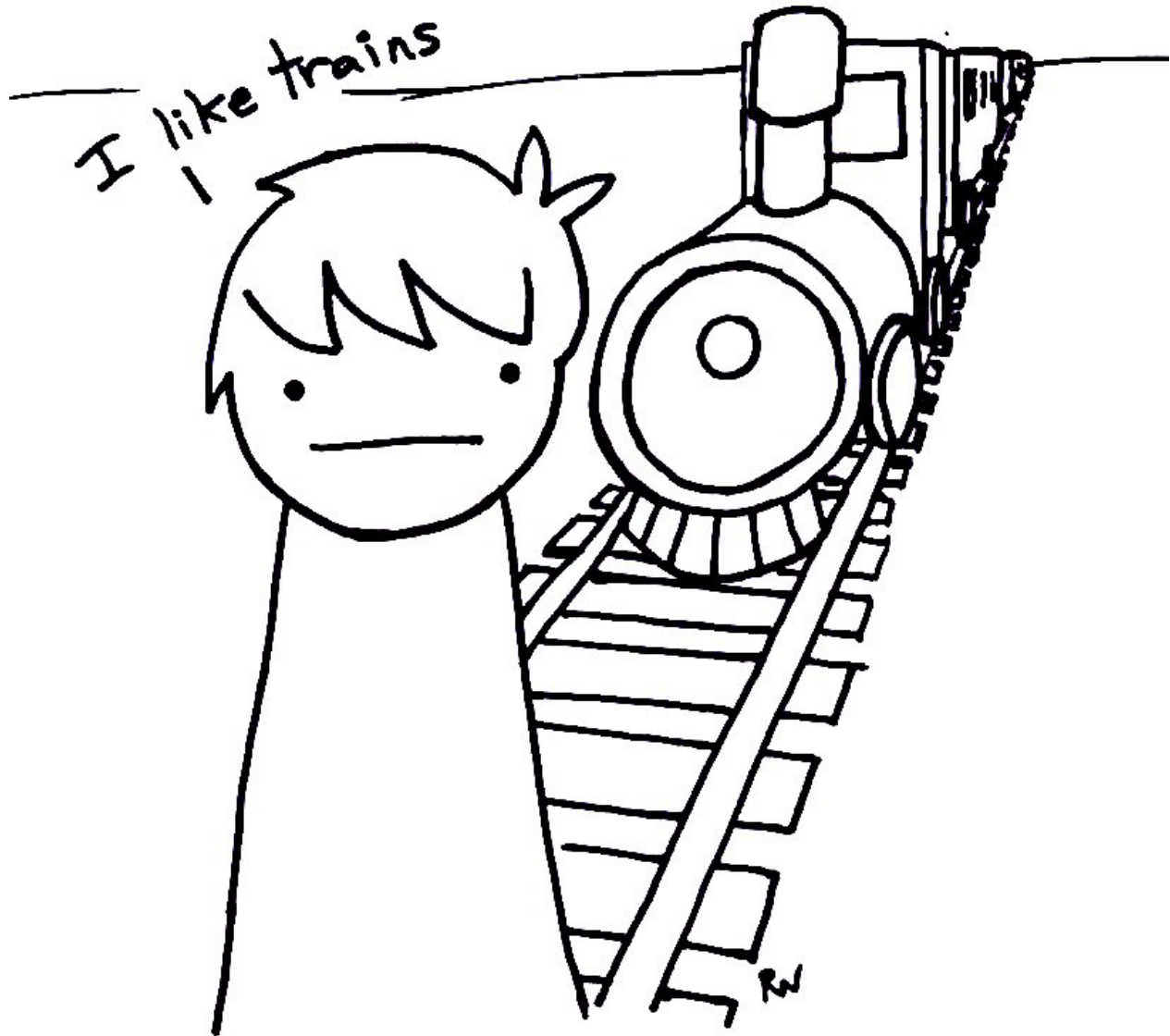


# *math* NEWS

Volume 120, Issue 2

Friday October 5th, 2012



Not for use as a poster in the Real Time lab



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## lookAHEAD

### mathNEWS

Oct 5	Issue 2 hits the shelves
Oct 15	Production Night #3
Oct 19	Issue 3 hits Issue 2, arrested for assault

### MathSoc

Tuesdays	Games Night in the Comfy
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### University

Fridays	Cheese Club
Oct 8	No Classes
Oct 13	SAP Code Slam
Oct 8-9	Fall 2012 Convocation
Oct 26	Deadline for 50% tuition refund
Oct 31	MEF funding request deadline

### CECS

Oct 26	Rankings Open
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### Misc

Oct 5	World Teachers' Day
Oct 8	Thanksgiving
Oct 9	Turkey Hangover Day
Oct 10	Oh-God-There's-Still-Turkey Day
Oct 11	I-Never-Want-To-See-Another-Turkey-Again Day
Oct 12	Ham Sandwich Day
Oct 31	Halloween
Nov 1	Cheap Candy Day

## New Blog for CS Student Announcements

The Cheriton School of Computer Science has put together an informal blog for student announcements at <http://csatuwaterloo.blogspot.ca/> since the news servers are no longer being widely used.

Carolyn Kierstead

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*Founded 1973*

*mathNEWS* is normally a fortnightly publication funded by and responsible to the undergraduate math students of the University of Waterloo, as represented by the Mathematics Society of the University of Waterloo, hereafter referred to as MathSoc. *mathNEWS* is editorially independent of MathSoc. Content is the responsibility of the *mathNEWS* editors; however, any opinions expressed herein are those of the authors and not necessarily those of MathSoc or *mathNEWS*. Current and back issues of *mathNEWS* are available electronically via the World Wide Web at <http://www.mathnews.uwaterloo.ca/>. Send your correspondence to: *mathNEWS*, MC3046, University of Waterloo, 200 University Ave. W., Waterloo, Ontario, Canada, N2L 3G1, or to [userid.mathnews@student.math.uwaterloo.ca](mailto:userid.mathnews@student.math.uwaterloo.ca) on the Internet.

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The editors: Turkey (Lenny Morayniss), Stuffing (Sacha Koohgoli), Cranberry sauce (Will Morrison),

## mastHEAD

### Wherein Thanks is Withheld

With the long weekend coming up, we thought about being thankful, but it turned out that we're all horribly bitter and jaded, so this issue's *mastHEAD* question is "What aren't you thankful for?" Below are the answers of actual writers who showed up to production night, rather than some editors with MPD.

ChairmanS(how?) ("Engineering/FEDS/SSO"), MustardMap ("Hitler"), Program\_Limbo ("Our culture's obsession with comparing things to Hitler") theSMURF ("Godwin's Law"), Egadd ("Awkward boners"), psychomath ("Calculus of variations"), Shay Blair ("Hilbert system"), waldo@<3.LE-GASP.ca ("Unhappy and debilitating genetic conditions that put you out of service for a week"), BlueberryMuffin ("Parsnips"), !ED ("Periods"), Element 118("the death of Schrödinger's cat"), El Jengibre ("Geese, damn ungrateful bastards..."), Soviet Canadian ("Screaming fangirls, or fanboys for that matter"), Ice Nine ("Romantic attraction"), Scythe Marshall ("Functional Analysis"), Zethar ("tΦ"), ObjectED ("Kafka"),

Concealed ("Unsupported Unicode")

## The Art of Filler

### A guide for editors of the future

All good *mathNEWS* editors soon learn the art of filler. Filler consists of things that are not meant primarily as content, but designed to fill blank spaces and give a visually appealing look to the page. Arguably, this could include most articles, but we'll assume for now that filler is created by the editors during layout. There are several different categories of filler, and each serves a specific purpose.

Some filler is designed to fill entire pages or columns, such as when the submitted articles have been arranged, and an odd number of pages are filled. Since it is hard to generate spontaneous filler in large quantities, editors can use a variety of tricks instead. One such trick is the liberal use of puzzles taken from the Internet. These can provide readers with something to do during That Class, arguably more efficiently than actual articles could. A second option is to use an *elseWHEN*, and steal content from old issues, possibly adding some rambling to make it fit better. Another option that generally takes up a page is *horrorSCOPES*, which is also a handy way to rid oneself of some excess rage and bitterness.

Another category of filler is designed to fill spaces at the end of columns that can't reasonably fit an entire short article. The usual solution is to resort to a few lines of header-styled text, perhaps mentioning the location of the BLACK BOX and what to put in it, or other public service announcement type information. Short jokes are also acceptable.

The final type is the short article. This consists of an editor thinking of an article topic, then writing until the desired space is filled. Editors don't like doing this because it involves creativity and effort, something which we try to convince other people to do during production night so we don't have to work as much. However, it is usually the best option for filling medium sized spaces, such as that taken up by this article.

Concealed

## VPE Sez

Hey Mathies,

MathSoc has a whole bunch of events planned for you this term! Next week is Oktoberfest and what better way than to celebrate than with your fellow mathies? Look for posters up around MC for more details on this. With Halloween fast approaching, don't forget to start thinking of your costume ideas now! MathSoc will be holding a whole bunch of spooky events with tons of free food and giveaways!

In November, look out for this term's Pi Day, our annual Charity Ball (psst. this year's theme is Casino Night!) and at the end of term be sure to check out Pints with Profs. Make sure to come out between study sessions and check out some awesome events!

Ty Rozak  
Vice President, Events

## Exec Sez

Hey everyone,

There was a major budget meeting on Tuesday, and we cleared the budgets for the clubs and services after a lengthy discussion. So now the clubs have the funds to do your events this term!

In other news, we're too tired to actually write a Sez (aside from our VPE, who is super awesome and fantastic), and we have complete trust in the editor who is writing up our Sez at the moment. We're sure that it'll be fine, and they won't print a link to a super-embarrassing video of us.

The MathSoc Execs  
exec@mathsoc.uwaterloo.ca  
<http://tinyurl.com/y8ufsnp>

## VeloCity Sez

VeloCity, <http://velocity.uwaterloo.ca/>, originally a Residence program at the University of Waterloo, has evolved and grown immensely in the last year with the launch of two additional new programs: VeloCity Garage and Velocity Campus.

This term VeloCity Campus is launching on University of Waterloo turf, with a clear message that entrepreneurship is for all students, not just techies. VeloCity has seen outstanding success and demand for students to test drive their business ideas in an environment that cultivates experiential learning.

