find this information in our office or on our posting boards.

We hope to see you soon, and best of luck with your first term!

## MATHSOC(IAL)

- In-person: MC 3035 and MC 3038
- Email: [info@mathsoc.uwaterloo.ca](mailto:info@mathsoc.uwaterloo.ca)
- Instagram: [@uwmathsoc](https://www.instagram.com/uwmathsoc)

## MATHSOC EXECS

- **President:** [president@mathsoc.uwaterloo.ca](mailto:president@mathsoc.uwaterloo.ca), for questions about MathSoc and advocacy
- **VP, Academic:** [vpa@mathsoc.uwaterloo.ca](mailto:vpa@mathsoc.uwaterloo.ca), for concerns about professors, courses, or co-op
- **VP, Internal:** [vpi@mathsoc.uwaterloo.ca](mailto:vpi@mathsoc.uwaterloo.ca), for questions about MathSoc events and clubs
- **VP, Operations:** [vpo@mathsoc.uwaterloo.ca](mailto:vpo@mathsoc.uwaterloo.ca), for questions about the MathSoc office and lockers
- **VP, Communications:** [vpc@mathsoc.uwaterloo.ca](mailto:vpc@mathsoc.uwaterloo.ca), for concerns over MathSoc communication
- **VP, Finance:** [vpf@mathsoc.uwaterloo.ca](mailto:vpf@mathsoc.uwaterloo.ca), for concerns over MathSoc finances

Awab Qureshi (President, F24)  
Remington Zhi (President, S24)

# WELCOME FROM MATHSOC CARTOONS!

Hello incoming mathies, and welcome to the University of Waterloo! We are MathSoc Cartoons, a project run under MathSoc's Vice President Academic with the goal of creating engaging cartoons that simplify difficult math and computer science concepts for students like you! We print our comics in **mathNEWS** (the newspaper you're reading right now) and post them to our socials, as well as to MathSoc's socials. As you'll see later on, our comics are sometimes posted to various Piazza/LEARN forums too.

## BUT WHY?

Often, we find that students understand difficult concepts better when they are presented in a visually appealing, engaging, and relatable way—cartoons are the perfect medium for this. Check out our recurring characters in the attached image! If you want to get a taste of what we do, here are some examples of past comics for topics you may learn during your first term here:

- MATH 135: Chinese Remainder Theorem: <https://mathsoc.uwaterloo.ca/math135-comics/#chinese-remainder-theorem>
- MATH 137: Mean Value Theorem: <https://mathsoc.uwaterloo.ca/math137-comics/#mean-value-theorem>
- CS 135: Abstract List Functions: <https://mathsoc.uwaterloo.ca/cs135-comics/#abstract-list-functions>

You can find a full list of our comics at [mathsoc.uwaterloo.ca/comics-archive](https://mathsoc.uwaterloo.ca/comics-archive).

## I'M INTERESTED, HOW CAN I GET INVOLVED?

The easiest way to get involved is to join as a reviewer, where you would be filling out surveys to provide feedback on the rough sketches and final works produced by our writers and artists. You can learn more and sign up here: [bit.ly/cartoons-reviewer-join](https://bit.ly/cartoons-reviewer-join). (P.S., we hold gift card draws for our reviewers!)

Additionally, keep an eye out for producer, writer, and artist applications, which usually open around the last month or two of the term—make sure to follow us on all our social media platforms to get notified when that happens :D

## FIND US!

Instagram: <https://www.instagram.com/mathsoccartoons>

Facebook: <https://www.facebook.com/mathsoccartoons>

Webpage: <https://mathsoc.uwaterloo.ca/mathsoc-cartoons-main-page/>

Email: [cartoons@mathsoc.uwaterloo.ca](mailto:cartoons@mathsoc.uwaterloo.ca)

MathSoc Cartoons

MATHSOC CARTOONS PRESENTS...

## MATHIEU

MATHIEU'S ENTHUSIASM FOR MATHEMATICS KNOWS NO BOUNDS. INDEED, HE'LL PREACH TO YOU THE JOYS OF DERIVATIVES WHEN ALL YOU'RE WONDERING IS "WHO IS THIS KID AND WHY IS HE ON MY LAWN?"

HE'S A LITTLE ANGEL WHO HAS NEVER DONE ANYTHING WRONG IN HIS LIFE, AND HE CAN PROVE IT WITH, LIKE, **MATH AND STUFF**.



## VECTORIA

VECTORIA WILL PLAY ANY VIDEO GAME IN ONE TO  $2^{31}-1$  DIMENSIONS, WHICH IS TO SAY, ALL THE VIDEO GAMES. IF YOU FIND A VIDEO GAME IN LESS THAN ONE OR MORE THAN  $2^{31}-1$  DIMENSIONS, PLEASE LET HER KNOW SO SHE CAN PLAY IT.

DESPITE GAMING FOR 711 HOURS A DAY, SHE'S FOCUSED AND ALWAYS MAKES SURE TO MOVE IN THE RIGHT DIRECTION. HER FAVOURITE TOPIC IS LINEAR ALGEBRA.



## THEA REM

SIMPLE, ELEGANT, AND BEAUTIFUL...AT LEAST, THAT'S WHAT THEA TRIES TO BE. USUALLY, SHE ENDS UP AS MESSY AND DISORGANIZED AS THAT ONE ASSIGNMENT YOU SUBMITTED WHICH MADE YOUR MARKER CRY.

SHE LOVES HER LITTLE SISTER, CORAL ARI, WHO'S ALWAYS FOLLOWING HER AROUND.



## LEMUEL MA

LEM MAY BE SMALL, BUT HE HAS A BIG HEART! OR SO HE CLAIMS. IN REALITY, HE'S A HUGE SHOW-OFF WHO WANTS TO BECOME RICH AND FAMOUS BY BREAKING AS MANY OBSCURE WORLD RECORDS AS POSSIBLE. (WHERE DID HE EVEN GET ALL THOSE DOMINOES?)

HIS FAVOURITE PASTIME IS TRYING TO HELP THEM WHEN SHE DOESN'T ACTUALLY NEED HELP.



STORY & ART BY AVA PUN | CHARACTERS BY AVA PUN & ALYSSA BAKSH

# FIRST YEAR MATH STUDENT'S GUIDE TO WATERLOO

## SHORT FORMS

**ActSci**—Actuarial Science. A major you can choose within the math faculty. Pairs nicely with statistics, ambition, or a love for ca\$h money.

**C&D (CnD)**—Coffee & Donut (shop). The Math C&D is located on MC's third floor, and sells cheap food and drinks. Other faculties have them too, but who cares? (Rumour has it that the Science C&D has the cheapest stuff, but you didn't hear it from me.)

**CCD**—Centre for Career Development, formerly CEE, formerly formerly CECA. The name you'll see in the "from" field of a lot of your emails if you're in co-op.

**CFM**—Computing and Financial Management. A program that combines both Computer Science and Finance. This program is your ticket to fitting in with both fancy finance people and nerdy computer science people. And possibly your ticket to an identity crisis if you read too much into that.

**CLV**—Columbia Lake Village. A townhouse-style residence that's super far away from everything you care about. On the bright side, old people like grad students live here, so maybe you can learn from their wisdom or something.

**CMH**—Claudette Millar Hall, part of the UWP complex. The newest student residence on campus and the only traditional-style residence with AC. Truly the place to be if you're living in residence in the spring term.

**C(&)O**—Combinatorics and Optimization. A program within the Math faculty. It's probably the answer if you've ever asked yourself questions like, "Which major should I choose in order to maximize pleasure, knowledge, and future earnings using at most a specified amount of effort and hours of my time?"

**CS**—Computer Science. CS students are the people who are qualified for all the co-op jobs you wish you were qualified for. Strangely, they also seem to be the majority of people you meet during Math Orientation.

**DC**—William G. Davis Computer Research Centre (Davis Centre). A couple lecture halls, some CS prof offices, food, and most importantly, the DC library. It feels almost as much like home as MC. Easily one of the greatest places to study among other math students.

**DD**—Double Degree. A program that allows students to get a BBA from Laurier while simultaneously getting a BMath or BCS from Waterloo.

**DP**—Dana Porter (library). This is more of an arts library but it's still pretty cool for a break from the usual study spaces every now and then. Going here may make you feel like you're cheating on DC, but it can offer you tenth floor views, which DC just can't compete with. Sorry, DC.

**FARM**—Financial Analysis and Risk Management. A program within the Math faculty. Not like the kind with cows and chickens and tractors and stuff.

**GRT**—Grand River Transit. The KW region's transit system. GRT is your new best friend, unless of course, you have a real friend who has a car. If so, congratulations on winning at university life already.

**KW**—Kitchener-Waterloo. They're like the conjoined twin cities of Ontario.

**LinAlg**—Linear Algebra. A class Math students have to take in first year, and maybe again later, depending on their program.

**M3**—Mathematics 3. Screw standard naming/numbering conventions, right? After Math & Computer and Davis Centre, the only logical name for the next math building is Mathematics 3. Stay tuned for Mathematics D and then Mathematics Cinco after that.

**MathSoc**—Mathematics Society. Want to know more? Stop by MC 3038 to check them out ;)

**MC**—Mathematics and Computer Building. Also known as your new home. Love it, respect it, get used to it. Expect to have a lot of classes here, and expect to spend a lot of hours in the tutorial centre (MC 3022) toiling over assignments.

**MKV**—Mackenzie King Village. A suite-style residence located between REV and V1.

**PAC**—Physical Activities Complex. This is where you will have some of the most unpleasant experiences of your university careers. Like writing exams. Or even worse: exercising.

**QNC**—(Mike and Ophelia Lazaridis) Quantum-Nano Centre. This is actually an engineering building but it forms a triangle with MC and the SLC so it's sort of in math territory. Also, the tables by the windows looking out on the Peter Russell Rock Garden are some pretty rad places to study (or at least as rad as study spaces can be).

**REV**—Ron Eydt Village. A popular dorm-style first year residence. Unofficially known as the party residence or social residence. But then again, this is Waterloo, so even REV is pretty tame compared to Western, or Laurier, or other schools that actually party.

**SLC**—Student Life Centre. Centre of the University Universe. Home to great food (including Tim Hortons!), clubs spaces, study spaces, the turnkey desk, and the only place to get food on campus 24/7: International News Flock Stop. Also conveniently located near Math, Science, and HLTH (sucks to be Arts, Engineering or Environment).

**SE**—Software Engineers. Hybrid creatures that belong to both Engineering and Math. Kind of confusing, but pretty harmless. They are our friends.

**UWP**—UW Place. A suite-style residence located on University Ave. Not exactly on campus, which is kind of inconvenient, but it's across from the plaza, which makes up for the distance. (Plaza = Burger King, convenience stores, all the Asian food you could ever want, and other such wonders).

**VI**—Village 1. Another dorm style first year residence. Less social than REV, but they get single rooms and a better cafeteria, so who even cares?

**WLU**—Wilfrid Laurier University. That neighbour down the street who we have a love/hate relationship with.

**WUSA**—Waterloo Undergraduate Student Association. Works hard to advocate for you and runs lots of cool events and clubs. Advocacy support is available for housing or any other challenges that you find yourself facing during your time at UW.

There are lots more, but these are a few of the important ones. If you hear any others that you're curious about, Google is your friend :) Welcome to Math, and good luck!