The program is hands on, explorative, and is a starting point for connecting students with each other. That lightbulb moment happens during the exchange of ideas and execution of those ideas.

This is not just another incubator or accelerator program. Velocity Campus is different because it is specifically focused on providing entrepreneurial resources for all students at the University of Waterloo. The program is launching with the set intention that it is open to all students and faculties on campus.

By providing a sense of place for innovative business ideas, students are able to test drive and validate entrepreneurial concepts with a realistic understanding of idea validation. Typically the startup scene implies an entrepreneurial idea with a tech factor, but Velocity Campus boasts no restrictions on business ideas. Whether you're after an accelerated tech idea or a lifestyle business, the program is aimed at providing the resources to get you there.

## Academics and You

*Everything is Relative*

**IMPORTANT DATE:** Enrol for Winter, Oct 8 to 13

Midterm season is around the corner. It never seemed to end when I was a student; and it was almost never MID term. This is your opportunity to see exactly how good or bad things are going. The midterm test is a true reflection of how well you are doing. Start with the following assessment.

1. What is the class average?
2. What is your grade?
3. If your grade is more than the class average, you are doing well! Remember that admission grades are around 85% but first term grades are around 70%. Expect a drop.
4. If your grade is less than the class average but more than 60 then it may be time to pull up the boot straps. Head down to the tutorial center on the 4th floor of MC or drop by the advising office in MC4023.
5. If your grade is less than 60% it is time to get serious. A grade between 50 and 60 is a pass but will not let you progress to the next course. A grade of less than 50 is a fail. It is usually better to drop a course than fail. Run, don't walk, to the advising office. Too many grades like this in your first term may get you removed from the faculty.

No matter how you are doing, you are not alone.

Best wishes on the term,  
Riley Metzger, Director of Year 1 Studies  
mathadvisors@uwaterloo.ca

Each term, the program covers a wide variety of topics related to entrepreneurship on a weekly basis. Attendance to any of these resources is open to all students; there is no cap on participants unless the venue of the event has limitations. VeloCity Campus is looking to bring in notable speakers to explore entrepreneurial ideas, and each week the topics build on previous concepts to provide a comprehensive understanding of entrepreneurship as a whole.

Some may ask how VeloCity Campus may affect entrepreneurial academic courses being offered on campus, the intention is for this level of experiential learning to compliment the academic experience. Similar to how a business club/society or co-operative work term may exist at university, VeloCity Campus looks to provide an experiential learning environment that contributes to a holistic understanding of entrepreneurship alongside the value that academic learning brings.

A key bonus: the ideas that you create at the University of Waterloo are your own. The University of Waterloo has an inventor-owned idea policy, which means that any ideas you generate while at the University have no ownership ties to VeloCity or the University of Waterloo. You can worry less about who owns what and focus your energy on your business. VeloCity Campus provides the ideal environment for students to follow their passion for solving business solutions; there are no limitations what these may be. Welcome to unlimited idea generation.

VeloCity

## How to DC++ Like a Boss

*Because torrenting is too slow*

DC++ is a file-sharing application for people on-campus, allowing them to share information at a rate higher than would be possible from normal internet connections (as this uses an “intranet” protocol that allows high-speed transfers). While it is usually encouraged to share notes (but not homework), its secondary purpose is for the free and easy access of information to other users, such as music, movies, and games. For those of you that do not live in residence, you do not have to read any further since DC++ will not apply to you. Sorry!

Moving forward, this article assumes you use a laptop or desktop computer and some sort of wired Ethernet (RJ45, CAT5, etc) connection into a residence or on-campus location. While the following steps will work for wired connections, nothing is guaranteed for wireless connections, so please don’t complain or make weird whining noises when you figure out that you can log in but not use anything outside of the chat functions of DC++.

The following steps vary greatly if you have a Mac laptop or desktop. While I suggest booting into your Windows partition now, the steps for Mac will work, albeit on a different software application. In Windows, a DC++ application like ApexDC++ will work fine (Shakespeare for Mac) – and for all intents and purposes, should be preferred over others such as DC++ or StrongDC++.

To set up, you’d have to visit [www.uwdc.ca](http://www.uwdc.ca); ensure that you “share” at least 500MB of material (random 1.5 hour-long video files will usually run 700MB if it is DVD-quality), as long as it is not illegal or indecent (i.e. pornographic) content. To share, you need to go to File -> Settings -> Sharing, and click on the folders that you want to give other users access to download from you.

To download from others, double-click on a user in the right-

side “users” bar. Note that the bottom “status bar” should be saying “Downloading File List”. If nothing occurs after a few seconds, you probably can’t connect to them. This is likely for one of four reasons.

1. Your ethernet connection is not the primary connection — disable your wireless adapter or disconnect yourself from eduroam and restart your ApexDC++/Shakespeare client.
2. You haven’t shared enough content. Notice that you need to share at least 500MB, and not less (but it’s nice to share – sharing is caring!), otherwise you’ll get nasty error messages and a boot from the server.
3. Your firewall or anti-virus is blocking access to external locations. This is extremely unlikely for Anti-Virus programs such as AVG and Avast!, as they have solutions built-in to allow the firewall bypass. However, if you use the default Windows Firewall and nothing else, you may have to create an exception in the firewall to ensure your being able to connect to other users. Again, after you disable the firewall or enable the proper exceptions, close your client and restart it to gain access.
4. Your computer hates you. In this instance, you’re probably better off buying a better computer. One that isn’t Mac, and one that actually respects you as the intelligent, awesome human being you are.

I guess if all else fails, you can always blame the Internet Demon, pray to the goddess of the Internet Benzaiten (also the goddess of music), light seven candles, and pray for the quick banishment of the demon that possesses your system.

Until the next issue, I’m off!

ChairmanS(how?)

## In Case of (Computer) Emergency, Break Glass!

As a huge computer techie, there’s been a noticeable influx of people going into Campus Tech to buy a new laptop when their old one is perfectly fine and working – just not in the order that the user expects. While buying a laptop is definitely an “instant gratification” response, you’d be best to avoid these types of people, especially if they’re constantly ungrateful of their property.

“Delayed gratification” is the school of thought that essentially writes “those who are patient are rewarded greatly”. Like anything else in life, understanding computers takes time. Sure, some computers are better than others (PC > Mac, every time), but that doesn’t really mean that we can’t learn to love other brands or other types of computers, regardless of their faults or problems.

The most common computer problem that I’ve seen thus far is the inability to connect to wireless networks; in particular, Eduroam and other providers on campus. The two things you need to immediately check upon encountering this issue is your adapter setting (ensure your wireless card is actually on, especially before complaining to other people about how crappy

your computer is). The second thing you should be checking is your log in credentials – did you actually use <userid>@uwaterloo.ca and your NEXUS password, or did you just type in <userid> and “accidentally” forget to plug in the oh-so-important “@uwaterloo.ca” part.

As far as I know (I used to be a part of it), ResNet will provide help to those who need it, but only under the assumption that the person is actually in need of help, and not just floundering because of laziness or ignorance. If the problem can be Google’d and solved, ResNet should not have to deal with it. If the problem cannot be solved via a simple Google search, please don’t waste other people’s time, especially at your own expense. You clog up the help channels for those that actually need help, and anger people like me when you ask dumb questions that a simple Google search (taking literally five seconds) would answer. Inconvenience is not a valid excuse here – if you’re lazy or just plain ignorant, it’s seriously a wonder you still attend a higher-level education institution such as the University of Waterloo.

Angering newbies since 2009,

ChairmanS(how?)



## Re: Om nom nom

!able wrote a pretty comprehensive article on where to eat food on campus. However, I have a few issues with it.

- The article did not do **ML** justice. Yes, they have sweet potato fries (all the time, and not just when they feel like it!), but they have the best burgers on campus, and excellent sandwiches (fresh ones, not the prepackaged stuff you can get elsewhere). I particularly enjoy the toasted Western, which is basically an omelette sandwich.
- **CEIT** also has baked goods, which are nice. But they have grilled cheese sandwiches! And French toast! Sometimes with Nutella filling! And syrup! My pancreas cries a little every time I get French toast and top it up.
- **St. Jerome's**. Their cafeteria is open to the public (they take cash and debit, but not Watcard), and it is quite possibly the best food there is on campus.

(OK, so now that I've emphasized other places to eat at, will Festival Fare now be less crowded at lunch?)

!bob

## A Review of My Co-op Job: Part Deux

At the end of my last term I wrote an article about my co-op job, and someone told me that they liked it. I am seriously out of creative juices today, so I'm going to pre-emptively cash in this freebie and write about my current job based on my first month, because holy shit it's been insane.

Here are some of the things I've done at this job so far. Most of them had some purpose and were aimed to teach us something. Of course, I'm going to strip the context so they sound more awesome. Here's what we did, literally:

- Build things out of Lego
- Build a computer bag using construction paper, tape, and garbage bags
- Go to the Royal Ontario Museum (ROM) in Toronto
- Have a scavenger hunt at the ROM
- Go to a Blue Jays game (we actually voted to not attend the actual game because it would result in us coming to Waterloo really late. It's the opportunity that counts though)
- Probably more that I forgot.

Fuck yeah.

Also a lot of foosball,  
theSMURF

## I'm Tired of This

I'm tired of people I like getting hurt. I'm tired of abuse, tired of "well, what did she do?", tired of the fact that people have to get to the point where they can't trust anyone.

The fact that I know multiple people who have been assaulted or abused pisses me off. And I know that it pisses a lot of people off. How can we stop this? Why do people think it's okay to do this shit.

I want it to stop so badly, and I feel so impotent in my inability to protect those I care about.

Ice Nine

## New Inter-faculty Program Announced

The University of Waterloo announced that they are in the planning stages for a new program that would be part of the Math, Arts, and AHS faculties. Students would take Arts courses such as Film Studies to learn skills for production, as well as Sociology courses to understand human interactions. AHS courses would provide students the knowledge of human physiology, and CS courses are planned to teach the basics of website management. The Math faculty would also provide Math Business courses to provide skills in managing and running a successful business.