TheUndecided

## THE 3<sup>RD</sup> FLOOR OF MC

### THE SOCIAL HEART OF THE UWATERLOO MATHEMATICS COMMUNITY

Welcome to the University of Waterloo and to the Math Faculty! You've begun your journey towards an undergraduate math degree along with over a thousand other math students, and you'll probably meet a number of them in your classes and residence life. What a lot of new math students don't realize is that there is a large social community to be a part of, and that there are many benefits to doing so. Let's have a look at some of the ways you can participate in the math community, most of which are located on the 3<sup>rd</sup> floor of the Math and Computer building, your new home:

**MathSoc:** The Mathematics Student Society runs many events during the year, and has many opportunities for volunteering and meeting other students. Many of the office workers are upper-year students, and all of them are willing to give you tips and help you feel at home. Some of the ways in which you can volunteer are to help staff the office, organize and run events like the our many Pi Days (we have three of them, one for each term!), and be a student representative on MathSoc Council. You can find the MathSoc office right across from the C&D (MC 3038)!

**Program Clubs:** Almost every program in the Math Faculty has an associated club, which runs events geared towards their members' general interests and an office where you can meet like-minded students in a social setting. For example, the Pure Math, Applied Math, and Combinatorics and Optimization Club (the programs are small!) runs prof talks and math contests, and the Computer Science Club has Code Parties and co-op resume critiques. Club members tend to take courses together, so there are likely to be students with whom you can work together. Note that you don't have to be in the program to join the club! Watch for the MathSoc Clubs Day early in the first month of classes. Finally, note that a large number of Stats- and ActSci-related clubs are actually located in the Mathematics 3 (M3) building. They're further away, but we still love them!

**Orientation:** Depending on when you're reading this, you're most likely either currently in or have finished participating

in Orientation Week. If you feel so inclined, next year you can switch roles, and be a leader of new students! In a leader role in Math Orientation, you have the opportunity to be a guide and role model for new students, and have a lot of fun along the way, meeting and working with the many other leaders; it's fulfilling and enjoyable to make the week go smoothly, and there are certain things that you only really experience as a leader. Watch for applications online in the winter term! They used to be on the 3<sup>rd</sup> floor but have recently moved to the 4<sup>th</sup> floor, but check them out anyway (they're cool)!

**Math C&D and Comfy Lounge:** The two "main" lounge areas of the MC are the sitting space outside the Math Coffee and Donut shop, and the so-called Comfy Lounge next door. Colloquially called the C&D, the Coffee and Donut shop is a great place to work in small groups with some table space and a power outlet or three, or sit and enjoy chili and a sandwich at lunch with a friend. The food is reasonably priced, and there is some part-time work available on occasion. There is also a balcony available, with some seating space there. The Comfy is where you can relax for a time, study or read in a nice chair, or participate in a MathSoc General Meeting. It is not for sleeping; that's what your room is for. The chairs are indeed comfortable, though, hence the name. As an aside, in the C&D there are microwaves; this is remarkably useful. A wide variety of students use both of these spaces; you're almost guaranteed to run into someone you know, or someone you wouldn't mind meeting.

That's a basic rundown of what you can find on the 3<sup>rd</sup> floor of MC; there are also labs and assorted study spaces on the floor. Make sure to spend some time exploring and visiting the offices; the people you meet will almost certainly benefit you in your time here.

Good luck!

Scythe Marshall

# SOME NOTES ON CONSENT

Consent makes it on the *very* unfortunate list of things you (a) really need to know and (b) are barely taught.

The full extent of most consent education is “If someone says no, that’s a no, and if someone doesn’t say yes, that’s also a no.” It’s fantastic that we as a culture have progressed to that point, but it’s a far cry from complete. Consent is also something that, if fucked up, can cause a great deal of hurt. This article can’t possibly fill in *all* the gaps, but instead, I’m writing some things I wish my partners had known, and the guidelines I follow that my partners have appreciated, with lots of input from my friends. Well-intentioned but ignorant people can cause a lot of hurt.

- First and foremost, these are general guidelines. If you make specific agreements with your partner that change these, that’s fantastic—these are meant as baseline rules and considerations, not universal maxims.
- Consent should be enthusiastic, not reluctant. If your partner seems like they’re saying a half-hearted yes, it’s safest to treat it as a no.
- Physical arousal is not consent. Physical arousal is correlated with, but does not imply, a desire for sex.
- A person’s outfit is not consent to anything.
- Consent must be continuous. That means consent can be withdrawn at any moment before and during the act.
- Continuous consent means that the conditions of the consent must continue to hold. If a person was previously enthusiastically consenting but now appears conflicted, *that is no longer consent*.
- Consent must be *specific*. A person consenting to making out *has not necessarily consented to anything beyond that*. It’s important to ensure others actually want to progress—sometimes, it’s only a kiss.
- If your partner has said no to something, don’t ask again. If you want something to happen, you ask, and your partner says no, asking again creates pressure. Instead, tell your partner you won’t bring it up unless they do. **If your partner is not comfortable enough to ask for something, they also likely aren’t comfortable enough to stop it.**
- Don’t ever think that stopping to ask for consent is going to “kill the mood.” There is nothing hotter than respecting your partner. There are also many ways to ask for consent; you can find ones that are both hot and respectful for your partner (I’ve personally found “I really want to kiss you” makes me *melt*).
- Any justification, including no justification, is a valid reason to say no. If something doesn’t make sense to you, is hurtful, or otherwise brings up emotions you need to deal with, you can ask about it later. In the moment, **any reason, or no reason, is good enough for a no.**
- Never sleep with anyone you have perceived or actual authority over.

- Fellas—this is coming from a gal who likes to be choked: you should ask about choking before you do it. This might sound obvious, but porn has fucked up a lot of our perceptions of sex, and made really violent acts like choking and slapping seem normal. In real life, you need to ask!
- Even if your previous partner was okay with something and didn’t need to be asked, you should still ask all subsequent partners!
- Asking a person what they like in bed isn’t a chore—it’s a great way to discover new kinks and preferences that you might not have expected ;)
- If someone has consented to something before, that doesn’t mean they’ll consent to it again. Always ask.
- Nonverbal consent exists, but is often harder to read, and varies greatly by person. It’s always better to start with verbal consent and figure out explicit agreements for what counts as nonverbal consent when you’re not in the middle of sex.
- People in vulnerable spots often have impeded ability to consent. Someone who is fresh off a personal tragedy, heavily emotional, coming to you for support in a capacity beyond normal friendship, or who you otherwise have an imbalanced relationship with probably can’t consent. Give them time to heal, and don’t pursue them in any way; remove yourself if you need to. You obviously don’t need to wait until everything is perfect in someone’s life, but if you’re asking yourself if they’re too vulnerable, they’re too vulnerable.
- If you ask yourself the question “Is this person too drunk?” they’re too drunk. Not having sex is mildly disappointing at worst; you can survive some mild disappointment. If they’re really into you, sex can happen another time, with no risk of blurry lines.
- If someone says no to you, even if this makes you sad or upset, don’t show it in the moment. The response to someone rejecting you should be nothing more than supportive, loving, and positive, so they can feel safe doing so going forwards. If you feel consistently rejected by your partner, that is a thing to discuss, but doing it in the moment creates pressure. Any conversation about feeling rejected needs to respect your partner’s ability to say no—talk to your friends about how to approach this. If you find yourself taking sexual rejection personally, you need to reflect on why.
- Don’t ever (in the moment) tie the sex life to the health of the relationship. Again, sometimes sex is important in a relationship and this can be important to discuss, but doing it during sex, or immediately following a no, creates pressure. Have conversations like that in a safe, neutral environment, separated from sex.

Golden, with contributions from Manganese, molasses, yummyPi, peacelovemath, cutlet, and a cool pen name



# SO YOU THINK YOU CAN RESEARCH

ADVICE FROM A RENOWNED SILLY mathNEWS GUY

There you are—I see you there, holding the mathNEWS in your hands. You want a taste of the academic life, don't you? No, I don't mean classes—you'll get those soon, believe me—I mean the *real* academic life. A taste of *discovery*. Maybe you also want a taste of *money*. Well, leave that second one on the backburner for a minute while I bring to you some practical, no-nonsense advice on undergraduate math research.

## WHEN CAN I START?

Well, not right now—and probably not for your first co-op, either—but sooner than you might think! I've had some friends who've started as soon as their second or third co-op. Usually, you'll want to have the relevant second-year courses under your belt so that you have some mathematical maturity that'll let you think hard about math.

When you decide you want to start looking into this, make sure to keep a close eye on deadlines. Seriously. Don't trust the ones you see online; contact whoever's in charge and confirm dates with them. Depending on the funding source you're going for (usually the NSERC USRA or MURA), deadlines come fast, some as soon as a term before you'd actually start!

## BUT WHAT IF I DON'T KNOW THE MATERIAL?

You and me both, pal. You think anyone knows the material before starting research? You'll spend the first month or two just learning the necessary content—that's a built-in part of the process. Your prospective supervisor probably doesn't expect you to have all the necessary background before starting—they just want to know that you're passionate, that you have some amount of interest in the field, and that you're eager to learn. The learning will be mostly self-directed, though—you'll need to be ready to read the notes and papers your supervisor tells you to.

## BUT WHAT IF I'M NOT SMART ENOUGH?

You are smart enough. You might not always feel that way—Waterloo is home to a lot of smart people—but you're here. You're one of the smart people. You can do it.

## WHAT IF I DON'T LIKE THE SUBJECT?

That might happen! It happened to me. But you'll be OK! It's the same risk as with any other co-op; the whole point of the program is to help you decide what you want to do after graduating, while also giving you some experience points for your resume. If you find yourself not liking the work, you can talk to your supervisor and see what kind of flexibility they have with what you spend your time researching. Usually they'll have a few different projects on the go, so they might be able to shuffle you onto something else. They want you to get something out of the term, so work with them!

## WHAT'S THE PAY LIKE?

Hah! Don't go into this for the money. You'll get paid enough, but your friends working software jobs will be getting paid more. Tough luck, I guess. If you need more money, look into doing some part-time work tutoring or something.

## HOW CAN I START?

Just email a prof. Seriously, just pick one and send an email. Even a cold email is fine, I've gotten two co-ops this way before. By the time you start rounding off your second year, you might have some ideas of some professors whose field of research you might be interested in. If not, that's OK—try looking online for faculty that do research you might be interested in, and ask for advice from people who have experience with faculty. The Pure Math Club (MC 3033) is a great place to start since a lot of people in that club are into research. Walk in, and people will usually be dying to tell you stuff about whoever. You can also ask other profs for recommendations on who in the faculty might be looking for undergrad researchers, depending on your area of interest.

Once a professor agrees to supervise you, you'll need to jump through one or two hoops of applications to actually get the job. Your supervisor isn't actually the one that's paying you; most of the time, your pay comes from grants given by the University and/or the government. There's info on each department website about how to apply, and if that info isn't enough, send an email to the administrative coordinator.

## WHAT IF I DON'T PRODUCE ANY NEW RESULTS?

That's OK! That's how it goes for most undergrad researchers. You only have four months and math is *fucking hard*. The focus is more on getting exposure to real research math; contributing a real result is just a bonus if you stick with the material and get lucky. Your supervisor won't really expect you to produce anything by the end of the term unless you agreed on a specific deliverable, which might be more realistic depending on what kind of research you're doing.

Anyway, good luck going after the research job! If you aren't sure, it can't hurt to try—it might be right up your alley after all.

jeff

Being a mathematician  
requires imagination.

PROF. BARBARA CSIMA

# FRESHMAN ADVICE EXCEPT IT GETS INCREASINGLY MORE SPECIFIC

## THIS MAY OR MAY NOT BE INFLUENCED BY ME AND MY FRIENDS' EXPERIENCES

1. Walk around campus in your early days and use Portal to find open classes to just sit in. You'll quickly figure out where a building, a study spot or food is.
2. Speaking of food, test out all the eateries on and off campus! You need to eat food, so might as well find what's best for you.
3. Get involved! Doesn't matter what it is, you'll make new friends and destress about that calculus quiz next week. Perhaps **mathNEWS** may strike your fancy?
4. Make use of all the student discounts you can get: Amazon Prime, Adobe, Apple, the list goes on past A!
5. Be considerate and don't put your bag in the middle of the aisle in class. I know the aisles are thin but people want to sit in the corners.
6. Don't be afraid of the gym! I know all the machines and humans are scary, but remember that machines are inanimate and often come with visual instructions + those humans have their own routine they're focused on. Exercise feels good after you do it, so I suggest going at least once (especially since you're paying for it).
7. Clean your room periodically, or else you'll be fighting a monster when moving out.
8. On the topic of cleaning, try to sort your trash correctly because Mother Nature doesn't like it when ramen cups are in the recycling bin.
9. If you use a device to take notes or study, make sure to bring your charger. Else, you'll be really annoyed that you walked 10 minutes to the physics building just to have to go back home and study.
10. Don't pull an all-nighter for an assignment worth 2%. Like obviously try to minimize your all-nighters, but if worst comes to worst, be picky with what you pull it for, since 2% is quite small in the grand scheme of things.
11. This is for my fellow non-CS students: Don't be afraid to join CS-related clubs! You won't be the imposter in a sea of techies.
12. Sometimes it's better to walk around instead of bus. Just because you paid for the GRT bus pass doesn't mean you need to use it everywhere to make your money's worth.
13. This is related to my last point, but explore Kitchener-Waterloo! Even if you only go travel for the Real Canadian Superstore or for a TooGoodToGo bag you're getting fresh air and steps, which is a win-win.
14. Don't be afraid to drop classes. Courses are here to serve your needs, so if French isn't for you and you don't want to pay \$200 for the textbook, then go take physics instead!
15. If you still decide to take that French course with the "required" textbook, an older version will work 95% of the time.
16. Fun fact: People like clean dishes! So like, don't leave them for a week or more. And if someone does that to you, tell them directly. They shouldn't get offended for basic standards, and if they do, well, the most you can do is avoid them and tell your Don in your one-on-one session.
17. Don't be scared to sit in Laurier buildings! I mean especially if you're doing a degree there, but even if you're just a Looer, no one will prosecute you for sitting there and some of the study areas are gorgeous.
18. Get into NYT Games. You'll either find a will and a spite to live, or something to do when your morning lecture is super boring.
19. Making banana bread out of unused bananas is great, but not buying too many bananas is even greater.
20. On the topic of cooking, if you are cooking for yourself (good job!) and want extra tender chicken, sprinkle a bit of baking soda, massage it around and let it sit for 10–15 minutes. Don't go too much longer or you get chicken mush, and me and my homies hate chicken mush.
21. If you or your mom are freezing glass with any liquid, don't fill the liquid up to the top because water expands so either a) the lid pops off, or b) the glass bottle breaks. Science!
22. Buy some sweets from Shoppers Drug Mart right after a chocoholic holiday, then Pavlov yourself every time you do work. Now you're top dog!
23. Maybe don't make a bunch of tarts for Pi Day? Like at least be on theme and make 1 pie instead of 20+ "mini pies."
24. I don't recommend spending 3/9 days of your reading week going to your former high school (unless you're doing something cool like decorating a bulletin board or annoying your former math teacher).
25. Pro tip: Don't eat moldy noodles to save money (this also includes eating around the mold xoxo).

Dollar Store Person

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## I DUNNO ABOUT YOU GUYS

But I never really have any problems with eduroam, it always seems to work well for me.

Foolish Student who is about to have problems with eduroam

# A HOW-TO GUIDE FOR THE ADVANCED COURSES

## AND WHY THEY'RE NOT QUITE AS SCARY AS YOU THINK THEY ARE

Do you remember choosing your courses this past summer, and reading about MATH 145/147 and CS 145? These are the so-called “advanced” level math and computer science classes that you can take in your first term in math at UWaterloo. This is an article intending to clarify the role of the courses, and emphasize why you should consider them.

The advanced math courses are called “advanced” not primarily because of a difference in difficulty level, but because of a difference in approach. The advanced math courses focus on teaching you theory and proofs, as opposed to applications. In the advanced math classes, you will see definitions of mathematical objects and properties, as well as statements and proofs of general mathematical statements. On your assignments, you will be expected to use these results to prove (or decide the truth of) other statements. The focus is on a theoretical understanding of math in the abstract case, as opposed to how to use math to compute things in concrete cases.

Doing assignments in advanced math courses is a lot like solving puzzles. You are given all the pieces of the proof, all the ideas, terms, definitions, and theorems you will need, and you just need to figure out how they fit together to complete the proof. Admittedly, these puzzles will sometimes be significantly more challenging than the similar ones that you would see in the regular honours level courses, but it tends to be the case that if you participate in the course and put effort into it, you'll gain the tools to succeed.

The advanced level computer science course, CS 145, is a faster-paced version of CS 135, where you jump right in to high-level abstraction and algorithms. In much the same way as the math courses, CS 145 does emphasize the theoretical aspect of programming, but it also challenges you to work on how to code effectively and efficiently. This, and the follow-up course CS 146, can be great starting blocks for a successful CS degree and career.

Note that it is indeed true that the advanced courses are not for everyone. Not everyone appreciates or needs to know the theoretical aspects of algebra or calculus or computer science, and that's just fine. However, if you are interested in what the advanced courses are all about, there is no reason you should be wary of trying to take them.

There is theoretically (hah!) no downside to enrolling in the advanced courses—you can drop from the advanced courses to the corresponding regular level course at no penalty, right up until the end of the drop WD period. This is a special policy that is designed to give you the opportunity to succeed. Practically, this is a bit of an issue if you actually do drop down very late in the term, because you will probably have not had the same amount of practice as the students in the regular level course at some of the more computationally heavy portions of the course. Talk to your professor and advisor as soon as possible if you end up contemplating this option.

More information about the advanced courses is available at the information session on the Tuesday of Orientation Week, if you're reading this before it actually happens, and from the first year advisors and the Pure Math/CS departments. Now that you know a bit more about the advanced courses, and are hopefully intrigued by them, you should learn how to enroll in them! If you didn't have the option to do so earlier, you'll have to talk to the instructors who are teaching the courses and fill out course override forms which you can submit to the Registrar's Office. Procedural information can be found online.

If you are trying to transfer courses, and you haven't yet, try to at least sit in on the lectures of the target class. Keeping up on the material in the advanced courses is highly important, especially early on.

Once you're in an advanced course, be sure to put effort in! They are usually more challenging, but they are very rewarding, both epistemologically and grade-wise, since the idea is that if you are in the advanced courses, you'd probably do well in the regular level courses. This is dependent on the work put in, of course. Note that your class is much smaller than a usual first year math course, and so it's not only easier to meet others in the class, but establishing relationships with them and your professor will be much more fruitful, as you can work on problems together or get help. The advanced math community tends to be close and supportive, so you'll never be alone in any struggles you might have. Best of luck!

Scythe Marshall and TheIdentity

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## QUEST: SHAWARMAFAX

### SEEKING: ONLY THE MOST SWIFT OF ADVENTURERS

**Hear ye:** The Council of the Fellowship of the Groups, Fields, and Rings has gathered today in the depths of the MC citadel at the behest of His Majesty The Goose, but when they sought rest and repose through lunch within the Student Life Centre, they found the line at Shawarma Hub extending all the way to QNC. This will not do. It is to our great fortune that more shawarma is found in abundance just beyond the eastern reaches of His Majesty's kingdom.

**Thy quest, should thee choose to accept it:** Find the interior path bringing thee closest to the shawarma at our campus's eastern boundary. Begin at Shawarma Hub in the Student Life Centre. End at Engineering 6. At no point may thou travel outdoors during this quest, for there be nazgûl in the skies. Have heart, for it can be done.

*Run, shawarmafax. Show us the meaning of haste.*

his majesty's royal spymaster

# STARBUS TROOPERS

Welcome aboard, soldiers! You are the newest generation to serve in the forces of the University of Waterloo Federation, a storied civilization that is the envy of the whole universe. Part of your basic training before joining our Federation Army is understanding Grand River Transit, the vital service that connects all parts of our empire and which you will frequently use to spread its glory across the galaxy. But how you act reflects not just on yourselves but on your brethren! So come on! Become good citizens together! Would you like to know more?

## BEFORE YOU BOARD

Your good behaviour is expected in all aspects of your life, even when you least expect it. That includes even before your vessel comes to whisk you to your next deployment. So what should you do to prepare yourself?

## KNOW YOUR ITINERARY AHEAD OF TIME

A Federation fighter is always well prepared. This means you must know where you need to go and how to get there. Thankfully, memorizing the GRT schedule is not part of our basic training, so feel free to use your favourite navigation aid, such as the Google Maps, Apple Maps, or Transit apps.<sup>1</sup>

## LET PEOPLE GET OFF BEFORE YOU GET ON

Moreover, a Federation soldier is always considerate. Letting others off first avoids physical conflicts when boarding the bus and will free more space for you.

## BE PREPARED TO PAY YOUR FARE BEFORE YOU STEP ON

Our reputation is one of organization and discipline; if you arrive at the farebox fumbling with your wallet, you bring shame upon your squad! Remember: your Federation-issued WatCard is sufficient to validate your fare.

## DO NOT HOLD THE DOORS OPEN

You might be late for your deployment, but everyone else has a schedule to keep, especially your driver!

## ON BOARD

Your obligations to the empire continue to be of the utmost importance once you have entered your vessel.

## PAY YOUR FARE

An honourable warrior must respect all those in the Federation's orbit. Not only is paying or validating your fair share part of your sworn duty, it respects the time of all other passengers and lets drivers fulfill their own duties without hindrance.

## MOVE TO EMPTY AREAS OF THE BUS

Many civilians may have the urge to remain close to the front of the bus. Do not do this! As more of your brothers-in-arms board, this area will become crowded and will hinder the driver's ability to take on passengers. Instead, move to the rear of the bus as soon as possible, and fill in any unused space.

As servicemembers in a galaxy-spanning society, you will encounter harsh climates that will make many choose these transportation options. With the space taken up by your weather-suitable gear and the new passengers joining you on your voyage, this directive becomes supremely important.

## MAKE WAY FOR PEOPLE IN NEED

Some seats near the front of the bus are designated as "priority seating" for passengers with a disability. As a good soldier, you are expected to be vigilant and self-aware at all times, especially to those around you. When you see someone in greater need of a seat than you, allow them the courtesy of your seat and make the Federation proud!

## BE STEADY ON YOUR FEET

Surfing your ride may be an amusing feat for civilians, but it is not for well trained warriors like yourselves. When your vessel is in motion, secure yourself by either sitting down or holding a solid handrail or one of the straps hanging from above.

## DO NOT MAKE EXCESSIVE NOISE

Your comrades may be happy to be in one's company away from the sorties you will soon face, but remember that public transportation is a shared resource. Speaking loudly, playing music, and many other activities distract others from their activities and demonstrate a lack of self-awareness unbecoming of a good servicemember.

## DO NOT EAT, DRINK, OR OTHERWISE CONSUME SUBSTANCES ON BOARD

Not only can the smell be offensive to your squadmates or other civilians, you run the risk of leaving a mess for the transit service to clean up. Once again, you must respect all those in the Federation's orbit. Do not make more work for them.