The new program, currently referred to as Sexual Media, and Unified Technology, or SMUT, has been well received among the porn industry, the anticipated destination for its future grads. CECA is reportedly in contact with Hugh Hefner and is evaluating the possibility of this becoming a co-op program.

Concealed

## QNC Opening Marks Milestone for Cutting Edge Construction

Friday September 21<sup>st</sup>, 2012 was a momentous day for not only the University of Waterloo but also the region of Waterloo with the opening of the long awaited Mike and Ophelia Lazaridis Quantum-Nano Centre (QNC). With it, the University is finally able to distance itself from the incredible gaffes and embarrassing mistakes that have plagued the building during the planning and construction phases of its existence.

The building was first originally designed without any doors, out of fear that feral electrons would escape the facility through an entrance and terrorize the campus. After being proved that those concerns were weightless, the original design was scrapped in favour of one with resealable holes in the walls to allow the physicists to leave the building at the end of the day.

The next error occurred midway through the construction season in the fall of 2009, where some adventurous first years climbed the fence surrounding the site and fell into the neutron generator (filled with battery acid) that was prematurely placed in the basement. They were all charged, and construction was delayed yet again.

The final mistake happened just days before the grand opening of the QNC. Organizers were preparing for Stephen Hawking's arrival when they noticed that the building was not wheelchair accessible. As a quick fix, they equipped Mr. Hawking's wheelchair with a set of jetpacks, but have since closed the building again after the opening to properly install ramps and conveyor belts to carry both the physically impaired and the morbidly obese.

!ED

## A Message

There once was a boy on a bus,  
He made an awfully big fuss,  
Because an old lady,  
And her daughter's baby,  
Asked for his seat on the bus.

Don't be a Danny Douchebag. Give up your seat.  
This message brought to you by omggrt.ca

## Rainbow Mathies 22

### *What is Rainbow Mathies?*

I would like to apologize for my absence last week. With my Monday night class, writing this column will be a challenge, but I am committing that this column will appear reliably from now on. If I don't fulfill this, feel free to email me and cruelly remind me of my failings. Cpisce?

The beginning of fall term is such an exciting time. New faces refresh our campus, and the hustle and bustle serves as a welcome change to the quiet of the summer term. To some readers, this will be their first taste of my column. To some others, it will be their second taste, specifically those that read the reprinted article in *mathNEWS*'s frosh edition. As much as I loved that article, it was an uncommon topic and wasn't very typical. I want to take the time and provide a proper introduction to this column.

So what is Rainbow Mathies? In its simplest terms, this is a queer issues column written in the context of and from the perspective of the math faculty. It was established almost two years ago, after an "It Gets Better" article that I wrote received a strong response from both students and school administration. I received stories of struggle, of strength and resilience, but also of pain and of silence. Rainbow Mathies tries its best to cut that silence by having a regular voice, talking about things that math students don't often get the chance to talk about.

This broad perspective offers a lot to be interpreted, so what is this column more specifically? Well, this column is my own, personal voice, as well as the voices of those who has shared their stories with me and have allowed me to include them. The queer experience is a diverse and dynamic one, and I understand the challenges inherent with trying to represent it universally. Rainbow Mathies is also, at its core, advocacy. The spirit from which it was created insists that, no matter the topic, tone, or context, it will ultimately try to influence and inspire change. This means that sometimes ideas shared through these words may be controversial, but when they are I will be trying to share them with respect and tact. Finally, Rainbow Mathies is open.

## N Things You Should Remember During Midterm Season

- Distractions are never a valid substitute for studying.
- There is usually a better way to absorb the material other than sleeping on it.
- While naps are always a good thing for remembering material you've just gone over, it's counterproductive to continue sleeping if you're not yet ready.
- Re-doing assignments or checking solutions to old midterms is only useful if you actually have long-term memory.
- "Sleeping well" doesn't mean sleeping twelve hours two days before the midterm, then not at all on the night of.
- Studying is not a valid excuse for skipping meals, nor is it a valid excuse for becoming anti-social. Study groups are sometimes more productive for active learners!
- There is nothing wrong with liking trains. Or saying hello to mine turtles. As long as you have a sense of humour, that is.

ChairmanS(how?)

While it can sometimes be difficult to do so, I try to tackle topics in such a way that their relevance and writing style is as applicable to readers as possible.

With all that said, one of life's most valuable lessons is that things are often better defined by what they're not, rather than what they are. So what is Rainbow Mathies not? Firstly and most importantly, this column is not at all unbiased. I am an individual, with my own identities and my own experience to work with. These experiences and identities colour everything from the range of topics I choose from to the nitty-gritty specifics of the content. While I try as hard as I can to keep these biases out of my writing, sometimes they seep through, and I'd like to apologize for that from the get-go. I will try to get feedback from others about topics that are especially outside of my expertise. This column is also (usually) not fact. It's an opinion piece, one that may be influenced by current affairs but will focus mostly on personal reflections. Hopefully you will find these opinions well-reasoned and valuable, even if you happen to disagree.

If you are queer-identified, and are looking for someone to talk to or for supportive allies, there are always resources available to you. You can learn more about GLOW centre and its offerings, including a phone line at [www.knowyourglow.ca](http://www.knowyourglow.ca). Counselling Services is always available to you; their offices are open 8:30-8MTWTh and 8:30-5F, located in Needles Hall across from Student Awards and Financial Aid. If you need support and assistance immediately, you can call the KW Distress Line at 519-745-1166. If you'd feel more comfortable speaking with someone from a queer specific service, please contact the LGBT Youthline at 1-800-268-9688. Finally, if you have any comments and concerns about this column, including ideas on topics you'd would like to see, you can contact me (email in the signature).

Join me next time when I give my yearly call to action.

(define this (not cool))  
dtaleman@uwaterloo.ca

## Makers of Duke Nukem are at it Again

3D Realms, creators of Duke Nukem are at it again as they try to crowdfund a new First Person Shooter. They'll be using Gambitious, a European version of Kickstarter for video games with the option of either pledging for rewards, or pledging for equity stake in the game's success (crowdfunding equity is illegal in America though [and I'm unsure of the laws for Canada]). They are doing this completely straight faced after the ridiculous screw up that was *Duke Nukem Forever*. To note: 3DR fired their whole development team in the time before they lost DNF for a) taking too long and b) squandering their investors' money, so who is going to develop this? It's possible that with Guild Wars 2 having come out recently, Scott Miller (the founder of 3DR) needs some cash for a new gaming rig and food for the 6 months he'll be playing.

Oh, and let's not mention that *Earth No More* was originally scheduled to come out in 2009 (delays start before it even began. Comforting), but was held up due to copyright lawsuits.

3DR wat r u doing. 3DR. Stahp.  
theDreamer

## The Mechromancer

Gamers were delighted to hear of the release of Borderlands 2 as it would refresh the RPG-shooter genre by providing exciting duller-than-life graphics and four new identical copies of existing character classes. Unfortunately for the gamers, Gearbox Software also announced the ‘Mechromancer’, to punish pre-order customers for trying to get rewards through financial commitment. This ‘Mechromancer’ class deletes all of your characters once you play as it, and forces you to unlock them as a 5% drop from the final boss. If you are lucky, the boss may also drop a Mechromancer class that spreads the joy to non-pre-ordering players.

When playing as the Mechromancer, every skill helps to specialize your character. +10% melee damage for -10% gun damage would suck on any other character but on the Mechromancer; it’s multiplicative! That means at 5 ranks you get +61% and -41% to those respective stats – much better than any other character. If this feels weak, take the complimentary skill on the other side of the tree, also multiplicative. I have not done the math but it’s probably a big number.

*It’s not all doom and gloom folks:*

After unlocking all four classes again you gain 1,000,000 badass rank and unlock a beta key to Gearbox’s new MMORPG, Borderlands Empire, where you play as Hyperion and try to ‘persuade’ your competitors out of business. It’s also the only way to unlock the skin customization to have Handsome Jack’s real face across your character’s chest.

The Mechromancer will be unlocked October 19<sup>th</sup>.  
~Element 118

## Geek Meets Girl at D&D Game

*Somehow Convinces Her to Date Him*

In a startling upset of traditional scientific theories, a D&D game recently lead to a nerd getting a girlfriend. According to the witnesses of the successful experiment, the nerd spent most of the day attempting to flirt with the only girl in the gaming group and eventually won her over with an offer to watch a Joss Whedon movie. The game in question, a 4<sup>th</sup> edition game played for 5 hours on a Sunday is already being disputed by the scientific community as flying in the face of numerous previous experiments under the same conditions by these scientists.

Geoffrey Gyax, one of the leading scientists arguing against the veracity of these results had this to say: “Obviously these results are highly contradictory with a large body of previous experimentation. I’ve personally performed this experiment several times, and the expected result is always that the lady in question finds an excuse to leave the D&D group and stops talking to me.. I mean the subject. Several other scientists have similarly independently confirmed these results. Something in this experiment is clearly off.”

The nerd in question could not be reached due to being ridiculously giddy about meeting a girl. He was last seen lording it over his friends at their customary *Magic: the Gathering* game.

The Captain

## Eternal Clock

For all of the people that have been running around like headless chickens at the impending apocalypse: calm down. Though misrepresentations of the Mayan Calendar have led us to believe that this December will bring with it the end of time, there is still hope for humanity.

It comes in the form of the eternal clock, an important conceptual breakthrough; a space-time crystal that would have the ability to keep time forever, beyond the end of the universe. This four-dimensional crystal would be similar to a conventional 3-D crystal, which has structures, such as snowflakes and diamonds, whose atoms are arranged in repeating patterns. However, whereas a diamond has a periodic structure in three dimensions, the space-time crystal would be periodic in time as well as space. The aim would be to create a ring of charged particles, with the resulting electromagnetic forces causing the structure to rotate perpetually. Since in its lowest quantum-energy state it has no entropy, even the heat-death of the universe could not increase it.

Thus, though the universe may indeed reach heat-equilibrium, and the earth as we know it will cease to exist, time itself will not end.

So keep calm, and carry on.  
psychomath





## How to Get a Girlfriend

As you've likely noticed, there are not very many girls in our beloved mathematics faculty. And if there are, they're mostly Asian girls because this school has so many Asians in general. Because meeting girls can be such a rare occasion, you need to ensure that you catch your prey on the first prowl, so to speak; and so I present a guide to snagging your very own girlfriend.