## USE SPACE PROPERLY

Self-awareness, again, is a key differentiator of a trained warrior. When a bus is crowded, take unused seats if no one else is in need, and keep your rucksack on your lap to save space. Likewise, if you are standing, hold on to your rucksack to avoid bumping into people when turning. Finally, do not place your feet on unused seats.

**SHOWER, PLEASE**

Good grooming makes a good soldier.

**LISTEN TO THE DRIVER**

Drivers may make announcements verbally or through an announcement system. Remember: their goal is to ensure your squad's safe passage from origin to destination. Heed their warnings.

**WHEN YOU DISEMBARK**

As you leave your vessel, remember these final tips.

**KNOW YOUR STOP, AND REQUEST IT AT A REASONABLE DISTANCE BEFOREHAND**

While we may count some psychics in the Federation's ranks, there's no guarantee your driver is one!

**USE THE REAR DOORS AND KNOW HOW TO OPEN THEM**

Remember the part earlier about avoiding conflicts by letting others off first? You and your squad can avoid that entirely

by using the rear doors of the bus! Just wait for the green light above the door and do the action indicated on the door itself, usually either waving your hand in front of the door or pushing the middle of it. Additionally, if your bus is at a stop but the door isn't opening, raise your voice to catch the driver's attention!

**THANK THE BUS DRIVER, OR DON'T**

You aren't playing Fortnite.

That's all I have to share with you! And always remember, soldiers: service guarantees citizenship, and good citizenship guarantees good service!

verdanik

1. The Federation prohibits the use of apps developed by non-human species.

**Pro tip: Eat Lazeez right before your midterm for maximum focus and energy.**

**THE mathNEWS EDITOR  
WHO ONLY TELLS LIES**

# YOU CAN CHANGE YOUR NAME

If all goes to plan, by the time this **mathNEWS** issue is in your hands, you will have made it to our wonderful University of Waterloo. You are very likely, at this moment, freer than you have ever been. No longer are you restrained by loving yet prying eyes, every time you return home. No longer do you have to ask the question: is this what they want? No longer do you have to justify being *you*. From this moment forward, you have the ability to live life as yourself.

Would you like to do so under a different name?

The identity systems at the University of Waterloo allow you to set a preferred name in place of your legal one. The process is incredibly easy: once you've worked up the courage to do it, it takes only a minute to do. As this is only a preferred name change, there's no need for official documentation to support it. Notably, this process does not change the name on your tuition documents. You can send your tuition bill home, and your loved ones will be none the wiser.

This name is used across Waterloo's systems: it's reflected on your student ID, your email address, on LEARN, and it's listed in your unofficial transcripts and student documentation. It is also used on WaterlooWorks, meaning that for the entirety of your interview process, your employer will only know your preferred name—they'll still likely need your legal name for payroll purposes, but every employer I've had has been incredibly understanding in using a preferred name everywhere it matters.

The hard part, after that, is using your name. Remember that a name is just what you're called, and if you call yourself a name, that means someone calls you that, and so you can truthfully say that you are called by your new name. Try then to find a new space where you can introduce yourself by it. The Glow Centre For Sexual and Gender Diversity, located in the third floor of the Student Life Centre, is an excellent place to start, but just about any club will do. You'll have to figure out how to change your social media profiles accordingly. Using pseudonyms and your last name are excellent places to start.

There's a form to change your gender too.

This process is hard. *Really* hard. You can do it at any time during your university career, so don't feel like you've missed the window if you don't do it immediately. That said, if this is something you're considering, right now is the best time to make the change.

Wouldn't it be nice to introduce yourself without hesitation?

molasses

*This article heavily adapted from cy, who wrote an article of the same name in mathNEWS 144.0 and 147.0. It has stuck with me.*

*Know that it will be worth it.*

# SMOKING HOT CO-OP ADVICE

Since the co-op process can be pretty intimidating and unintuitive for newcomers, I'll outline some tips for blazing your way to success on your first co-op. The CCD (official co-op people) will explain the process and requirements to you in the semester before your first co-op term, but these are a few extra tips and tricks for taking your game from so-so to flaming hot.

## GETTING THE INTERVIEW

- It's all about the résumé, although on a side note, making sure you have a positive social media presence can help for some jobs as well.
- If you're having trouble writing your résumé, start by describing all of your work and volunteer/extra-curricular experience in the last 4–6 years, then reduce that down to simply the most recent and/or relevant positions. The final copy of your résumé should be 1–2 pages total.
- If you have personal side projects related to your field, definitely include them! For example, dropping a link to your GitHub account or a personal website is a great way to stand out if you're applying to programming or web development jobs.
- Don't underestimate the value of soft skills like communication or teamwork. Even if they're completely unrelated to your major, you can use activities like playing in a band, being part of a club, or writing for *mathNEWS* *cough* shameless plug *cough* to show your leadership/teamwork/communication/other skills.
- Get someone to proofread your résumé. Seriously, I cannot emphasize this enough. Ask a knowledgeable friend or head to a résumé critiquing session on campus—find more than one person who will give you honest and detailed feedback on the quality of your résumé. Like a good essay, résumés usually need several revisions before they are presentable.

## PASSING THE INTERVIEW

- So you got an interview—congratulations! You've made it past the first step, so give yourself a pat on the back and then put on your war paint.
- Research the company before doing the interview. You should be able to clearly and concisely state what the company does if they ask (which some occasionally will).
- Make a list of your key strengths that you can market in that particular interview. Look for opportunities to tout these strengths as the interview progresses.
- There are some stock questions that come up frequently in interviews, like “Tell me about yourself,” “What are some of your weaknesses?,” “Why do you think you fit this job?,” “Why do you want to work here?.” Thinking about your answer to

some of these questions before the interview will help you avoid foot-in-mouth scenarios.

- Prepare a list of 3–5 questions to ask at the end of the interview. The employer may have already answered some of these questions during the interview, so having more than 3 means you can have back-ups. Make sure to include questions about things that will help you choose which job you want (work environment, pay, location, etc.) as well as ones that show interest in the position (job duties, typical work day, etc.).
- Find some good-looking clothes, and be ready at least 10 minutes before the interview. Some interviews may start early (in-person interviews especially), and if not then the extra time gives you time to breathe and calm down.
- Just relax. No seriously, just relax and be natural. You've already made it this far, you're prepared for this.

In the end, the interview process is a bit weird. You'll have some interviews that you thought you bombed only to find out you got an offer (that's how I got my first co-op job), some interviews that you were sure you rocked for which you are never ranked, and some interviews that go exactly as you expect. All you can really do at the end of the day is try your best and not take the results too personally. If you're having trouble, CCD offers lots of resources to help spruce up your job prospects and there are lots of other students and upper-years around campus who have tons of great advice. Best wishes!

BlueberryMuffin

## TAKING A MINOR

One smart thing to do with your degree is stick more words on it. There are two common ways of doing this at UWaterloo—heh, well, maybe three, but this column is far too short to discuss taking a joint. You can do the double major thing, or you can just throw a minor onto your degree. So what kind of minors are there? Well, there are those in math and those not. For mathie minors, you need a bunch of courses, but frequently they just overlap the ones you're taking so it turns out to be like four or five courses, perfect for filling up your math-course requirement without taking all STATs or something foolish. Now, for outside of math minors—perfect for those thinking of becoming teachers who want a non-math “teachable”—these take around ten courses, so plan ahead. It gives some structure to your electives, but they require you to take specific stuff that is only available in certain terms—hey, like why I can't finish my English minor on time. So, in conclusion, think about one, but try to plan early.

Allen MacLeon

# YOU SHOULD JOIN A STUDENT DESIGN TEAM

## YES, EVEN IF YOU'RE IN MATH!

Welcome to UW, firsties! In my experience, you will have much to explore over the next month, and multiple people, clubs, and projects will scream at you to get your attention. However, one extra-curricular activity that often gets ignored by Mathies is joining a student design team. This is strange, as one of the reasons many prospective engineers come to UW is because they've heard amazing things about the school's student design centre.

### WHAT ARE DESIGN TEAMS ANYWAY?

They are student-led teams under the Sedra Student Design Centre (under the Faculty of Engineering) that strive to build large-scale engineering projects and compete in competitions. We have teams dedicated to many things, including building rockets, trading algorithms, software, alternative fuels, robots, alternative meats, self-driving cars, drones and even a satellite! Teams exist to help their members develop technical skills and real-world experience with engineering a large, complex project. They often have many sub-teams that each focus on a part of the project (such as software, marketing, electrical, etc.) so that you can be involved with something you're interested in. Many software engineers and CS students love to get involved with the software side of many teams, but that's not to say that there isn't space for math students too! Many math students can be found in teams creating simulations, running crucial calculations, building and testing electronics, and whatever else you might imagine.

### SO WHY SHOULD I JOIN A DESIGN TEAM?

Student design teams are a fantastic way to gain experience and learn new technical skills that look great on a resume. And they're a great way to make friends outside your program too! Most, if not all, teams are open to math undergraduates and are very welcoming to new students, even if you're a complete beginner. In fact, most teams even encourage math students to join! This is because many teams come to the Mathematics Endowment Fund to ask for a portion of their funding, and MEF, in turn, grants them funds based on the number of math students that are involved. So, often, a math student is very valuable to a team. Also yes, you heard that right—many design teams are actually partially funded by your money! So you might as well take some time and check them out. Often times there's no commitment, so if you don't like how a team functions, or find that your time would be better spent focusing on MATH 147, you can easily back out.

### BUT I'M JUST A MATH STUDENT. IDK WHAT ENGINEERING IS.

And that's fine! A lot of people join teams as a way to gain experience and team leads know that. In my experience, teammates often empathize with the stage you're at and are more than happy to guide you through everything and make sure you have the tools to succeed at the task they assign to you.

I'll let you in on a secret—nearly every team's hardest problem is not complex engineering, it's student recruiting and retention. So most teams will do their best to make sure that you're not lost, and you shouldn't hesitate in asking your more experienced teammates to help.

### OK, HOW DO I JOIN ONE?

Teams vary in their sign-up process. I recommend reaching out to teams directly (see the "Where do I learn more" section for tips on how to do this). They will often tell you about themselves and their subteams, after which you often choose a subteam to join.

Most large, old teams such as Rocketry or WARG will simply ask that you show up to meetings, and complete a beginner's task (often called *bootcamp*) that will help get you acclimated with the sub-team you are joining. Remember, don't hesitate to ask for help with the bootcamp. The point of them is not to weed out people, but instead to help you get the experience you need to contribute to the team.

Some new teams, such as Electrium or Wat Street, may have a sign-up process where they might conduct simple interviews or have you complete a more involved task to join.

Once you're in, make sure to come to meetings diligently, and make yourself available to do tasks. For most teams, you will get what you put into them. Since a lot of teams are low-commitment at first, it's very easy to get lost in the noise and never get assigned a task, so make sure you actively participate and help out!

### WHERE DO I LEARN MORE???

Most teams have a website or email listed on their section of the Sedra Design Centre website under the "Directory of Teams" that you can use to learn more about them or use to reach out to them, respectively. (*Note: This list is sometimes outdated.*) I recommend going through the list and seeing if something catches your eye. You can then check out that team's website to see what their subteams are involved in and what their work looks like. Then, you can write them a nice email explaining who you are, what you're interested in, and if there's a way you can talk to them to find out more.