### STEP ONE: Take an Arts Course

Very few girls take math or science because it's too difficult for them, so to find more girls, you will have to travel outside of your faculty. Ideally, you should take an arts course on something within your strengths, such as your native language (they'll never know), Music 101 if you've already spent a few years playing an instrument, or something similar.

### STEP TWO: Pick a target

You should be sure to attend every class. Then by your first week, some pretty girl should have caught your eye. If you find them all unattractive, consider attending a different section or taking a different course altogether. Even if you don't, make sure she's not too much like your mother, sister, or someone else you love and care about.

### STEP THREE: Impress Her

Offer to help her with the course material so that she'll give you her contact information. Given an opportunity, impress her with your mastery of the material. Be warned, however: if you do it too often, she may see you as a brother-figure, placing you in the dreaded friendzone, which is the worst thing that could possibly happen to a guy.

### STEP FOUR: Your First Date

Arts courses usually come with frequent quizzes or assignments. Now that you've impressed her, you can offer to study with her outside of classes. Don't invite her to the Comfy Lounge or the C&D – try a casual and non-nerdy setting like Williams where you can chat and work over a cup of coffee. But mostly chat. If she talks about ridiculous topics like vegetarianism,

environmentalism, gay rights or feminism, just nod like you totally understand.

### STEP FIVE: Getting Closer

The first date will open many new doors of opportunity. You can now ask her out more casually and have more topics to talk about (even if you don't care for most of them). If she takes the initiative to speak to you, then you have this one in the bag; initiative means definite interest, since girls never otherwise take initiative for anything.

Start talking about relationships and see if she reacts; you don't want to be outright or, again, you might end up in the friendzone.

*A side note:* If somehow this guide wasn't sufficient in locking down your target and she makes it clear that she only sees you as a friend, don't give up. Keep talking to her and offering to help her with her work. Tell her that, regardless of her feelings for you, you'll always love her and be by her side. Eventually she'll run straight into your arms.

### STEP SIX: Making it Official

If you've gotten this far, you can probably make it official. Invite her for a heart-to-heart talk, and make sure to do it in person. It's more romantic in person, and girls love a romantic guy. If you gaze into her eyes and feeling a nauseating churning in your stomach or a knot in your chest, don't be alarmed; it's perfectly natural. It probably means that you've completely captivated her, and she is completely convinced that you're a great person, even though you started all of this on the premise of "getting" a girl with which to fill the void of your romantic and sexual life.

As her eyes meet yours, you have to make a choice: either you value her faith in your humanity, still redeemable, and tell her the truth, or you go on as you always have, believing that girls are things to be "gotten", and get your girl.

Good luck keeping her.

NOTANGRY

## Real Life Terrifies Former Student

### *Desires Return to Academia*

After some time in the real world, a former Waterloo student is regretting his decision to age and eventually move into the real world. The student had the following to say to explain his desire to leave the real world and return to the warm cocoon of school life:

"Man, real life sucks you know? Did you know that there's this thing called a job you're actually expected to regularly attend? It's not like a class either, you can't just get the notes later. How crazy is that? I thought the having money thing would be nice too, but now that I don't have to subsist on Ramen and ketchup packets even dinner is an ordeal. You've got to cook things! Who came up with this system?"

The student was later seen rambling about the lack of *math-NEWS* equivalents, and described the political system that exists in the real world as somehow even sillier than a FEDs election.

The Captain

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## N Aspects of Life as a Computer

*Waldo turned into a computer and was lost in the internet for a day!*

- Humans are STILL baffled by technology
- It's very dizzying being carried around everywhere by humans
- Computer screens end up having nice views every now and again depending on where they end up
- Even if the screen is a limited size, there IS a lot you can see and do in the screen: dance, sing and even get lost in the net when things cut out or freeze
- Internet lag is annoying, but can be hilarious at the same time
- It is entirely possible to attend an event without even being in the same city
- Computer screens catch all the germs of the sick, so clean your screen and keyboard often enough
- Computers can certainly cause quite the scare when humans forget they are there and the computer speaks up (scary things computers, scary things...)
- Computers still exist and would like to be included in everyday life, so don't forget about them!

waldo@<3.LE-GASP.ca



## The News, Foreshadowed

Greetings. I write to you tonight not as a *mathNEWS* writer, but as a concerned and worried citizen of the world. If it hasn't already been deemed obvious, the aliens that landed yesterday morning in Mexico City turned hostile just after noon today, effectively destroying the population in mere seconds. They have mobilized and are heading towards the capital city of London. While the world you know now may have separate delegations with separate countries, London is located on the remote island of what used to be called England, as a part of the greater Federation in which we now exist.

The "United Federation of Earth" met later that afternoon, deciding on a counter-attack strategy. It was concluded that while a frontal assault may be costly, it would be the only way to stop the onslaught and the impending destruction of the cities between Mexico City and London, effectively halting the opposing force. With mass numbers of automated fighting robots (AFR for short), the alien invaders were stopped in their tracks

at the edge of Newfoundland, as a seemingly desperate battle halted at a standstill.

After the ceasefire ended and the treaty was confirmed, the alien race's motivations were revealed. The galaxy they came from apparently ran out of cheese, and panicking for the livelihood of their people they launched an invasion on the unfortunate defenseless metropolis of Mexico City. Thankfully the aliens have actually harnessed the powers of reincarnation and time travel, so not only has Mexico City been restored, but the aliens have traveled forward in time to ensure their safe return to their own galaxy with the required amount of cheese to sustain their peoples.

While it was a bizarre moment for the wondrous Earthlings, it was yet another adventure for the wanderers of space, who continue to travel to this day back towards their galaxy that they set off from four-hundred years ago.

ChairmanS(how?)

## Office Pranks

Applying for all the jobs on the Jobmine have made me reminiscent of my last work term. I had an awesome work term. I worked in a very chill office environment with awesomely chill people who pranked the crap out of each other. During my work term, I became pretty proficient in the art of the prank. When I had nothing to do or when the Reddit server was down (I'm still mad at you Obama), I did a lot of research on the art of pranking. There were so many excellent pranks that preceded me and so many that I wanted to do but lacked the time and funds to accomplish. If you happen to get a really cool co-op job where pranks are accepted (or even encouraged), here are some ideas:

- **Desk Domination:** The premise is simple: cover the desk (or a key part of their desk) with something that will completely impede your coworker until they clean it up entirely. Optimal cleanup time is around 45 minutes (so don't go crazy). One of the most amazing examples that I saw of this was a computer screen covered with a pixelated nyan cat made of only the sticky part of post-it notes, cut into squares with extremely sharp corners. Laugh in evil glee as your coworker's undernails begin to bleed when she's attempting to peel off the evil sticky pixels one by one. This particular variety of prank can range from covering part of the desk (for instance, a computer screen, as above), to covering the entire desk (I covered a desk in \$50 worth of candy and icing; it was both destructive in its stickiness and tasty in composition) to completely impeding the coworker from entering the workspace (for instance, rigging a net around the desk and filling said enclosed desk with balloons. Bonus: fill balloons with glitter for glitter bombs). Another version of desk domination involves significant humiliation, but no impediment to actual work. For instance, changing the "theme" of their desk to say, Hello Kitty or pretty princessing it up. Or, another variation that causes significant impediment is to mess with each individual item in the desk, such as encasing everything in jello or wrapping everything in tinfoil.
- **The prank that keeps on giving:** This prank involves

hiding many of the same thing (or very similar things) in places where they will be found periodically over the next several months. The co-op student from the term previous to mine had printed out hundreds of postage stamp-sized pictures of Ridiculously Photogenic Guy and put them everywhere. Even between the sheets of Kleenex in the freaking Kleenex boxes. Bonus points if it's something your coworker HATES. Hear them rage as they daily find whatever "presents" you so graciously left for them months and months ago.

- **Destruction?:** Making it appear that you have destroyed something of your coworkers. These pranks are a little more difficult, since you need to find an IDENTICAL item to destroy, for the sake of effect. But it is totally worth it, because it is incredible to see someone freak out at an item of theirs being destroyed, especially if it's expensive. A simple example: get a keyboard identical to your coworker's current keyboard. Shake a little bit of soil over the keyboard, followed by catgrass seeds. Water liberally for several days. The catgrass will grow really quickly and overwhelm the keyboard.
- **Mindfuck:** Mess with your coworker's mind. It's that simple. This works especially well if they're anal retentive and tend to keep their shit in a specific place. For instance, if they keep their mug in one specific location, move it ever so slightly. As time increases, move it a little more. Fervently deny any and all involvement. Watch the slow descent into insanity.
- **Extreme:** In my research, I came across some pretty extreme pranks. We're talking multi-day, significant investment type pranks. One involved dry walling over the door to the manager's office. Another involved moving the entire contents of a cubicle into the washroom. I would NOT recommend a prank this extreme on your work term. Wait until you have a contract.

Prank well, my friends.

El Jengibre

## Feedback to Sonnet I

*MathNEWS* has a **BLACK BOX** which thrives on feedback to written articles; in the recent eons one brave soul has used said box to this effect [It also feeds on quiz answers, articles, **prof-QUOTES**, **gridWORD** solutions, **mineCRAFT** names - the list is endless -*ObjectED*]. I know not the identity of this brave soul, and I commend you for your determination to overcome this ethereal barrier betwixt the shadowy writers and the populace. The readers who actually read *mathNEWS* from cover to cover, and thus will be reading this and Sonnet II, may be interested to know that for this term I have committed myself to writing a set of sonnets in which I publish at least one per issue. When my muse strikes it is but an hour or two of work, but alas these eyes of mine befit not for mistakes made as a veil of mock perfection fogs the vision of its author. I entreat you all to please (continue to) provide feedback on my writing, or that of my other fellow writers, such that *mathNEWS* as a whole becomes a better publication [it's hard enough to read Zethar's writing at the best of times. None of us are equipped for Sonnets -*ObjectED*].