Many teams will have orientation sessions where they go over their current projects, plans, and sign-up process at the start of the term. I believe there's also a fair where multiple teams set up a stall and market themselves to first-years. I recommend bothering one of the software engineering friends you made at orientation to see if they know more. You can also ask around to see if engineering seniors know the leads of teams you are interested in, who will be happy to tell you more.

# FEDS PRESIDENT STILL SOUR ABOUT NAME CHANGE FROM FOUR FIVE YEARS AGO

For all of my first year, the undergraduate student “union” went by the name FedS, reflecting how not only was it a Federation, but also of Students. Well, those days and models are gone, with a new governance model and a new name bringing with it some benefits, and plenty of drawbacks to boot.

I guess I should start by introducing myself; it’s pretty unlikely we’d have met before. I’m Nicholas Pfeifle, your student president with a record breaking number of votes, to absolutely autofellate my own horn. I’ve just wrapped up my degree in Nanotechnology Engineering, a degree I pursued for no small part because it had the fewest required math courses of all the engineering programs. If it’s any consolation to the readership, my parents both are Mathies from the class of ’87. I’ve been reading **mathNEWS** for far too many years of my life, and will spend some of my precious word count shilling writing for our esteemed publication. Many a wonderful success story of journalism have graced its pages. From Fraser Simpson, **gridMASTER** extraordinaire, to our inevitable someone or other getting their lucky break from the M&M machine scandal that broke on these fine pages a few months ago. The Wikipedia page is right around the corner, Editors.

I’ve written a handful of pieces here over the past few years, and my penchants for environmentalism often seeps into opinion pieces on the mismanagement of the higher education sector in Ontario, to blockheaded moves in developments and urbanization. As a highschooler, I studied environmental science, and that edge of smoldering rage fuels a lot of what I get up to. Heck, it’s half the reason why I still refuse to get to work by car, even after having been hit on my bike two times. (This is also an open invite to send me unsolicited ideas on how to reduce our climate and chemical impact at the University and community at large, [nspfeifl@uwaterloo.ca](mailto:nspfeifl@uwaterloo.ca))

Oh yeah, I’m also here to let you know about FedS, or as my staff and nearly every student calls it, WUSA. *The Federation of Students; Operating as the Waterloo Undergraduate Student Association, University of Waterloo* is our current, uh, name. WUSA for short, though you might see the old branding on poster boards or in the name of the FedS Bus service that runs to Toronto and other parts of Ontario on weekends. It’s my fulltime job (and actually the full time job of a shocking number of employees) to keep things like your Bus Pass, Health and Dental Insurance and Campus Cafes running in ship shape. As should be obvious from my tone, there’s lots here to critique, but you’d be wrong to say we aren’t trying.

For example, I’m sorry to say that the bus pass is increasing in price this year. It’s hard to negotiate against inflation. As a consolation prize, Counselling Services has agreed to run appointments after class hours. That’s a lot of how things seem to go here; there’s always good to be found in what feels like the endless torrent of bad.

If you’re interested in making changes to campus WUSA might be the place to get things done, but to be very honest and undermine my own position, you should get involved with MathSoc first. I take the Federation part of our name very seriously, and it was a big campaign point of mine to support the decentralisation of our student government. I might represent students on big issues, like campus-wide policy, or academic policies, but I’m pretty clearly out of touch with the struggles you’ll inevitably run into in the classroom.

Speaking of issues, WUSA has been pushing for years to resuscitate the office of the Ombudsperson, and I’ll be quite angry if the University folds on this promise. We’ve already arranged to foot half of the salary to keep them neutral, and now I’m months into email chains opaque about progress.

WUSA also operates the campus club system, which is one of the default answers when you ask a question about how to make friends at Waterloo. There are a handful that I’ve fallen in love with, and I hope you find the ones that make you happen too. However, to get political, it’s really not your immediate fault that campus, through its designed environment and systems of academics, is non-conducive to community building. We do our best, but the lack of central green space, over reliance on cars, lack of upper year housing, R’lyeh-esque layout, propensity to competition, addiction to silent study over group work, poor integration of profs and students, low funding for undergraduate research, and more all contribute to the malaise.

Unfortunately for you, prospective mathie, MC is one of the worst cases of our awful architecture syndrome. This is a callout piece, but I directly blame the design of our built environment in the Math faculty for the piss-poor faculty attendance at convocation. My role as your student president is to be a back bencher, which for every other faculty was how I rolled. MathSoc has done so much to make sure the bottom three floors aren’t totally garbage, but wow, have I been disappointed with how enraged profs get when you attempt to attend office hours on the fifth floor and make any sort of noise. This sort of critique about how our design influences our campus culture is what gets me goin in da morning.

I was serious about that involvement piece by the way. The decision making that happens on campus pretty rarely runs through exclusively WUSA, and overwhelmingly happens with input from Faculty Societies or the Student Senators (who are distinct from MathSoc and unaffiliated with WUSA, a hill that I fully am prepared to stake my position on). It’s well worth your time cutting your teeth there, it’s not a sprint, it’s a series of sprints back to back, but you might as well run the smaller fryable fish before you learn to tuna base.

How to get involved? Check with Awab and Rem.

Nicholas Pfeifle



# HOW TO MEET PEOPLE AND ACTUALLY STAY FRIENDS

## A PRACTICAL AND HOPEFULLY NOT GENERIC GUIDE

One of the big questions everybody has is: now that I'm a Math student, have I signed myself to a sad friendless existence only occasionally punctuated to writing a proof with a fellow regretful classmate at 4am or grinding LeetCode with my (very real) gf?

The answer is no! And also that's awfully specific.

"What if people don't want to talk to me cause I'm weird?" Spend 10 seconds scrolling through r/uwaterloo and you'll see everybody wants to make friends and are weirdos themselves, just nobody wants to be the one who makes the first move. Not only that, people are so worried that even when somebody else makes the first move, they turn it down in case the person "wasn't serious" or something. I think this is a mistake! The average person really wants to make connections, it's sorta wired into us. You just gotta put yourself in a position to meet cool people, and luckily Waterloo is full of amazing, smart, dedicated, and funny people, and that includes you guys just coming in now (hi!). And the start of a new year means an influx of people looking for the same thing as you!

Well, university classes are often too theoretical, but I'm here to give some practical advice with examples, here's some stuff I literally did to meet people **that I'm still friends with years later**:

- In my first month of university, I put up a poster in my residence looking for CS students to study with
- I brought over a deck of cards to a club that (I thought) was supposed to be about writing and asked people to play
- I went to random parties where I only knew one person as an awkward +1. I stood in a corner until someone mentioned a topic I was hyper-fixated on
- I cold approached someone I'd seen once at a club and asked them to join my band. Somehow that worked
- I signed up to be an orientation leader (I'm one this year too!)
- People I'd never seen before joined **mathNEWS** and I immediately invited them to go climbing
- I met a guy with a cool stick and asked if he wanted to come to my apartment for a party
- I sent a message in a group chat at my co-op asking for people who were willing to be ruthless in social deduction games
- I joined Quizbowl and Game Dev and Pure Math Club even though I wasn't sure if these were clubs I really cared about, just to try them out.

I joined other clubs too, that don't fit the list since I didn't necessarily make long term friends, but I want to emphasize that doesn't mean it was a wash. I had fun. Even if they were only acquaintances and only for a bit, it was a great break from work and made me feel happier and more motivated about life at uni! **So here's some real advice: don't just quit**

**cause you're not making super tight bonds right away.** Some people aren't gonna stick around forever, that doesn't mean the time you spent with them isn't valuable. You might not realize it, but that time you spend socializing instead of staying in is really important for you. And as you get better at talking to strangers and are able to open up more, others will feel more comfortable too and that friendship-making magic starts to happen.

Here's another thing though. **Meeting people is step 1, but it helps to show you wanna put in the effort for being friends.** A lot of people are afraid to be the first one to put in genuine effort, but you have nothing to lose. So here's some examples of things I did that brought me closer to people:

- I said yes to joining dodgeball and innertube water polo despite my a lack of physical talent
- I arranged card games with my first-year study group so we could get to know each other better
- Someone I met at a party happened to live in the same building as me so we started arranging regular morning coffees
- I invited my entire orientation group to an after-orientation party... even though I wasn't the host (but I had permission I swear)
- Talked openly about our struggles in university and dreams for the future with people I'd only had more casual conversations with
- I got invited to watch fireworks with someone I'd met only once in a larger group, we'd never hung out alone

I went to parties and social events even when I felt tired, even if I knew I was only going to show up for a little bit. Just to show "*I wanna hang out with you,*" to make sure that work wasn't consuming me whole, to acknowledge that friendships had an important place in my life. Making friends takes some effort. But, you've already put in a shit ton of effort to get here, you're gonna be putting a shit ton of effort to stay here, why not give a bit of a shit to have fun while you're here?

And I know it's not just about effort, some of you might feel too unskilled at socializing, or too nervous to be able to just approach someone. I get it, honestly I've been there too. I don't want to minimize this, but I'd like to gently encourage you to start trying to move past it. There's no danger in failing, people care more about the Waterloo grind than failed social attempts, so you can just try again and again until your practice has made you perfect.

What are you interested in? What's your hot take on whatever the world is throwing at us? And the person near you that you haven't approached yet, what do they think? Has anyone here asked them about themselves yet? Maybe the first person to do that can be you :)

# HOW TO SUCCEED IN YOUR MATH COURSES

## ADVICE FROM AN UPPER YEAR WHO FAILED FIRST YEAR

I hope that subtitle grabbed your attention. It's a little bit dramatized, but I did actually fail two courses in my 1A term, and I averaged a 59.8, I was forced to change sequences, and I was threatened with being removed from my program. I'm now excelling in 4<sup>th</sup> year and graduate level math courses, and am doing original research in the pure math department. I also tutor lots of students, and I've seen people struggle and succeed in a huge variety of courses. Studying in high school is very different from studying in university, and in this article, I'm hoping to give an idea of some of the changes you should be making.

First and foremost, before we get to the practical, **if you want to succeed, you need to take care of yourself.** This means eating enough, sleeping enough, hydrating regularly, getting time outside, socializing, taking breaks, being physically active, and doing whatever else you need to take care of your mental health. All of these points are non-negotiable.

The fundamental struggle of university math courses is that they start asking *why* and *how*, not just *what*. Most of high school math is rote, in that you are given a formula or technique, and asked to apply it. Most problems are directly from the textbook, maybe with the numbers changed, but you can fundamentally get by just practicing a bunch of practice problems and memorizing a few algorithms.

In university, you will be asked questions you have never seen before on exams. You will be given problems that genuinely require new problem solving skills, that take insight and understanding, that require you understand *why* something works, not just *that* it works. Because this approach is fundamentally different, your studying will also probably need to change.

Your courses will now start proving propositions in lectures. You will be given rigorous, precise definitions of terms, and formal, detailed proofs. You should aim to understand all of these proofs completely, and to understand why things are defined the way they are. When you see a new definition, theorem or proof, you should always *immediately* ask yourself:

1. What is the intuition behind this? Why does this make sense? If it's a definition, why does this capture the idea the definition is about?
2. Does this look like anything I've seen before? Is that a coincidence or is there a connection?

It's OK if you can't answer these questions right away, and it's OK if you need to ask outside sources, but these want to be understood. Again, unlike high school, it doesn't just matter *that* things are true, it matters *why* they are true, because you will be expected to create similar arguments on your exams and assignments, and the "why" of the truth can often inform you of where you'll need to use it.