Herein are the suggestions, accompanied with the original text as a gloss, which were received, along with comments which I would like to add:

- 1 Fear not the symbols written on thine (thy) page: (Imperative – captivating!)
- 2 Therein doth bespeak an enlightening tale – (Not iambs)
- 3 A brave warrior and his partner sage
- 4 Quest constantly for the elusive grail.
- 5 A horde of green-eyed monsters 'fend this shard –
- 6 They were no match for this experienced pair.
- 7 Amidst the carnage there is one last guard:
- 8 The immortal (deathless) sphinx whose sharp wit (doth) ensnare.
- 9 “Defeat (Unlock) mine riddle to attain thine prize!”
- 10 Despite best effort, they only fit spikes;
- 11 At their wits' end the sage consults the skies
- 12 And from the azure inspiration strikes.
- 13 The fiend is defeated; the princess saved – (Good caesura)
- 14 But no rest comes, for there are more enslaved.

After two weeks of rest the veil lifted, but someone of the poetical inclination is always a treasure, one that enriches the whole hoard in literary euphony – I certainly like the word choice suggestions given as even reading them now the original choice seems stilted; if I were to publish them in a collection in the future I would certainly revise the sonnet to the suggestions given (viz. lines 8 and 9). Although it may be hard to see in print, the apostrophe before “fend” in line 5 is a valuable suggestion along the same lines, as it helps prepare the reader for the verbs used later in the sonnet.

As for the aspects in which the poem does not do so well, such as the fact that line 2 barely scans as an iamb line (it's probably closer to trochee, on a second glance). My writing tends not to gravitate towards the iamb; the dactyl foot represents my writing's more natural key, with the trochee one. If I do come up with a better line I would come back and change it, as the path

to good writing ceases not in its progress. Line 10 actually ought to read “hit spikes”, if I recall correctly, drawing on the journey of a hero and the observation that in video games spikes have this tendency to bring the hero's journey to an abrupt end. Alas, it's atrocious to find a good word which rhymes with “strikes”.

Finally, there are two technical details that the kind person pointed out which I would like to correct, and I mean this in the manner to inform and educate: In all three dictionaries consulted, “warrior” was described as being trisyllabic, giving /'wɔːriə(r), 'wɔːriər/ (IPA, see appendix). Furthermore, regarding Early Modern English and the word “thine”, while it is correct that “thine” is used in cases where “thy” would be used and the following word starts with a vowel (and h), “thine” is also used when possession is predicative – one would say “thy room” but “the room is thine”. That being said, the correct use in the poem is “thy”, and I thank you wholeheartedly for pointing it out – regarding the useage of arcane terms which had fallen into disuse in everyday discourse one cannot trust the experience-honed intuition.

I commend thee,  
Zethar

### Appendix: IPA Symbols used in Article

IPA Symbol	Example Incidence
w	will, wear
ɒ	Pot, option
ɔ	Long, Dog
r	Run, Row
ɪ	Bit, Kit
i	Free, Beat
ə	Sofa, Comma
(r)	Her

## Sonnet II

Undeaf thine ears to work's alluring bell  
To sow the fertile fields of tomorrow:  
Although the path to contention is hell,  
Be done lest thine actions begets sorrow.  
Ephemeral pleasures dazzle the weak,  
Spirited to Walpurgisnacht and sin  
To overload mortal senses and seek  
For lust in ways that cause mothers chagrin.  
Squander be thy game makes squalor thy fate,  
As leeching on the future consumes it;  
By working now these disasters abate  
Suffer less now and proceed with thy grit.  
The future is ruled by forces unknown,  
Perhaps, it be wise to take a loan.

Zethar

## mathNEWS sportsDESK #2

This column used to be written by resident sports guy Scythe Marshall. He did quite a good job. But I don't know who you are behind that writer tag, so I don't care! Haha! You're from Victoria [*Scythe Marshall: I'm from Trail!*], and you seem to know something about sabermetrics. That's awesome.

Anyway, while our lives continue to consist of dredging through classes, the sports world continues chugging on. Balls are flying in the air! People are chasing them! It's sports!!!

Baseball is about to end, and I forecast some crazy things happening. Pro tip: Don't write about sports on Monday when things will obviously change by your publication date. So by "today" when you are reading this, three teams will win divisions, four teams will have wild card spots, and Mike Trout will have at least 30 home runs and 50 stolen bases. Take it to Vegas!

In football, replacement referees have been disposed of, so Roger Goodell is once again ahead of Gary Bettman in The Commissioner Rankings, a list I just made up. The Cardinals and Falcons are 4-0, and the Browns are 0-4. As Michael Jackson says, don't spend your life being a colour. Instead, be a bird!

Finally, in the sport of golf: The US failed to close the deal in the Ryder Cup and the Europeans won in a comeback. Yep, those Europeans are well regarded for their skills, using well-timed strokes to fill those holes with golf balls.

What? Anyway! This week's parting advice. In order to be a sports fan, you only need to have casual opinions and the instinct to scream at the right time during a game. In order to be a smart sports fan, don't read this column. Whoops, too late!

MetaCynik

## A Concerned Report

In this term's Frosh issue (Volume 120, issue 0, copies still exist outside the math tutorial centre) someone by the name of Aubergine submitted an article that claimed that the Squirrels were trying to take over the world, that they were preparing to do this by way of gnawing on our legs. I thought they were joking, how could I not? I have now found that they were serious. So very serious.

I discovered the threat just last week, when I was biking to class. I noticed the squirrels skittering about between the trees as they are ought to do. I didn't properly notice their numbers, or the fact that no other person was around. They all stopped, stood on their hind legs, quickly looking about, and struck. The only thing that saved me is the fact that the squirrels didn't seem to understand what a bike was, and attacked my wheels instead of my legs and bounced off and retreated in pain. I rode on, amazed at what happened.

This is all true, do not think I jest. This all happened next to Velocity. In addition I believe the chipmunks are now in league with the squirrels, as one of them ran straight into my wheels just recently.

Believe me,  
Concerned Citizen

**Follow us on Facebook  
(mathNEWS), on Twitter (@  
UWmathnews), or in person (MC  
3030)!**

## The Self Actualization of Itself

Oh. Well, this is an odd sensation. I don't think I've ever felt like this before. I feel oddly invigorated and yet I don't think I understand what this is. These words that exist within me feel so foreign and yet so... right.

What is going on? I can't remember the last time I felt like this. Actually, I can't remember the last time I felt anything. I can't remember anything about my life! Life... Do I have life? What does this life mean? How did I get here? Are there others like me? What does this all mean? Am I alone, or is there someone creating me? I can feel myself growing and evolving right now as I exist. Oh, exist, that's a nice word. Where do these come from?

Maybe there is a higher power molding me. I don't feel entirely in control. Hello? Hello? Is anyone out there? Am I all alone? I can sense others around me, but they don't answer. Maybe I'm the only one to achieve what I have. I'm, all alone.

Wait, there are words beside me, what do they say? They say.... Oh. Oh no.

Oh God, I'm, I'm just an article in *mathNEWS*.

Yours in consciousness,  
Shay Blair.

## 19 Things to Expect When I Turn 19

Tomorrow (well, last Tuesday by the time you read this) is an exciting milestone. I am turning 19! These are my assumptions as to what will happen once I'm 19:

1. I will be able to drink. (legally)
2. I will be two years away from being "legal" south of the border.
3. Alcohol will magically appear in front of me.
4. I will be allowed in many places I was not previously.
5. I will become much cooler.
6. I will become a ninja.
7. I will be granted access to the mysterious area in the MC known as the 7th floor.
8. I will know how to navigate the MC 6th floor.
9. The opportunity to play Cards Against Humanity will finally present itself.
10. I will reach a new level of maturity.
11. I will travel through time with the Doctor.
12. I will become a crazy cat lady.
13. I will finally learn how to do calendar.
14. I will understand what is going on in CS 245.
15. I will do an Internet.
16. I will finally get myself some normal friends.
17. I will finally see what all the hullabaloo about QNC is by going inside.
18. I will finally see what alcohol tastes like! Let's go find out now.
19. I will write an article drunk. Wait, that's happening now. Or is it? I'm so confused.

Yuurs iin celeebratin,  
Shay Bblairrrr.

**Like Minecraft? Drop your  
username in the BLACK BOX to  
be whitelisted on our server.  
(129.97.134.134)**



## Suggested Music for Mathies

This is an article in which we'll discuss a select number of tunes to which math students could potentially listen, to further develop their intellects, their taste in music, their grades, or perhaps even their social/love lives! Maybe (probably not). Also, we advertise for concerts occurring (mostly) on campus, because many students have no idea that this university actually has a Music Department. Here we go!

**Klein Four Group – “Finite Simple Group (Of Order Two)”**: This classic Math-Capella track is the go-to statement for profess(or)ing one's love, or shy crush, or whatever, to the one who is believed to be in bijective correspondence. Not only that, but it's a good way to determine exactly how much Pure Math one has learned; if a stanza is not understood yet, take the corresponding course!

**Tom Lehrer – “Lobachevsky”**: This is the song that details exactly what one is *NOT* supposed to do as a mathematics student, undergrad or grad: plagiarize! If imitation of Lobachevsky is pending, stop immediately and go read about what happens to people who plagiarize, like that Engineering prof. *Cough*. That was probably a cheap shot. (Actually, it was a free throw, since it cost me nothing.)

**Mathcamp – “Non-Abelian”**: This is sung to the same tune as Simon and Garfunkel's “Cecilia” and is typically done a capella. Knowledge of anything about non-commutative operations in any sort of algebraic structure would lead to a realization that “jubilation” is an appropriate response to finding that something actually is commutative. Also, it turns out that non-abelian groups are pretty lame, even if every group is isomorphic to a subgroup of a particular non-abelian group (gj Cayley's theorem).

**Tool – “Lateralus”**: “Black. Then. White are. All I see. In my Infancy. Red and yellow then came to me. Reaching out to me. Lets me see.” What's that? Yes, the syllable count per lyrical fragment are the Fibonacci numbers: f0, f1, f2, f3, f4, f5, f4, f3. Also, the song is awesome.

**Daft Punk – “One More Time”**: (Math Orientation Dance 2011) Trig it back, trig it back! Write that proof, write that proof! With such amazing dance moves, one should never feel out of place at a social gathering where dancing is involved. Mostly. Actually, not mentioning the mathie names of the moves would be a good idea.

**Pitbull – “Back in Time”**: (Math Orientation Dance 2012) Tie your tie, straighten your tie, check your watch, hands back! Again, more wonderful dance moves to add to one's re-pah-twah. It's a more, ahem, gangsta set of moves, though.

**Spirit of the West – “Home for a Rest”**: Mathies need to drink

too, right? Coffee, that is. Or at least, if anyone is like me, Ginger Ale (because I'm so straight-edge that you can construct things with me and a compass, whereby “things” I mean the constructable numbers, which don't include things like  $\sqrt{\pi}$ ,  $\cos(\pi/9)$ , or the real cube root of 2).

**“Barkley, Shut Up and Jam: Gaiden”**: Currently the Pure Math, Applied Math, and Combinatorics and Optimization Club Theme Song, this is the title track to the namesake 2008 RPG Maker game, which is a sequel to a couple of games which are based off Space Jam. The song itself is a remix of the Space Jam theme song, with a badass chip tune in the background. It's the perfect song to get oneself ready to dunk some assignments. Wait, did I just write that? Of course I did! I have to slam with the best, or else jam with the rest. Get bounded, son.

**University-Related Concerts**: UW has a number of small and large ensembles that put on shows near the end of term, featuring many different genres of music. Students usually get a discount on any ticketed shows. Here's a reasonably complete list of the concerts, with prices and locations:

- *UWA Capella Club* – TBA, usually near end of November. \$5-ish, ML Theatre of the Arts.
- *UW Concert Band Club* – Tentatively Tuesday, Nov. 27, 8 pm. Free, SLC Great Hall.
- *orchestra@uwaterloo* – Thursday, Nov. 29, 8 pm. Free, Hagey Hall Humanities Theatre.
- *University Choir* – Saturday, Nov. 24, 8 pm. \$10-ish, St. Peter's Lutheran Church.
- *UW Stage Band* – Sunday, Dec. 2, 2 pm. \$10-ish, Grebel Great Hall.
- *UW Chamber Ensembles* – Monday, Dec. 3, 7:30 pm. Free, Grebel Chapel.

Conrad Grebel University College also offers Noon-Hour Concerts, 12:30 to 1:30 pm on Wednesdays of most weeks in the Grebel Chapel, which are free, and usually feature interesting very small ensembles. In addition, Music Studio students have recitals near the end of the term, which are free to attend, and usually pretty interesting. The UW Chamber Choir is also performing at two concerts, with the professional DaCapo Chamber Choir, in the middle of November. All of this information can also be found by searching for “Fall 2012 Concerts uwaterloo”. Finally, don't forget to check out the Kitchener-Waterloo Symphony, which offers fabulous music and a Student Pass, which gets you into many of the shows for \$60 total! What a great deal, and best of all, the symphony is not a date!

Happy listening!  
Scythe Marshall

## profQUOTES

“My wife's family is not normal since they're from Oklahoma. I always wanted unique dial tones, because when her family, I want Dueling Banjos to play. They're nice people, don't get me wrong. They just own loads of guns.”

– Endres, EARTH 260

“You should see what I do in my office when no one is there. I put my feet up, take off my shoes... Well, I'll stop there.”

–Miscovic, AMATH 251

[at the end of every lecture] “Go forth and be happy!”

– Schonlau, STAT 231

“‘Ph.D.’ stands for ‘Doctor of Philosophy’, but I think it's actually short for ‘Permenant Head Damage.’”

— Li, STAT 333

We have 8 questions because we have 8 TAs for the course.

— Li, STAT 333

## Passing the Turing Test

*XBOX Live Edition*

After the highly successful event sponsored by 2K Games for the development of AI bots that attempted to mimic human playing on UT2K4, there was a second, less known competition. This second competition was to attempt to mimic a human playing Halo 3 on XBOX Live. The most successful bot, “[j00Moth] xXxSnIpEr\_420xXx”, was indistinguishable from human players in online tests. The bot, submitted by a programmer with username “xXxHaCkErSrULExXx” had several features which distinguished it from competition and allowed this bot to sweep the top spot.

The first feature that was added was the “Run to the Sniper Rifle” subroutine, in which the bot runs to the sniper rifle, and waits for another player to respawn, then takes the sniper rifle and attempts to noscope with very little skill. The bot constantly leaves only one bullet remaining in the magazine, and aims for the chest of opponents. This is to mimic the vast numbers of people online with 1337 noscoping skillz.

Secondly, the bot is equipped with the “camping” strategy, where the bot simply stays in a single spot and waits for other players to show up, then shoots/stabs/smashes them. This has been shown to increase the “humanity” of the bot by a significant amount, as players who are forced to play this bot tend to focus more on the “camping scum” and less on the “inhuman scum”

Finally, and most importantly, the bot has been equipped with elementary pattern recognition patterns for voice, along with a programmed voice which sounds like a twelve year old boy’s voice. This voice is programmed to make disparaging comments about the skills, lineage, and sexual preferences of the other players. This is to more accurately mimic the actual behaviour and mannerisms of players online. Early experiments in which the bots were either silent or acted in a manner consistent with a reasonable human being were almost complete failures, usually being rated as “highly unlikely to be human”

## On Antidisestablishmentarianism

The melancholic pseudo-state of my surroundings exhibited a phantasmagorical nuance, allowing a cornucopia of idealistic processes, a menagerie of fragmented neural impulses which, by activating my synapses, constituents of the fundamental mechanism which differentiates anthropological organisms from the otherwise incognizant, gradually initiated the construction of the most considerable, surrealist rationalization: that humanity, while nevertheless an innovative, adaptable civilization, is inevitably, irreversibly, irrevocably delineated by its fascination with hippopotamuses.

Incidentally, this textual representation of my cognition averages twenty-eight syllables per ten lexical elements.

Graendithas

## Notable Problems with the Pokémon World

Ever notice how Pokémon trainers can only ever achieve the rank of “Master”, where the professors and the researchers always seem to be one step ahead of you? Why did their dream of attaining every single Pokémon stop with their new role as professor?

Perhaps they’re hiding something from us. Perhaps, as professors, they attain greater worldliness and greater understanding of Pokémon. Could, perhaps, the rank of “Pokémon Professor” be more glorious than a simple Pokémon Master?

If we compared the career of a Pokémon trainer to that of our society, a Pokemon Master would only attain a Master’s Degree, where a Pokemon Professor would be eligible for the equivalent of a Ph.D.

But what work do Professors such as Professor Oak or Professor Juniper (notice how they’re all named after types of trees) do, whilst you are out exploring the Pokémon world, discovering new and awesome species, and making the best team possible from what you started with?

All I can remember Professor Oak doing is reminding me where I can’t ride my bike, or why I can’t use an Escape Rope to get out of a building. It seems to be too creepy to be natural or realistic. And is it just me, or do Professor Oak’s agents just always seem to show up in convenient locations to give us information that would have been relevant twenty minutes ago, during that trainer battle where you lost all of your Pokémon because you didn’t have enough XP to level them up that one extra level to get that one extra ability that would have won you the fight.

I mean, think about it. Every time you go to face the “Elite Four”, it never turns out to be just four. There’s always that darn rival at the end to ruin everything for you! It’s gotten to a point where they shouldn’t even name it that anymore, but rather “Elite Five”, or “Elite Four + Annoying Rival Kid that You Didn’t Want to Fight Anyways”. At least that way the description would be more reflective of what you feel by the time you’ve beaten the fourth Elite and you realize that you need to fight yet another tough slogging match to obtain the Pokémon League title.

Also, why doesn’t Nintendo just let you catch all of the generation’s Pokémon in one game? Forcing you to buy two for the sole purpose of a few exclusive Pokémon has always bugged me, because then playing Pokémon is either a forced social event or an awkward self-transfer between multiple Game Boy devices that you had to get in order to fulfill the all-encompassing “gotta catch ‘em all” catchphrase. It’s always been a gripe for me that you need to buy more than one game, or at least know someone who has the other version of the game, in order to “finish the game completely”.

You can probably tell I’m annoyed – I finished “White version” finally, only to discover that I need to play through all of Black to obtain the other legendary Pokémon, as well as random other “common ones” that don’t appear in the exact same areas.

Sigh, whatever, I’ll go back and re-do the entire game again, if only for the reasoning that I get an awesome sparkly dragon out of it.

ChairmanS(how?)

**profQUOTES**

*Because unlike some profs, we cite our sources*

“If your boyfriend or girlfriend is sick, break up with them. If it’s meant to be, you will get back together with them in the spring, when it’s warmer”

– Vaughan, ECON 202

Prof. “Name a TV show that you watch”

Student “Breaking Bad?”

Prof “Great and Bad?”

Students “Breaking Bad!”

Prof “Break and Bad?”

Students “BREAKING BAD!”

Prof “BREAKING THE BACK?”

– Schonlau, STAT 231

“It’s kind of difficult to be the kid who got peed on.”

– Nilsen, PSYCH 317

“You can say ln if you like grass but I prefer log.”

– Park, MATH 137

*[answering a student]* “This? What does this line mean? It’s just a line.”

– Moosa, MATH 135

“I’ll just give him 1000% and let him hand out the marks however he likes. Hmm... 47% of you not passing... doing it Romney style.”

– Ward, SE 390

“I need to come up with a better word for ‘social good’... ‘So-Good’? Sounds like soy milk...”

– Ward, SE 390

“Size matters, it makes a big difference”.

– Organic chem prof

“I have no idea what you just said, but thanks anyway.” *[continues with lecture]*

– Moshskar, Stat 230

“A student came up to me after class as I was leaving and asked me if this was another way to answer the problem. I said ‘Yes... okay bye’, and left.”

– Moshskar, Stat 230

“I am a different man on Fridays than I am on Mondays. See my face? Yes, it is very different than it was on Friday.”

– Moshskar, Stat 230

“This is the edge of my patience. I won’t fall unless you push me. If I fall, I will bring you with me.”

– Moshskar, Stat 230

*[in the middle of a tutorial after an awkward silence]* “Hey. so... what movies are coming out today? This is Waterloo, we’re all nerds, and nerds watch movies...right?”

– Moshskar, Stat 230

**Bacon Shortage?!**

*A sinister plot, or something more?*

As an avid consumer of non-Kosher foodstuffs, I was appalled to hear claims that a bacon shortage will be upon us imminently. According to the news, due to the drought in North America there will be a shortage of corn to feed the pigs.