When going through a proof, first read it through completely, and try to capture the general idea. Sort of figure out overall what it is saying. Then, go through it slowly and carefully, at each sentence, ask yourself the same basic questions:

1. Why was this sentence valid?
2. Which hypotheses are we using? In math, a hypothesis of a theorem is a condition you're assuming true. For example, if I say "If  $x$  is odd, then  $x + 1$  is even," my hypothesis would be " $x$  is odd."
3. Why might someone think to do this?

Question 3 is especially crucial here, because that helps you practice for your own problem solving. You will often get to a point in a problem where you have no idea what to do next, but any example or theorem you already have is a template! You won't be able to directly copy anymore, but you can learn from the given examples and solutions by asking yourself *why*. Once you have a general idea of why something works and the ability to explain why every individual step works, you will be able to prove it on your own, and you will be able to work through similar problems. Again, if you're having trouble with these steps, ask your professors, classmates, TAs, tutors, upper-year friends, or anyone else who can help. Once you're done that, I would recommend asking the following questions:

1. Is this proof like anything I've seen before? Why are they connected?
2. Can I lose hypotheses or generalize this theorem?

These aren't questions that need to be answered, but they're good to ask, because they get you thinking on a deeper level, and again encourage problem solving.

Speaking of problem solving, this is the one area where I think excessive help will hurt. In order to practice solving problems, you need to... solve problems. It is completely OK to get hints and guidance, but I would strongly recommend that you almost never look at solutions to problems you haven't solved yourself. The reason for this is that, if you are given a hint and you solve the problem on your own, you have learned something and practiced problem solving. If you just look at the solution, you've learned something, but you've left a crucial skill undeveloped, which will really come back to bite you in the ass when exams come around.

When doing assignment questions, often finding the answer comes down to asking yourself a good question. "What is the definition of everything involved," "What is the intuition here," and "Does this look like anything I've seen before?" will almost always be shockingly good starts. Sometimes there is no intuition, sometimes it doesn't look like anything you've seen before, and sometimes the definitions don't help, but these three basic ideas solve a ton of problems. If you try something that almost works, ask yourself how it can be modified or why it failed; if you try something that seems

really tedious, ask yourself why it's tedious, and if that can be avoided.

That's all for now. Good luck in your first year. You're really in for an incredible experience, and remember—supports exist for a reason! Take advantage of them :)

Golden

## SOME YAPPINGS ON HOMESICKNESS

*So that's how it works. You plod along, putting one foot before the other, look up, and suddenly, there you are. Right where you wanted to be all along.*

THE ELDER SCROLLS IV: OBLIVION

When I first got to Waterloo, I felt absolutely miserable. It was my first time away from home—despite only being an hour and a half away—and it never came to my mind that I'd feel so homesick. I spent my days crying after classes, complaining about every little thing wrong with the university or the city, and being a whiny, pessimistic child. I know there will be some people reading this article who feel the same way I felt when I first got here, and I know it can be rough when you see everyone else enjoying their newfound independence while you're feeling at your lowest. I hope that a short story about my experience helps you make the most out of yours.

I hate change. I can't even move a piece of furniture around in my room without feeling off about it. My entire life, I've worked on snapping out of that habit and trying to accept that change is inevitable and for the better. When I arrived in Waterloo, all that work felt like it had just unraveled. Home is familiar. There's comfort in the walls you've been sheltered by for years; a sense of importance and empowerment when you know the streets you grew up in and the best places to eat in town. When you get to a new place, you're an outsider forced to adapt to a new environment—suddenly, you know nothing. Your hometown friends are in one place, while you're a hundred kilometers away, dreading the thought of losing them. It's hard.

As I walked through the halls of my dingy V1 residence, commiserating as usual during my first week at the school, I made my first friend at Waterloo. We barely talked, but we knew we'd be in the same lab and planned to be partners. She quickly became my best friend, and one of the most important people in my life. You're so vulnerable when you first get to university that it's honestly easier to make friends than expected. Other people are going through the same struggles as you, but everyone is wearing a mask to hide it. As long as you put in an effort, you'll make a ton of friends with plenty of material to bond over. Just make sure you're hanging out with the right crowd; mingle with everyone, but be close to the people that uplift you and encourage you to be better. You'll quickly learn that a lot of people only have the goal of putting you down because they don't want to succeed themselves.

I started 1A going home every weekend. That turned to every other weekend, and eventually into hardly any at all. As time

goes on, the homesickness wears off and independence kicks in. I took a lot of long walks at night with friends, bonding and enjoying the little piece and quiet we had after finishing our assignments. There are a lot of nice trails around here, and even more to explore when you start heading off campus. It took me a while to realize that this city is actually pretty cool (*shoutout St. Jacobs Farmers' Market and all the dope vendors*). Take your time getting used to your new home. I was always so caught up in comparing myself to others and "not feeling independent enough yet" that I forgot everyone here is just faking it. Just do your own thing and understand that as long as you work on yourself and actually *try*, you'll get somewhere.

I always thought to myself that university is both the best and worst years of your life. I don't know if I still agree with that statement, but I know that you have to play the cards you've been dealt. Get yourself out there, keep your circle close, and just try to have a good mindset. Too many people let pessimism and negativity consume themselves here, and I've seen the harm it does.

Usman!

## QUEST: EVERYTHING THE LIGHT TOUCHES

**SEEKING: MAGES, WITCHES, WIZARDS, AND WARLOCKS ALIKE**

**Hear ye:** His Majesty The Goose requires your aid. Just this morning, a message appeared in the waters of the egg fountain of the campus rock garden: an illusory vision from a mage's tower stretching some six stories into the sky. His Majesty could not believe such a sight, for the royal observatory of his citadel, the Coffee and Donut balcony of Mathematics and Computer, only sees out from three stories in the air. The very idea of a tower more grand than His Majesty's? It cannot be true.

**Thy quest, should thee choose to accept it:** Assemble a team of fellow adventurers, and begin an expedition to the uptown square of our fair Waterloo. Seek the tower, it has been labelled "parking garage" to ward off unwelcome guests. Ascend to its sixth floor, and look out upon the city,

*Tales from afar tell that the view is remarkable.*

his majesty's royal spymaster

# SOFTWARE ENGINEERING STUDENTS: YOU ARE NOT ALONE

## YOU ARE A PART OF THE FACULTY OF MATH, NO MATTER WHAT ANYONE ELSE SAYS

Hey first-year Software Eng students,

I was in your shoes once, where you stand right now. Last year, in fact. It's probably a bit silly for me to be the one writing this article; I'm the same age as most of you.<sup>1</sup> But one of the things I remember the most from my Orientation Week (apart from it being like 37°C the whole time) is reading through as many old issues of **mathNEWS** as I could get ahold of. There were lots of fun articles about various things, but I especially remember articles along the lines of "What your math major says about you" and "What Pokémon is your major." Something I noticed fairly commonly among these articles was that often, the authors wouldn't include Software Engineering.

I was a 6 hour drive away from home, living on my own for the first time, grieving the end of a friendship and break-up, and trying to not die from overheating while missing my family. Between the fairly common jokes about Software Engineering not being "real engineering" and not seeing my program anywhere in the Math Faculty's student newspaper, I felt like I wasn't really a part of either group. Two of the people I was sharing my residence suite with already knew each other before coming to university, and the third kept mostly to herself. My orientation group had some other Software Eng students, but in that first week it was really difficult to keep track of people especially with everyone wearing the same orientation T-shirts.

Surrounded by people, I felt more alone than I ever felt in my life.

So that's why I'm writing this article for you lovelies. First-year Software Engineering students, I see you and I feel your anxiety and isolation. It's okay to feel whatever feelings you do, and it's okay if it takes some time to adjust. The move from being in high school to being in university can be extremely overwhelming, and that's okay. Take your time to adjust; I promise there will be people who will be more than happy to welcome you in when you're ready.



Okay, mushy sentimental stuff aside, let's get into some more logical and rational things you may be thinking about. I'll do this in somewhat of a Q&A format, so that it's easier to find out what you're looking for.

*What faculty does Software Engineering really fall under? What department?* Software Engineering is 100% a part of the Faculty of Math AND 100% a part of the Faculty of Engineering. Software Engineering has its own department that coordinates with both faculties, the Department of Software Engineering. The closest Math Faculty department is the David R. Cheriton School of Computer Science, while the closest Engineering

Faculty department is the Department of Electrical & Computer Engineering.

*So what student society does Software Engineering contribute/have access to?* As Software Engineering students, we have representatives for and access to MathSoc, EngSoc and SESoc events. First-years have 2 class reps for each of MathSoc and EngSoc, and 3 class reps for SESoc. These are positions elected by the cohort on a term-by-term basis.

*How is SESoc any different from the faculty student societies?* Since MathSoc and EngSoc serve all math/engineering students respectively, they have to run events to incorporate a greater number of people. SESoc runs events for Software Engineering students only, so it is much easier to meet Software Engineering upper-years specifically through SESoc events.

*How are the 1A courses? Do you have any tips on how to handle the courseload?* For the most part, 1A and 1B courses are to ensure you fulfill the graduation requirements for both the Math and Eng Faculties, and are fairly prof-dependent.

- A large part of MATH 117 is high school review. If you did AP Calc AB the only truly new topic is Squeeze Theorem. If you did AP Calc BC then this should all be review for you.
- MATH 135 is an intro to proofs, but if you don't know what you're doing or the TAs are being annoying about you not showing every tiny step, the assignments can take a long time. Fun fact, this is the only SE 1A course run by the Math Faculty instead of the Eng Faculty.
- MATH 115 starts off with high school review but can get out of hand quick. Tutorials every week are quizzes where you're allowed to work in groups; use this to gauge your competence with various topics.
- CHE 102 is mostly just grade 11 & 12 chemistry minus orgo plus phase transitions.<sup>2</sup>
- CS 137 is a fun class and if you've worked with C before it should be fairly easy, and is pretty straightforward even if you haven't. Watch out for trick questions in exams if you're being taught by Victoria, she can be sneaky (all SE students unanimously love her regardless).
- SE 101 is extremely easy in terms of courseload for the first two months, but then it becomes a scramble to complete your First-Year Design Project by the deadline. I VERY HIGHLY RECOMMEND PICKING TEAM MEMBERS EARLY WHO YOU KNOW WILL PULL THEIR WEIGHT!<sup>3</sup>

In regards to handling the courseload, try to get a small group together to study and work on assignments together (as long as the course permits it). Even better if you can schedule specific times weekly to do so. Other than that, try to follow

the extremely generic advice of “start early, get a good sleep, don’t cram.” I feel obligated to say it, even though I know most of you won’t follow it.

Finally, join your cohort’s Discord server, and not just because they have specific channels for each class. They also have channels with pinned resources, places to ask questions, and places to just chat with your classmates. If you’d like to see reviews of your professors or classes, you should check out [uwflow.com](https://uwflow.com). It’s Rate My Professor + rating the class + course calendar + checking for available classes (more useful in upper years). It was created as a Fourth Year Design Project by UW students and is kept up to date, so your info is secure.

Hope this is helpful to some new Software Engineering students out there, and that it’s helped you feel less alone. Best of luck in your upcoming term!

### Sexy\_Software\_Babe

1. 2006 just looks so much more aesthetically pleasing as a birth year than 2005. I will not apologize for speaking the truth.
2. I failed this class with a 48% last winter term because the grading scheme was that the final was worth 50% unless you failed it and then it became worth 100%. I would’ve had a 67% in the class otherwise. Yes I am still salty about it, how could you tell?
3. Also, don’t expect reimbursements any time soon, regardless of what Paul Ward may tell you.