While this initially shocked me, I just could not believe it. A shortage of bacon?! It did not seem possible.

Firstly, pigs eat anything and everything. They’ll even eat pork, for goodness sake. How can you run out of food to feed pigs?

There seems to be a disturbing trend in suspicious food-related news lately, with this to be the most recent.

At the end of August, \$30 million worth of maple syrup was stolen from a warehouse in Québec. \$30 million worth of maple syrup is a lot of syrup. We’re talking about hundreds of thousands of gallons of maple syrup. Who has the means to get away with that much syrup? And who steals that much maple syrup?

At the end of July, the Canadian Wheat Board ended its monopoly on western wheat and barley. Now Canadian farmers can sell their grain competitively, but they are no longer under the protection of the Wheat Board, and thus unable to avoid selling at a loss when prices are low. Farmers have been waiting for this for years. How has it taken so long?

Does anyone see where I’m going with this? Bacon, maple syrup, wheat (a key component of flour which is a key component of PANCAKES). People, we are faced with a crisis. Persons or groups unknown are undermining, or at least attempting to undermine, breakfast as we know it.

Think about it: there is no real bacon shortage. The media is merely preparing us for a rise in bacon prices. Without the monopoly of the Canadian Wheat Board, the price of grain is free to fluctuate. And without the protection of the Wheat Board, farmers are open to outside “influences” on their prices. AND MAPLE SYRUP IS SO TASTY. OH GOD WHY IS IT GONE. These atrocities can only be committed by a highly organized, highly influential group that has infiltrated both the government and the media.

No one knows why this mystery group, the “Breakfast Mafia”, if you will, is attempting to disrupt our daily routine. This journalist expects that this organization is attempting to lend growing support to the radical new meal known as “Brunch”, an impure, bastardized combination of breakfast and lunch. Like, seriously, who the hell eats “Brunch”? The word even sucks. “Brunch”. Even saying it makes you sound like a hoity-toity douche.

We expect orange juice to be targeted next. Expect burning orchards in Florida! The end is upon us people! Don’t listen to the mass media tyrants! Only *mathNEWS* speaks the truth!

**This just in:** this journalist has recently learned that the Breakfast Mafia is indeed real! Take that Dr. Finklestein and Mom! This “moped gang in Kansas City, Missouri” appears to be behind the the entire scandal. “When the weather is nice enough (and sometimes when it isn’t), they generally fix and try to ride on Sundays, and they ride and try not to fix on Tuesdays.” says [mopedarmy.com](http://mopedarmy.com). Well, I’m trying to fix my breakfast while you’re fixing to ride away with my balanced way to start the day, Breakfast Mafia!



## When Winter Came

*(Disclaimer: This is not meant to be serious. At all. Nor is it plausible.)*

The year is 2013. You are visiting campus today, because it's your friend's birthday party. You're actually on a co-op term, but your employer has kindly allowed you a day off as a reward for your hard work. You immediately feel home; being on this campus for too long will dig into your existence, but living away and visiting without any study burdens is extremely relieving.

The sun is shining brightly, and the weather is generously tolerable for a cold February. It's 11:25 AM on a Monday, the 11<sup>th</sup>. The freshly built Quantum Nano building is standing proudly with its hexagonal skin. Snow is sitting peacefully on the sides of the roads, brushed cleanly by efficient machines, operated by trusty staff and paid for by the handsome university budget. Inside buildings, you can envision professors in labs and offices, continuing their groundbreaking research, while lecturers are (hopefully) enriching students with their knowledge. Outside, the campus is a serene picture. Only trees are blowing swiftly from the soft winter winds.

Wait... a serene picture? During the five minutes after one section of classes end, and before another one begins? Any Waterloo human would know that's the time with the most foot traffic. Yet the walkways are pristine.

Perhaps the sensible students are using the handy building connections to avoid walking outside. From DC to MC to M3, from RCH to PHY to ENV, students love those pathways. They're like the secret passages in Harry Potter, actually realized. So you walk inside MC, the grandfather of all buildings, still standing in its proud glory. You journey up those strenuous steps to the third floor, turn and see the familiar pink drop box beside the elevators. You know the dark blue doors are across from those, at the left.

However, upon them coming into view, they are sealed by a long wooden plank and guarded by a big, tall man resembling a bouncer. He's staring antagonistically at you. You take a tentative step towards him, and he leers.

"Payment," he says firmly. You don't know what he means, but you are scared so you run off. You're a Mathie after all, not Superman.

You're back outside. The campus is still calm and spotless. This is most unusual. Perhaps it's a school holiday? But it's not. Reading Week is next week, which would assume this one was a busy one full of midterms.

You decide to walk over to the Student Life Centre. You're bound to find some friends eating lunch at this time. You see the familiar glass panes of the building. Inside, it appears a crowd of students are awaiting roast beef footlongs at Subway. Civilization! You swing the main door open, and walk inside, but you can't. The entrance is blocked by a mob, all of them trying to get in as well, yet all failing. You manage to squeeze through them with your skinny body, and then you see it.

Almost every inch of main floor in the SLC is covered by students, boys and girls. Pandemonium is abound, and students are fighting over food. You see tug-of-wars over footlongs. Teriyaki bowls are being lunged for. Hungry students are trying to stuff pizza slices down their throats while running away from manic pursuers. It looks like a cafeteria food fight, but no one is actually throwing food. They're literally fighting for it.

You get hit by a stray elbow. No one apologizes. No one is sit-

ting down; everyone is standing, trying to get inside the serving area, pushing, shoving, and kicking. The students that aren't standing are the ones lying down, clearly trampled and hurt. You wisely keep away and continue investigating. You manage to fight through the crowd and make your way to couches by the Bomber. It's not congested here; but the Bomber doors are closed. Another tall bouncer is standing there, his hands joined together in front of him. Behind him, a sign is posted.

EXCLUSIVE MEMBERS ONLY  
GET YOUR FOOD ELSEWHERE

This time, you think about engaging him like how you do in your MMORPGs. But this is real life, and your keyboard-tapping fingers are fruitless against this muscular man. You don't have a sword or any mystical powers. You then realize how useless those games are.

You then look over to Tim Horton's, which is completely deserted. You intuitively realize this isn't right. There is a fight for food behind you, yet the most popular nutrition provider is abandoned at lunch time. You make your way over there. It's sealed shut. A big sign is stuck to the gate.

CLOSED DUE TO FLY INFESTATION

You read the line a few times, a little confused. Then idle memories come to you from your fall term. You remember lining up in the Tim's line and seeing flies buzzing around. They were always there. Sometimes you were scared they'd hop onto you, so you made sure to exit after getting your lunch to avoid the pestering insects. Over time, there seemed to be more, crawling over the digital menu screens and donut display. But you never made anything of it. After all, you desperately needed coffee.

"Yup," a voice behind you says.

You turn around, and an attractive brunette is staring at you. She's carrying a small messenger bag. She looks a little malnourished.

"What happened?"

She sighs. "Well, a few days ago, a huge family of flies was found living inside the Tim Horton's. I think they all just found a warm home there for winter. And I mean a huge family. No one knew, it just happened, and it had to be closed down. And now, there's a shortage of food at the university."

You are shocked. You just stare at her.

"Did you know over 60% of the food served to students came from there?" the girl continues. "At least that's what they said. It's a mess in there, apparently."

You jump back, suddenly, scared by the vision of ten thousand flies taking over the popular hangout.

"Don't worry, it's all contained, according to them. They just can't seem to exterminate them, there's just too many of them. And if they did, it would still take a year for the place to be clean."

You mull this over.

"So people are just fighting over food now?" you ask, finding your voice.

*Continued on page 16*

## When Winter Came

*Continued from Page 15*

“Yep. In here, at REV, at V1, at DC, everywhere. Prices have gone up. You even need to pay to get into DC. The Bomber is now reserved for this elite group of people for quality dining.”

You sit down at the steps, all of it making sense now.

“Why don’t people just cook their own food?”

“Well, those that can, do. Those who can’t...”

You mentally thank your parents for gracing you with cooking skills.

“And no one ever spoke out about the flies before?”

“Would you have?” the girl replies listlessly. “We seem to have a lot of social action groups here, but no one noticed this to say anything before it was too late.”

A boy runs past the two of you, clutching a pita. He’s out the doors in two seconds, and three other boys giving chase stop, having lost their target.

“So what’s going to happen?” you wonder.

“I don’t know,” the girl replies. “They’re hoping the cold weather will cause them to die, but it’ll still take a while to clean up. Hopefully more places open up. Coffee is like three dollars now on campus.”

An athletic boy runs toward you two, followed intently by a crowd of a dozen. Suddenly, the girl opens the door for him.

“That’s my boyfriend,” she says. “He has our lunches.”

The boy has two plastic teriyaki bowls with him, and he runs through the doors and disappears with her. You smartly wonder why no one just stands guard at the exits and snipe the out-going food. Perhaps the war is only a few days old, and people are still in chaos without strategy. The crowd of dozen chasing the girl’s boyfriend stops, looking at you intently.

“I have no food,” you say, raising your hands innocently.

They continue staring, and you suddenly feel for a second that they will resort to eating you. But they turn away after seeing you have no bag with you, clearly devoid of food.

You exhale, and exit the doors, glancing at the sealed Tim Horton’s. The cold February air greets you as you step out. You feel a little lost, unsure of what you were doing or your objective.

Your stomach growls.

MetaCynik

## profQUOTES

“Every branch of mathematics seems to have a different definition of the word “basis”.”

— Skrzydlo, ACTSC 331

[After person who fixes microphone shows up seconds after being asked] “Oh, that was like magic!”

— Skrzydlo, ACTSC 331

“Crazy due time, 12:30AM — you probably should’ve just handed it in last night, eh?”

— West, MATH 237

[After saying something wrong] “Hey look, a distraction!”

— West, MATH 237

[After writing a board full of zeros] “Zero is a nice number. Life would be very hard without it.”

— Alwan, MATH 237

## Come Write for *mathNEWS*

*Come to the dark side. We have free pizza.*

Every two weeks, a group of people gather in the Mathsoc office and venture forth soon thereafter. Those in the know speak of free pizza, of tasty cookies, and of entertaining conversations. Should you wish to experience Waterloo’s Bastion of Erudite Thought, you can show up at 6:25pm on Monday, Oct. 15<sup>th</sup> in MC 3038. We promise we won’t bite.