## ISSN 0705-0410

UW’S BASTION OF ERUDITE THOUGHT SINCE 1973

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## FIND TIME FIND TIME FIND TIME

### THE ONE WEIRD TIME MANAGEMENT TRICK THAT NINE OUT OF TEN DENTISTS QUIETLY RESENT YOU FOR KNOWING

I quit one of the school’s bands at the end of my first term—it wasn’t something that I wanted to continue. When my second term started, I suddenly found myself with two extra free hours a week.

It would have been easy to spend them doing assignments. However, I knew that I wanted to continue making music, so I decided that every Friday, from 12AM to 2AM, I would have Dedicated Music Time. Nothing would get in the way of Dedicated Music Time: sleep could wait till after, and assignments could wait till the morning.

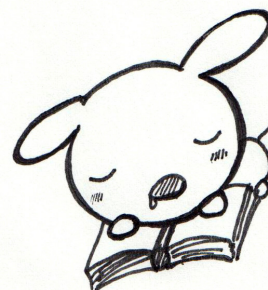
To properly commit to it, I even went out and bought a new MIDI keyboard, replacing the one I got on my eleventh birthday. This made the Omicron lockdown a lot more bearable.

It was my first time managing my time like this. I wasn’t perfect—halfway through the term, I pushed Friday back to Sunday, and when exam season hit, I decided to take the extra two hours of sleep—but generally, I stuck to it a lot better than I expected. It felt good having those quiet midnight hours to myself every week, free from all responsibility. It was my sacred little ritual. Maybe I could have benefited from it during exam season.

Find time! There’s always time! If there’s a hobby you’re afraid you won’t have time to continue when classes start, carve out a few hours a week to do it. Even if it isn’t a club activity, treat it as if it was—as if there were other people in the club that depend on your presence every week.

Assignments are greedy. They take every hour you let them. Often, they will win, and you have to give them the time that they deserve. But once in a while, you can win, and you can take back some time for yourself.

If you spend five percent less time every week on coursework, there’s a good chance you’ll learn to work five percent more efficiently. You’ll be ten percent happier for it.



# HELLO FRESHPEOPLE!

## THIS IS IT, YOU'RE HERE

Hey there! Chances are if you're scrutinizing every detail of this publication then orientation weeks are not your favourite... that's okay; I got to know new people a lot better through my roommates and existing friends. I'm not saying you should skip O-Week, though many of my friends did and they ended up just fine (I think) (hopefully) (I haven't talked to them in a while). It was actually while reading **mathNEWS** that I concluded I was at the right university, based on the eccentric neurodivergent writing style of some articles, so I hope to give back while satisfying at least some of your search for answers on navigating this time as a reward for being able to get through my messy CS student writing.<sup>1</sup> I'm entering my 2A term, so I'm not infinitely wise, but I also haven't forgotten everything like all the elderly individuals who may be contributing (imagine being born before 2005). Anyway, here are some words on select topics...

### ON mathNEWS

I still don't know how to describe writing for **mathNEWS** when people ask me about the various things I do around campus. In the past, I have said "I contribute to the Math Student Society publication," since "I write for **mathNEWS**" implies many assumptions that could not be more false:

1. **I am part of a special group of writers**—I like to think I am special but really anyone can contribute to **mathNEWS**; it is my hope that an overly ambitious five-year-old discovers this, only to publish content indistinguishable from my garbage.
2. **I uphold rigorous publication standards**—While there are editors responsible for article layout in issues among other things, I have only heard one rule, and that is "don't get us sued". Any higher standard and my fortnightly ramblings would not get published.
3. **I contribute to mathematics**—I don't think I have once written about math and seldom do I see it in **mathNEWS**... to be fair, I'm a CS student, but I don't write about that either.
4. **I report on news**—Maybe in this day and age my babbling can count as news but otherwise there has not been any real journalism in this publication since someone wrote that article on the M&M machines (ask literally anyone)
5. **I am coordinated with other contributors**—I show up to maybe half the prod nights and do not know anyone's real name. I do know a few people's writer names, though nobody knows who I am—which is probably a good thing, to be fair.

Sound reasonable to you? Maybe come to a prod night. Don't get too attached to anyone, though, you may not see any of them again after four months due to the way academic and work terms alternate after first year.

### ON HOUSING

If you live in UWP/CMH then you will probably not go to the other residences and vice versa, unless you have close friends there. I was lucky enough to be in MKV meaning I was not too far from REV or V1 for food. Generally, V1 trumps REV except in the case of wraps; don't get wraps from V1. If a traditional meal plan was forced upon you, then make sure to use it all before you leave residence. You may have noticed that they steal half of your money and give you a 50% discount, but do not be fooled: the discount only applies while you have the meal plan, which is first term and second term when you are forced to buy it again. Start planning where you will live in second year EARLY; put your email on all the sign-up sheets for nearby housing as soon as they come out or you may end up like me who was almost homeless this fall.

### ON CAMPUS

There are 5 Tim Hortons on campus. There are only 2 McDonalds within the city limits of Waterloo. [*Editor's note: there are now 3 with the newly opened location near Costco!*] I don't know what I'm getting at here—I just needed to tell a fun fact to someone—but there are enough places to eat where you can go to a different place to eat every day if you're not picky. Unfortunately, I am picky, but a long walk to University Plaza can be worth it. It's an even quicker bus ride (remember you have free GRT transit with your WatCard) if you can time the bus from V1, REV, or CLV just right. Moreover, take the time to explore campus, find your favourite washrooms, and identify good study spots for when your room will inevitably stop working. If you need to print something then most buildings have a printer which takes money from your flex dollars, just learn to use the W Print Self-Serve portal online. Lastly, figure out the bridges and tunnels now before winter. Hopefully, the editors can attach the diagram I made last year on the next page, though I know for a fact this article is too long to fit on one page.

### ON EXCELLING

I have terrible time management. Somehow it gets a little better under the pressure of campus and people around me, but the workload will likely get to you. Some profs, courses, and timeslots are better than others, so it is important to identify those now lest you be stuck with them for the rest of the term. Luckily, Waterloo has a culture of innovation so people have made plenty of tools; namely, reviews on [uwflow.com](http://uwflow.com) take precedence over [ratemyprofessors.com](http://ratemyprofessors.com). Additionally, you can plan your academic career on [uwpath.com](http://uwpath.com), though I did it myself using cards on [notion.com](http://notion.com) before hearing about that. Speaking of Notion, all of my high-achieving friends use it, whereas I still use Google Calendar, but the point is you should be scheduling. Lastly, let it be known there is no shame in dropping courses. I dropped MATH 145 when I knew it was too much for me<sup>2</sup> and MATH 147 + CS 145 have hurt me. Luckily, you can swap into their

counterparts for free; other classes are not so generous after the drop deadline.

Good luck, have fun :)

- Mac 'n' Cheese on Mondays
- Chicken and Vegetable Stew on Wednesdays
- Chili on Fridays

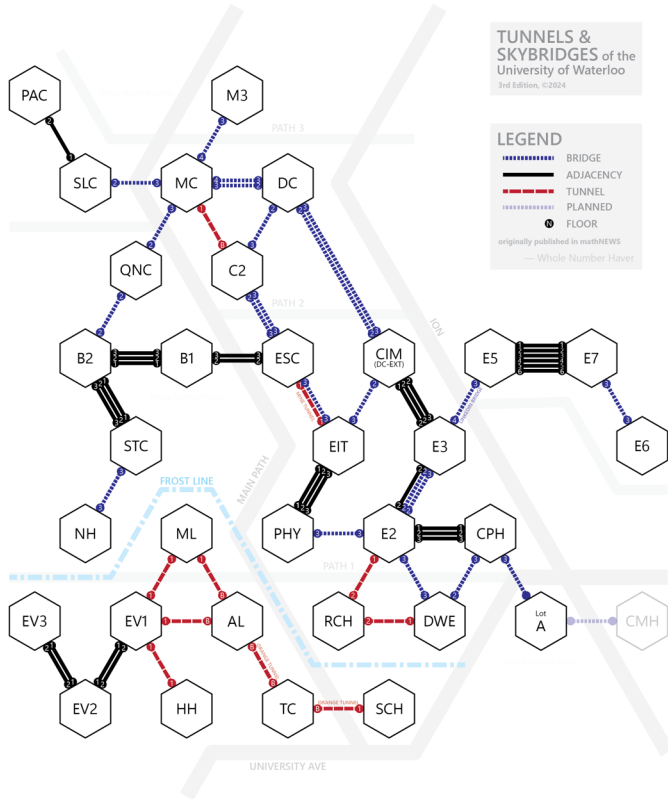
There's also garlic breadsticks on Friday (that sell out extremely quickly — *especially* when I'm on campus!)

You'll also hear people referring to the seating area connected to the Coffee and Donut Shop as the C&D — there are microwaves available to heat up your food, as well as plenty of seating (complete with power outlets) so you'll be able to eat and study at the same time! It's also a popular place to meet with friends to work or study together. There are board games nights hosted by MathSoc every week as well!

The C&D doesn't accept meal plan dollars (or any payment by WatCard) — but they do accept cash, debit and credit!

Hope to see all of you around at the C&D!

Axel



Whole Number Haver

1. Grammarly has assigned this 61-word sentence a score of 98, with the only complaint being the extraneous word “actually.”
2. I still showed up to every MATH 145 lecture until reading week, which is a cool thing about university is that you can show up to most lectures as long as you know where they are.

## YOUR GUIDE TO THE MATH C&D

The Math Coffee and Donut Shop (or Math C&D/CnD, for short) is a tiny little shop on the third floor of Mathematics and Computer (MC) building (it's the big old grey building that you'll learn to love). Despite its relatively small appearance, the C&D is actually a million-dollar organization run by MathSoc! The C&D sells some of the cheapest food on campus, including coffee & donuts (duh), bagels, muffins, and other assorted baked goods. There's also a wide variety of pre-packaged sandwiches and meals (veggie and halal options are available!), sushi, as well as a rotating selection of soups and hot food. A small snippet of the hot food available:

## MEGA gridWORD

Hail and well met, incoming first-years!

We, **mathNEWS'** ELITE PUZZLE **craftingCREW**, present you with a 50x50 crossword. Wait a minute, what's that? You only received a 25x25 crossword in this issue? Well that's because a 50x50 couldn't fit on one page. In order to solve this puzzle, you will have to engage in a challenge found most intimidating by even the sagest of math students—TALKING TO YOUR PEERS. Each corner of this crossword, along with the clues, are scattered into four parts (+, -, ×, and ÷) across various copies of the orientation issue. You may also need to delve into ANCIENT **mathNEWS** TEXTS (post 2020) (easily searchable on the **mathNEWS** website) to solve this here puzzle.

Good luck and happy solving, but remember, sometimes the true crossword solutions are the friends you make along the way.

If you do complete this puzzle (or get remotely close) send a picture of your submission to [mathnews@gmail.com](mailto:mathnews@gmail.com). One submission will be selected to receive a 5 dollar Math C&D gift card.

Quizzard People

**ACROSS**

- 1. Seriously injure
- 5. Farfalle or fusilli
- 10. Gets clean
- 16. Identity for Hawaiians with both Native and non-Native ancestry
- 20. “\_\_\_ coffee?”
- 43. Salinger dedicatee
- 44. “\_\_\_ manners are a mirror in which he shows his portrait”
- 45. Anti-ship missile that skims waves at nearly the speed of sound
- 46. Has \_\_\_ ear: lacks sensitivity
- 47. Two curved pieces of iron attached to the collar of a draft horse
- 52. Bose-Einstein condensate? or the 369A from 149.4
- 60. China shop purchase
- 61. Cubic meters
- 62. Predestined
- 68. Bean and Cool J
- 69. “The Thin Man” dog
- 71. Stool pigeon
- 72. Internet meme of “The Matrix” star
- 74. ncRNA repressor of the nuclear factor of activated T cells, for short
- 97. “\_\_\_ well that ends well”
- 100. Opposites of offs
- 103. Conical shelter
- 106. Vintage tint
- 112. Audience reaction “indicators” used at sporting events
- 117. Michigan Professional Insurance Exchange, for short
- 119. Tenant
- 126. Birth -> Honk -> Death, or the 369A from 152.2
- 129. Gibraltar and Magellan: Abbr.
- 137. Become ripped?
- 138. Alliterative Gmod game mode
- 139. Hang on to
- 140. Gate fastener
- 141. Calgary hrs.
- 143. Like passive aggressive grievances
- 150. Approaches
- 152. The \_\_\_ of Kilimanjaro
- 153. “Yuck!”
- 154. “Sprechen \_\_\_ Deutsch?”
- 155. The girl reading this, or the 369A from 147.4
- 161. What I do when I see Imprint
- 163. YMCA, WWF, UNICEF Org. Type
- 164. Garden store buy
- 165. Montessori and Sharapova
- 170. Sound sleeper?
- 172. Take annoyance at something
- 173. Regarding this point
- 176. Chosen
- 180. Legal wrongs
- 189. Big name in campers
- 190. Unfavourable review of university preparation program, or the 369A from 147.1
- 205. Funniest MATH 135 theorem, abbr.
- 206. French fry seasoning?
- 208. A Parisian network
- 209. Java vessels
- 210. Connery and Penn
- 218. Housewife with kids, abbr.
- 220. Driver’s warning
- 222. Of the lips
- 224. Parameter inference method of STAT 231 fame, abbr.
- 226. “G’day \_\_\_”
- 234. “...But the tree remembers” or the 369A from 151.1
- 240. Transgressions
- 241. Second section
- 251. Major and minor constellations
- 252. Community reputation

- 254. Brain \_\_\_
- 255. Chose violence
- 267. DQ Coffee blended with soft serve and ice
- 270. Pirates, in old slang
- 271. Rocky peak
- 272. Lost cat, for example
- 282. Bob \_\_\_\_, former sportscaster for the Pittsburgh Penguins
- 283. Little piggies
- 285. Home bodies?
- 287. Ben Simmons, team and number
- 295. Product of oak trees, \_\_\_n
- 296. “We’ll take it from here”
- 298. Lays down the law
- 299. 100%
- 308. Circe’s island in Homer’s “Odyssey”
- 309. \_\_\_ Vegas, N.V.
- 311. Famous Disney mermaid, scrambled
- 313. Anoint
- 320. Like pure energy
- 324. In a heap
- 326. “SNL” alum and Sandler friend Kevin
- 328. Browns, on scoreboards
- 334. Apples needed to keep doctor away
- 335. Ice cream treats
- 337. “when r u getting here?”
- 338. Cookie container
- 344. Advice on seminar scribbling, or the 369A from 147.2
- 349. The hard stuff

**DOWN**

- 1. Strength of spirit (Required for this gridWORD)
- 2. “\_\_\_ of a person” (Like you will be after this gridWORD)
- 3. “Whatever works”
- 4. “Take \_\_\_ I Am” Mary J. Blige song
- 5. Personal histories
- 6. “Te \_\_\_”
- 7. Dips for chips
- 8. Letter-shaped fastener
- 9. Fall flower
- 10. Turn back to zero
- 11. Tel. no. add-ons
- 12. Grp. that might have rules about lawn upkeep or pet size
- 13. Pretense
- 14. Hot roast sandwich dunked in its jus
- 15. A group of sheaves of grain stood on end in a field.
- 16. “I do \_\_\_ proud man ...”: “Troilus and Cressida”
- 17. Mar- or walk-, suffix
- 18. Board game strategy that sounds like cooking advice
- 19. “Give \_\_\_ to” (acknowledge)
- 20. “A League of \_\_\_ Own”
- 21. “Jack Sprat could \_\_\_ fat”
- 53. Arthur of “The Golden Girls”
- 54. Historical period
- 55. Sandy men of Dune
- 56. The most horny (Like when I finish this gridWORD)
- 70. Armour plate protecting the upper thighs, not a type of approval
- 72. Look out over the bay from Alcatraz to do this
- 73. “All bets \_\_\_ off”
- 86. Live up \_\_\_ name
- 87. Devices for sharpening razors
- 89. Most foolish month, abbr.
- 97. Peanuts or pollen, e.g.
- 98. My \_\_\_ massacre
- 99. 99 \_\_\_ ballons
- 101. Actor portraying Sam Bowden’s throat?
- 102. Bishop of Catania

- 104. “He \_\_\_ on me after he killed me in Fortnite”
- 105. Great lengths of time
- 106. Holy \_\_\_ (Vatican)
- 107. Found near food left outside
- 112. Abbr. used to denote intended recipient of a letter
- 113. Mythical bird, with the last syllable mixed?
- 114. Actor and scientologist Michael
- 115. Intentionally trigger a seizure
- 116. Sound of (prolonged) disgust
- 118. Sorta suffix
- 120. UK’s shortest tenured PM and most famous lettuce rival
- 127. Reflectiveness of an object
- 128. Big boy wind
- 151. Fills to the gills
- 152. User of piercing weapon
- 154. Sufficient Material to Yield, for short
- 162. Like many a bloody movie
- 163. Australia’s First State, abbr.
- 164. Capital of South Korea
- 166. \_\_\_ in stone
- 167. Military location, scrambled
- 173. “... would thou \_\_\_ ne’er been born” (“Othello”)
- 174. Son of Elam whose name means “God the Lord”
- 175. Nouveau \_\_\_
- 177. Opposite of WWN
- 178. Street \_\_\_d
- 179. Elemental cartoon (or its 2009 adaptation), for short
- 191. Pianist Arthur, considered one of the greatest of all time, or the 369A from 148.2
- 192. One of Saturn’s loops
- 193. de Armas, Ivanovic, and Ng
- 194. Broadband option (learn about it in CS 456)
- 195. Pooh creator’s initials
- 207. Yogurt choice, informally
- 219. Poorly trained pitbull
- 221. Swedish flower-shaped pastries
- 223. “It’s fine \_\_\_” (leave it be)
- 224. Where the little green men will come from
- 225. ION, e.g.
- 235. Used at the airport and the dentist’s
- 236. A series of surveys about Canadian social life
- 237. You are, French?
- 238. Type of graphics option
- 239. Supernova remnant, for short
- 241. Golfer’s aims
- 242. When these are drawn, the war’s begun
- 254. On the market
- 256. \_\_\_-80: old computer
- 267. “Cry \_\_\_ river”
- 268. Brutish fantasy creature
- 269. Spanish gold
- 271. Aquarium fish
- 272. Curated Haikus
- 284. Waterloo Warrior sports league
- 286. Branching structure?
- 287. Coenzyme central to metabolism
- 296. Martial arts star Bruce product promo
- 297. Convenient, if immoral, exits to situations
- 298. Grp. consisting of Thailand, Indonesia, and Malaysia among others
- 308. Gucci, Ray, and a Canadian shoe store
- 309. Fits together nicely
- 310. Large grocery chain based in Germany
- 312. Visitor parking area where I parked for Waterloo Ready in 2019
- 314. Suffix with refresh- or replace-
- 320. \_\_\_ scale (measure of hardness)
- 321. \_\_\_-B error, Piaget’s absent schema of object permanence
- 322. How to \_\_\_ button (stitching tutorial)
- 323. \_\_\_r: Greek half man - half horse
- 324. “He \_\_\_” (Has rizz)



- 314 . Suffix with refresh- or replace-
- 320 . \_\_\_ scale (measure of hardness)
- 321 . \_\_\_-B error, Piaget's absent schema of object permanence
- 322 . How to \_\_\_ button (stitching tutorial)
- 323 . \_\_\_r: Greek half man - half horse
- 324 . "He \_\_\_" (Has rizz)
- 325 . Bing Crosby's record label
- 327 . Whip accompaniment (singular)
- 335 . Christian denom. that observes the Sabbath on Saturday
- 336 . '70s extremist grp. who kidnapped Patty Hearst
- 345 . Table scrap
- 346 . Goldfish species, anagram
- 347 . Italian roads
- 348 . Visualize ocean (as an alliteration)
- 350 . Mcfly and the Madagascar Zebra

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# lookAHEAD

SUN SEP 1

Warrior Welcome

MON SEP 2

Math Orientation Events  
Labour Day

TUE SEP 3

Math Orientation Events  
Co-op Work Terms Begin

WED SEP 4

First Day of Classes

THU SEP 5

Be Late For Something  
Day

FRI SEP 6

**mathNEWS**  
disorganizational meeting  
Math Orientation Events

SAT SEP 7

Black And Gold Day  
WUSA x UWaterloo  
Concert

SUN SEP 8

**mathNEWS** 156.1  
production night  
First Monday of the term  
WUSA Welcome Week  
begins

MON SEP 9

TUE SEP 10

Reserves Removed

WED SEP 11

THU SEP 12

FRI SEP 13

**mathNEWS** 156.1 released

SAT SEP 14

## mathNEWS DISORGANIZATIONAL MEETING

**mathNEWS** is like an old friend. It shows up, pretty regularly, every other Friday; makes you laugh, cry, and scratch your head trying to solve puzzles; and then says, “See you in two weeks!”

Now, **mathNEWS** doesn't just appear magically; it's put together by a very tight-knit group of writers, artists, proofreaders and glorious editors. All of us here at **mathNEWS** are always looking for new writers, proofreaders, artists, puzzle-writers, and general what-have-yous.

If you're interested in becoming a part of the hot mess that is **mathNEWS**, come out to our disorg meeting on September 6<sup>th</sup> at 6pm in MC Comfy. There'll be posters around MC to remind you.

The Editors

## NOT SO STRAIGHT AND NARROW?

If you are a UWaterloo student and you identify as 2SLGBTQIA+, there is a space for you! In the Student Life Centre (SLC) in room 3103, you will find the Glow Centre for Sexual and Gender Diversity! This student-run service offers a safe and welcoming environment for all students at the University of Waterloo.

The door is open from Monday to Friday from 10am until 4pm, just drop in and hang out! There are also activities run at 7pm from Monday to Thursday, and also an occasional term-specific event!

You can find more information about our events on the [@uwglow](#) Instagram page, or email [glow@uwaterloo.ca](mailto:glow@uwaterloo.ca) with any questions about the services we provide.

The Glow Centre for Sexual and  
Gender Diversity (Glow Centre)

## TAKING A MINER

One smart thing you can do with your free time is kidnapping. There are two common ways of taking a miner at UWaterloo — heh, well, maybe three, but this column is far too short for such interpretations. One involves kidnapping, while the other, umm, also involves kidnapping. It's really all about who you kidnap. I am not a big fan of kidnapping the young, so I'm going to recommend you take a grown-up miner. Of these, there are several kinds available for the taking. Uranium miners tend to have radiation issues, so try to keep your distance. Coal miners are typically less biologically dangerous; however, there is the mess issue. Those who work in sepulchres or open-pit mines don't usually get covered with as much muck and mess, so I find them the best after the act of taking a miner, but getting them is awkward. Miners who work in shafts can be taken from their shafts a lot easier than kidnapping open-pit workers. So, in conclusion, kidnap guys who work in clean shafts. Or Shaft.

Davey R. Adams