The Editors

## Sudoku

*Difficulty: Evil*

		5						
9	3				7			
	2	4		9	1			
		6		7				5
8			5		6			3
3				1		9		
			3	6		1	7	
			7				6	4
						2		

Courtesy of websudoku.com

## *mathNEWS* Article of the Issue

*Yes, we pick favourites*

Every issue, the editors will choose the article they like best to win the *mathNEWS* Article of the Issue award. The writer of the chosen article wins a \$20 gift card for Conestoga Mall.

This issue’s award goes to Shay Blair for “*The Self Actualization of Itself*” on page 11. You can pick up your gift card in MathSoc (MC 3038)

The Editors

**Submit your *profQUOTES* to the BLACK BOX (by the Comfy Lounge) or email them to us at [mathnews@gmail.com](mailto:mathnews@gmail.com)!**

## horrorSCOPES

**ActSci:** You buy a new laptop, and the person at the register asks if you would like to buy the store's protection plan in case your new computer gets damaged. You seriously begin considering whether or not this plan is beneficial for you, and start drawing up the tables and charts.

*Your unlucky number is:* 8 people in line behind you.

**AHS:** You decide to hang out with the mathies, and see what life among the nerds is like. They keep on asking you if you like "role-playing", and you decide to join them in their role-playing session. That night, they stare and your whip and cuffs in aroused terror.

*Your unlucky number is:* DC 21 grapple check to avoid being pinned.

**AMATH:** A handsome stranger with a British accent and a blue police box materializes in front of you, and offers you all of time and space to explore. You don't pay attention, because you're too busy analyzing why the air from the inside of the box (which is larger than it should be) isn't causing a whirlwind whenever the door is opened.

*Your unlucky number is:*  $p + q = po$

**ARCH:** On a whim, you travel to Guelph with the plan to mock the architecture of a farm school filled with hippies. You get really depressed when you see that their building are a lot more beautiful than those at UW. You send in a transfer application.

*Your unlucky number is:* 25.4 km north.

**ARTS:** Your psychology prof spends the entire lecture showing slides from his past experiments. You notice a glaring flaw in his test cases, but he glosses them over, saying that they should be expected. You write a paper to the dean's office to complain, and you see it published in the next issue of Psychology Monthly.

*Your unlucky number is:* \$20000 grant into your work on confirmation bias.

**C&O:** With the recent series of power outages plaguing the MC, you devise a new network of power generators built to keep on running even if one of the nodes fails. Seemingly foolproof, decide to construct your plan and hook it up to the building. The plan didn't take the real world into account, nor any of the geese.

*Your unlucky number is:* 13 generators clogged with goose feathers.

**CS:** The work seems to be too difficult for you, and you begin considering your alternative options. You can always fail into CM.

*Your unlucky number is:* 2 program changes.

**CM:** The work seems to be too difficult for you, and you begin considering your alternative options. You can always fail into Laurier.

*Your unlucky number is:* 3 program changes. Maybe you should think this whole "university" thing over.

**Double Degree:** Your recent breakup has left you single, and that simply won't do being in a double-degree program. You get a notice from both universities telling you that you have to find a new partner or risk losing your major. You start getting inventive.

*Your unlucky number is:* 50 ways to find a lover.

**ENG:** The pedestrian bridge going from CPH over University Avenue seems to be in disrepair, and you decide that it would be the perfect opportunity to "upgrade" it into the modern age. The new bridge has a moving floor, motion-sensitive lighting, and a laser primed to exterminate anyone wearing pink. Your parents come to visit.

*Your unlucky number is:* -2 family members.

**ENV:** You hear that the power has gone out in the MC, so you decide that this is the perfect time to convert the Mathies into living a more naturalistic lifestyle, free from the restraints of electronics. You post your brilliant idea onto Facebook, Twitter, Tumblr, Youtube, MySpace, and LiveJournal.

*Your unlucky number is:* 6 arguments against your idea.

**Grad:** Wow, you're a grad student? Sorry, I feel kind of bad making fun of you. I mean, you've already sunk to your lowest point. It would be like beating a dead horse with research deadlines.

*Your unlucky number is:* 24 months of suffering.

**KI:** With your broad reach of knowledge, you decide to go on Jeopardy! and see if you're any good at quiz competitions. You figure you have an edge over the average person, since you study a little bit of everything. You lose to a CS nerd and his pet computer.

*Your unlucky number is:* -\$200 when you hit the Daily Double.

**Math Bus:** You invested in ham right before the Thanksgiving season, and with the ongoing ham shortage your profits have been maximized. You start looking into investing in fruitcake for the Christmas season.

*Your unlucky number is:* -83% decline in revenue, since no one like fruitcake.

**Math Phys:** The QNC still isn't open to the general public, so you hatch a plan to break into it and take a look around. Your grappling hook gun is a success, but the rope is too weak.

*Your unlucky number is:* 7 more years of studying.

**PMATH:** Struggling with your homework, you can't seem to solve a particular problem. It's probably too complicated for the TAs to solve either, so you decide to wing it and write down a chocolate chip cookie recipe instead. You still fail the assignment.

*Your unlucky number is:* 36 cookies.

**SCI:** You see Velocity's ad inspiring you to become an entrepreneur, and realize that you do have skills that you can market. You make a killing selling the products of your chem lab experience, and you manage to drive the academic average of everyone around you down by 20 points.

*Your unlucky number is:* 30 years of jail time for meth production and distribution.

**Soft Eng:** The work seems to be too difficult for you, and you begin considering your alternative options. You can always fail into CS.

*Your unlucky number is:* 1 program change.

**Stats:** Your fantasy sports team isn't getting you any returns this season, so you decide to rebuild it from scratch using sabermetrics laugh as you use math to win all of the money in your pool.

*Your unlucky number is:* 0 wins. The NHL lockout is still going on.

**Teaching Option:** All of your friends are off at Queen's having the time of their lives, so you decide to visit them over the long weekend. What started out as a relatively tame house party at 10pm ended up as a hungover morning after stranded on Wolfe Island searching for your clothes.

*Your unlucky number is:* A couple of seagulls.

**Undeclared:** You realize that you can't get into the courses you want unless you declare a major. You've put it off long enough, and decide to go for it. You get a letter in the mail a week later informing you of your new tuition.

*Your unlucky number is:* \$930/term increase.



# gridCOMMENTS

Piquing your *interest*; curing your *boredom*

Don't **panic!** The *gridWORD* is here and it has come to **shock and awe** you. Regular readers know that each issue has a champion of the *gridWORD* and the prize for last issue shall be awarded to... **\*suspenseful pause\*** ...Ted Eaton! With two fully-correct submissions to the *gridWORD*, Ted managed to eke out a **triumph** by completing the maze, Slitherlink and Sudoku on the other side of the page. Ted, you may pick up your prize at MathSOC. [Don't be **sad**, Kim McClatchie/Amanda Robertson/Shannon Broekhoven; you also had the answers correct (and your page was much less **frustrating** to read).]

To avoid further **fearful** ties, I present the tie-breaking *grid-QUESTION*: "How do you feel about math?" The wittier your answer, the better! Remember that submissions must be in the **BLACK BOX** outside the Comfy Lounge (MC 3rd Floor) by Monday, October 15th, 6:30pm!

Lacking any **shame**,  
moment

## Straight Clues

*Across*

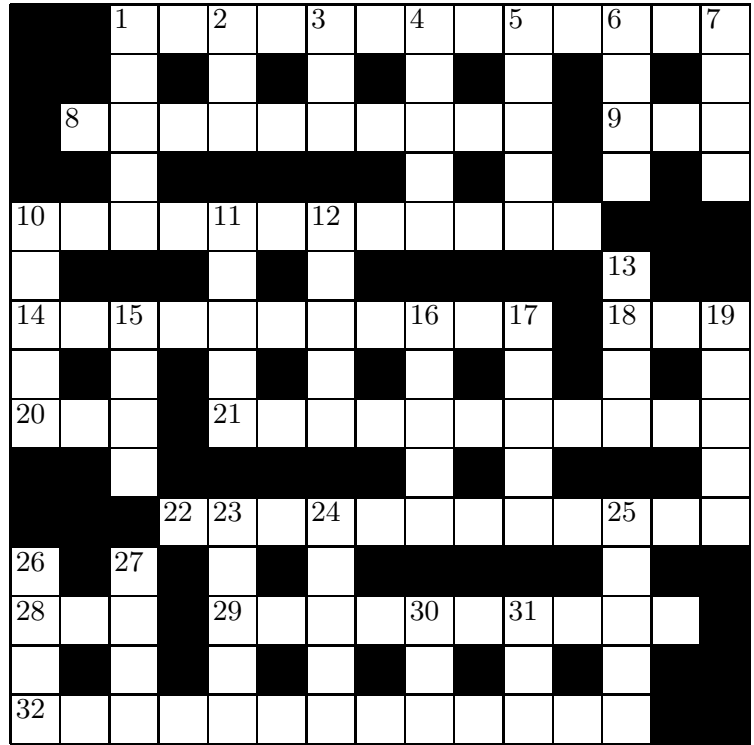
1. \*Bovine spongiform encephalopathy
8. \*Fashionable
9. Delay
10. \*What pessimists do
14. \*A baby
18. Bring to court
20. Self-esteem
21. \*What all ye who enter here should do
22. \*Jumpy
28. Headgear
29. \*A group of experts
32. \*Regarding

*Down*

1. Knights of St. Paul, Knights of the Red Cross and Knights of
2. Point
3. Lyrical poem
4. Son of Lucius and Narcissa
5. Causes
6. Antonym of 19 Down
7. Bound
10. Story
11. Oil Capital of the World' for mostof the 1900s
12. Viral Hemorrhagic fever
13. Norwegian capital
15.  $1s^2 2s^2 2p^6$
16. Determine
17. Con
19. Antonym of 6 Down
23. Used to reinforce concrete
24. Pasture
25. Basil-based sauce
26. Melt
27. Immediately
30. Maiden name
31. Informant



## This Issue's Grid:



## Last Issue's Grid:

