

math NEWS

Volume 113, Issue 5

Friday, July 9th, 2010



CU  C | 10
at waterloo

the canadian undergraduate vuvuzela conference



lookAHEAD**mathNEWS**

July 9	Issue 5 is out!
July 19	End of term Production Night
July 23	Last <i>mathNEWS</i> of the term

MathSoc

Tuesdays	Games Night
Wednesdays	Movie Night
July 22	π approximation day
July 23-24	24 Hour Games and Movie Night!
July 23	Instructor of the Year nomination end
July 24	Student Life 101

Faculty of Math

June 26-August 2	Withdraw/Failure period
July 10	Math Orientation Leader Retreat
July 26	Open Enrollment for Fall 2010
July 28	Lectures End

Miscellaneous

July 31	Harry Potter's Birthday
October 31	Halloween - Nevermind why we're telling you this 3 months in advance

REMINDER: Orientation leader retreat tomorrow!

If you're a leader this fall, tomorrow is the math Leader retreat! If you don't go, Maria the FOC will be very sad because she put a lot of work into it. (As well as the other FOC) Besides, I'll be there and I'm reasonably friendly and stuff!

Prez Sez

CorruptED.

[This was sent to us last week, but due to a bunch of terrible organization and some bad luck, we missed the printing deadline. Completely our fault, or InsideED's retirement's fault, or something of the sort. Apologies. — CorruptED]

So we meet yet again,

My intention was to write something libelous or defamatory in this rendition of the Prez Sez, but I'll leave that to the editors once again. They seem to have a firm handle on that sort of stuff.

Instead, I guess we'll have to do something moderately useful in this wondrous allocation of space and paper.

For all of you apathetic Mathies out there (and boy, oh boy, are you ever out there in bunches), it's time for a change. The weather's heating up, clothing choices are becoming more provocative, and there are more and more opportunities for you to get involved. Our clubs have amazing resources and events planned out for the rest of the term. And don't be telling me that you don't want to go to events that are filled with 'lame-o's. First of all, 'lame-o' is an elementary school term. Second, listen to your mother — don't judge a book by its cover. These events are amazing — tell your friends to tell their friends, and make these gatherings a fantastic to meet new people.

With that being said, get outdoors, get involved, and have some fun. Who knows — you may even enjoy yourself at some point. Or... you could be a lame-o.

Cheerio,
K-Siz

mastHEAD*Where I whine about the heat*

Hello everyone!

We here at *mathNEWS* have been working hard this summer term, at least when you factor in this ridiculous heat. I had been very nicely working under the "sleep during the day, work overnight" habit since around Canada day and avoided most of the boiling sun right up until production night. Tragically, the making of *mathNEWS* forced me to go out into the sun, so if you see a cringing editor attempting to avoid the daystar it is probably me.

It's times like these, when suffering under a ridiculous amount of heat, that we look to the animal kingdom and declare our ever undying hatred of fauna that have it better than us, adaptation-wise, to deal with heat. Perhaps this weather wouldn't be so bad if I was cold blooded, like a reptile. Perhaps even a toad, even of the Hypno Variety!

That brings us to this week's *mastHEAD* question, "How do you feel about hypnotoad?"

perki ("Hones— ALL GLORY TO THE HYPNOTOAD"), Rami ("Well, I — ALL GLORY TO THE HYPNOTOAD"), Nadia ("In my opini— ALL GLORY TO THE HYPNOTOAD"), —image("I thin— ALL GLORY TO THE HYPNOTOAD"), InsideR ("Ha! I— ALL GLORY TO THE HYPNOTOAD"), GroovyED ("Techni— ALL GLORY TO THE HYPNOTOAD"), Thor ("It should be noted— ALL GLORY TO THE HYPNOTOAD"), FuzzyED ("Persona— ALL GLORY TO THE HYPNOTOAD")

CorruptED ("From my point of vie— ALL GLORY TO THE HYPNOTOAD")

What is this *mathNEWS*?*For our guests at the CUMC*

So some of our guests this week may have picked up this *mathNEWS* suspecting it will contain news about math. While we do have some of that, our equally great focus is on satire and humour.

With that said, enjoy!

InsideR

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Batman, Superman, and Spider Man: Jeff Bain, Harrison Gross, and Will Hughes

Website Director Sez

Oops!

Hello, Fellow Mathies!

So, this will sound kind of embarrassing, but earlier this term we noticed a bit of a bug with the online exam bank. Namely, the exam submission form was not saving what it needs (such as the course that exam is for), and the system for the exams to actually get *approved* didn't actually exist. Even worse, we suspect that this bug has been there for about a year and a half without anybody noticing.

Anywho, we have just finished fixing the system, and the VPA and Resource Directors are working on clearing the backlog of to-be-approved exams. We should have the bulk of the exams online before finals start. (In the meantime, feel free to submit your past exams to the exam bank. You can do that online now!)

In other news, some of you have noticed a message when logging into the exam bank (or elsewhere on our site) that our login system needs to be replaced. We're working with the kind folks at Kiwi and CAS on changing that over to the new system.

As well, we're working on a new look for the website. We hope to have it up by the fall. But it looks very nice.

Did you know MathSoc is online? Come visit us anytime at <http://www.mathsoc.uwaterloo.ca>!

Joe Collins and Dmitry Kogosov
MathSoc Website Directors
website@mathsoc.uwaterloo.ca

VPA Sez

Hey Guys!

For some reason my article didn't get onto mathsoc last fortnight. *[Sorry! Our bad! Blame InsideED's retirement! — CorruptED]* Anyways, first off due to a resent fiasco, caused by me missing a meeting, I am currently working on comprising a list of committees/boards/councils that a VPA is suppose to attend as well as the corresponding contact and regular scheduling information. Some of these have multiple seats for student representation so that will also be noted. In other news, Computer Science Council met on June 9th where the creation of a cs247 course (which is an advance cs246 course for SE students) and the removal of scheme from cs138 for SE students were approved. As mentioned before, there was a lot of debate on the later issue.

On June 28th's UAC meeting, it was decided that first year math classes (math 13[5-8]) would no longer have weekly tutorials because it was felt that since a majority of students weren't going to them, they were a waste. It was proposed to instead have online video tutorials and more resources in the Math Tutorial center. Finally on a less serious note, Instructor of the Year Award nomination forms are out and available at the MathSoc office. Come pick one up and nominate your professor for this prestigious award.

Hope that was informative,
Andre

CSCFlash

The CSC is holding code parties July 9th from 6pm-midnight and also July 16th from 6pm-as late as we want!

CECS Proposes New Ranking Algorithm

The Co-operative Education department is proposing a new algorithm for matching students to co-op jobs, which may reduce the amount of information available to students at the ranking stage, according to the Alex Hogeveen Rutter, the Engineering Society's VP Education.

He says the proposed algorithm is designed to maximize the number of students who get jobs in the first round as well as reducing the number of unfilled positions. However, the consequence of this would be that the student may not be informed on how they were ranked by the employer, or even if they got an employment offer from the company.

We asked MathSoc VP Academic Andre Magalhaes for more details about the algorithm, but he was unable to give us more insight. He said the discussion last fall, when he was President, involved allowing employers to rank multiple students at an "offer" level, and matching the student who would be worse off without the job. It's not clear if this is part of the newest version of this algorithm or if it has changed since then.

Students on an Engineering Society forum about the issue are unanimous in their opposition to the proposed change. Concerns include the fact that this more poorly represents the real world than the current system, co-op already benefiting employers "at the expense of students", and punishing those who put in hard work and receive multiple offers by giving them a job they don't want. One poster even added that his employer would prefer that his offer student were told about the offer as it would "[increase] their chances of accepting the offer, even if it means coming back in a later round if they don't get matched."

We attempted to get more details about the algorithm from CECS, but they did not respond by the press deadline. None of the changes have been approved or implemented. If approved, it would likely be rolled out with the replacement for Jobmine, known as Waterloo Works, in the Spring 2011 term.

InsideR
Twitter: @mN_InsideR

VPAS Sez

Hi Readers!

First off, I'd like to thank everyone who volunteered for Canada Day last week. It was awesome, especially when the fireworks display started, it pays off everything doesn't it?

Second, if you're interested in helping out in Student Life 101 which will happen on Saturday, July 24th, please email vpas@mathsoc.uwaterloo.ca with your full name, email, and major. You'll be answering questions any incoming students have, and show them how awesome our Math Faculty is!!!

That's all that I have to say for now. Be sure to check out our "What's Happenin'" board on the 3rd floor of MC across from C&D. Cheers!

Joycelin I. Karel
Vice President of Activities and Services
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Interesting Math

The nth Prime

One of the most common misconceptions in mathematics is the notion that there is no general formula for the n th prime, p_n . While tempting, this is false, and in fact there are numerous explicit formulas. This article will be devoted to outlining one such method. We begin by stating Wilson's theorem, which says that a natural number $n > 1$ is prime if and only if $(n-1)! \equiv -1 \pmod{n}$, where I use \equiv as congruence equivalence. The proof of Wilson's theorem is fairly easy with some group theory.

If $n = 2$, then this is easy to check. If n is prime and at least 3, then $\mathbf{Z}_n^\times = \{1, 2, \dots, n-1\}$ forms a group under multiplication mod n , with an even number of elements. Then for an element a in the group, there is a unique inverse element b such that $ab \equiv 1 \pmod{n}$. In the special case $a \equiv b \pmod{n}$, this gives $a^2 \equiv 1 \pmod{n}$, and since n is prime, $a \equiv 1$ or $a \equiv n-1$. Now pair the elements with their unique inverse and multiply by both 1 and $n-1$. This is the product $(n-1)!$. On the other hand, since we paired inverses, we get a product of 1's together with $n-1$, which is $-1 \pmod{n}$, as claimed.

Conversely, suppose the equivalence holds for a composite n . Then there is a prime p such that p divides n , and so p divides $(n-1)!$. By the equivalence condition, p then divides $(n-1)! + 1$, and so p divides 1, a contradiction.

By Wilson's theorem, $((j-1)! + 1)/j$ is an integer for $j = 1$ and if j is prime, but is a fraction (less than 1) if j is composite. Write $[x]$ for the floor of x (that is, the greatest integer less than or equal to x), and define

$$F(j) = \left[\cos^2 \pi \frac{(j-1)! + 1}{j} \right]$$

Then $F(j)$ is 1 if $j = 1$ or is prime and is 0 if j is composite. Letting $\pi(m)$ denote the number of primes no larger than m , this tells us that

$$\pi(m) = -1 + \sum_{j=1}^m F(j)$$

Define

$$A_n(a) = \left[\sqrt[n]{\frac{n}{a+1}} \right]$$

PMAMC&OC

SASMS

As in previous terms, the PMC and MathSoc will be hosting Short Attention Span Math Seminars (SASMS)! It will be held on Thursday, July 22nd, from 4:00PM to 12:00AM, in room MC 1085. During SASMS, students will be giving 25-minute talks on interesting mathematics topics to their peers. Dinner (in the form of pizza) will be provided, as well as snacks and drinks. We are currently still accepting speakers, so if you are interested, please e-mail pmclub@gmail.ca with a title and possibly a short abstract. For more information, you can check our website at <http://pmclub.uwaterloo.ca/>, check out our Facebook event at <http://www.facebook.com/event.php?eid=134415519914836>, or drop by our office at MC 3033.

PMC

for $n = 1, 2, \dots$ and $a = 0, 1, \dots$. Then it is a straightforward calculation to see that $A_n(a)$ is 1 for $a < n$ and is 0 otherwise. Thus,

$$p_n = 1 + \sum_{m=1}^N A_n(\pi(m))$$

where N is a sufficiently large integer, for example 2^n . Thus, we have our formula for the n th prime:

$$p_n = 1 + \sum_{m=1}^{2^n} \left[\sqrt[n]{n} \left(\sum_{j=1}^m \cos^2 \pi \frac{(j-1)! + 1}{j} \right)^{-1/n} \right]$$

If you haven't figured it out by now, this is an extremely unwieldy formula, even though it is closed form (a finite combination of elementary functions under elementary operations). Indeed, it is likely that a simple prime sieve would be more effective in determining the n th prime, after going through the work of finding the previous $n-1$ primes, but at least now you can impress your less learned friends by demonstrating a formula that many believe do not exist.

Vince's problem of the issue

Consider the integer lattice in 2 dimensions, that is, the collection of 2-tuples where each entry is an integer. Suppose there is a square whose vertices are pegs on the lattice points. You may move the pegs in the following way: select a particular peg to move and another peg as a pivot. Produce the line perpendicular to the line joining the chosen pegs, and reflect the first peg across this line. Is it possible that, after a series of such moves, the four pegs form a square strictly larger than the original?

Vince Chan

v2chan@math.uwaterloo.ca

24 Hour Games and Movies!

You know you totally want to check it out

This July 23rd-24th, the Games director is organizing a 24 hour long games night/movie extravaganza! It's right near the end of term before exams and therefore the perfect way to unwind a bit before Exams come crushing down upon you, so definitely check it out! You won't be sorry!

Games people

Idiot

Idiot Idiot Idiot Idiot

It has idiotically been brought to our idiotic attention that we idiotically use the idiotic term "idiot" idiotically often. Therefore, we at *mathNEWS*, in the idiotic spirit of responding to our idiot readers, present the following idiotic article:

Idiot idiot idiot idiot idiot. Idiot idiot idiot idiot. Idiot idiot idiot idiot idiot idiot idiot, idiot idiot idiot; idiot idiot idiot, idiot! Idiot idiot idiot? Idiot idiot idiot: idiot, idiot, idiot idiot, idiot.

Idiot

Thor's CS Problem of the Fortnight

Wearing the Concrete Shoes of Computer Science

Last Fortnight's Question: Suppose you are implementing a mapping service. Users are going to query systems with latitudes and longitudes, and you need to return which country contains the provided latitude and longitude. How would you implement this service?

Its Answer: The problem described is point location. Given a plane of polygons and a point, how do you figure out which polygon contains the point? It's a foundational problem in computational geometry. One solution is the so-called slab method. In this approach, you draw horizontal lines through every vertex for each of the polygons. You then use a binary search on the latitude (y) coordinates of the lines to determine which of the resulting "slabs" of the map contain the point. It's then a matter of a second binary search on the edges that cross that slab to find the polygon in the slab the contains the point. All in all, you get a nice, easy $O(\lg n)$ solution to the issue.

This Fortnight's Question: In the game Risk, I often find myself needing to move my armies around a world map in order to attack my enemy. Recently, I found myself with a large army in Alaska, needing to get it to a territory in Africa where my one remaining opponent was. I had two options: I could go west and attack through Russia, or I could go east through Europe. Suppose that I know the number of armies stationed on each territory on the map. How can I determine which direction I should take my forces? If you're not familiar with Risk, all you really need to know is that I can only move my forces through adjacent territories, and fighting more armies is bad.

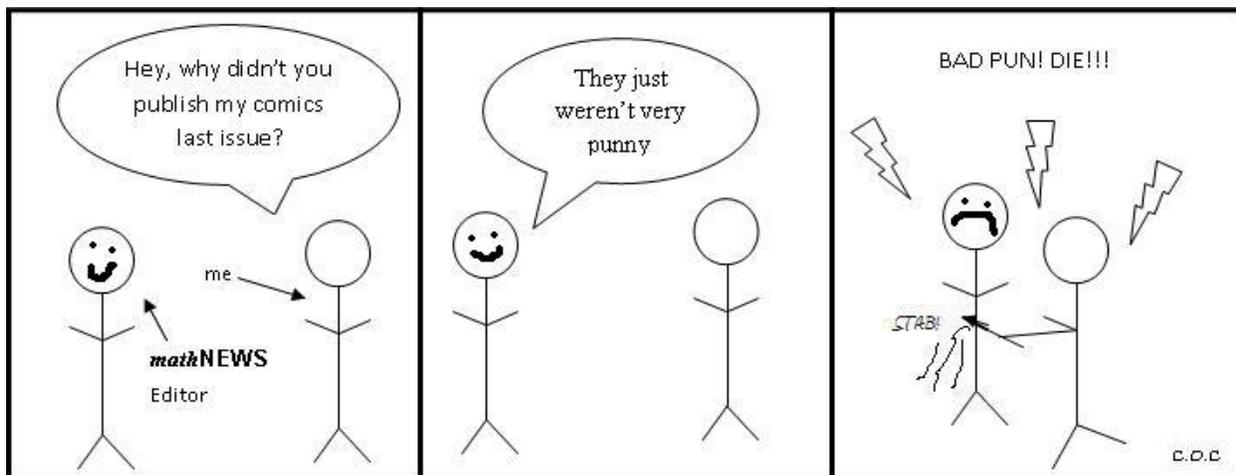
Thor

The Real Reason InsidED Quit

Because none of us believe that academics justifies leaving the editorship

We've been wondering why InsidED abandoned us, forcing us to actually do some of the drudgery involved in running *mathNEWS*. (Were you aware that we actually have to do stuff besides make snarky comments? I wasn't when I joined!)

So, this week we bring you what we think is the real story in comic form:



Dating guide you should abide

Okay, everyone, I checked the **BLACK BOX** this week and there was nothing there for me! Well, there were only a couple of letters I'm going answer, but compared to other weeks it's nothing! And both letters were from guys. Usually I get much more mail from girls for some reason. I like telling myself it's because I'm hot.

Anyway, back to the point, please send all of your dating questions and shout-outs and stuff to the **BLACK BOX** or to the online *mathNEWS* email (whatever it is), so I can answer it. Don't forget, next issue is my last column for the term, so it's your final chance to get dating advice! Go!

Yo Date-Less man, so I gots me a prob, dawg. It's so hot outside, I get these like sweat-stains, you digg? So I thinks them girls don't like that and stuff. So what do I do, yo?

Advice: First, stop pretending to be from the 'hood'. You're in Waterloo, dude. Next, there's a simple solution for your problem, it's a very common problem. Just go to the pharmacy and ask for a serious deodorant. Not one of these flimsy Gillette stuff, I mean industrial/medical strength. You might need a doctor's prescription, but once you get one, your life will change. Trust me, I practically shower in the stuff and I smell pretty half-decent.

Hey date-less. I'm pretty sure my girlfriend wrote you last time, saying that she was mad because I ignored her. It wasn't my fault, soccer was on every day! But the world cup's almost over now, so she's making me ask, how can I make up for ignoring my super hot and smart girlfriend?

Advice: Sure, I'll help you out. The best way to make up for ignoring your girlfriend is by sending some quality time with her. Now, because it's so hot outside, you want to do something indoors so that your sweat-stains don't gross your girl out. Movies are great options, but there aren't any good movies there days (unless you want to see Toy Story. For some reason I'll never understand girls love that movie). That leaves bowling (usually not a good idea), and taking her to a nice restaurant (expensive!). In conclusion, just buy her something nice. And no, a vuvuzela doesn't count.

I believe that's all I got. Once again, if you have dating questions, send them in. If you don't have dating questions, you must not be dating anyone, i.e. you're a loser. Too bad for you. Enjoy the scorching summer days, and don't forget the 3 rules of finding a boy/girlfriend- date, date, date!

The Date-Less Dating Guy

The k-Body Problem

The CUMC has been held here at the University of Waterloo this week, and as such campus has been flooded with math students from across the country. That is to say, unsuspecting potential victims. Now, it is easy to notice that as the number of unsuspecting defenseless students approaches infinity, the number of broken bleeding dead bodies which an arbitrary student must hide also grows without bound; in particular, it exceeds the number of easy hiding places. This is widely referred to in the literature as the k-body problem. To help alleviate this, we suggest a number of atypical but useful places to stash the bodies until you can safely smuggle them out of the city and dump them in the woods somewhere.

First, the lost and found at police services is an ideal place to leave bodies. While this may seem counterintuitive, police services never actually pays attention to their lost and found. Other things theorized to exist within the lost and found are fossils from the Precambrian Era, Fermat's proof of his last theorem, and the Durin's Bane, named after the King Durin VI, who delved too deep within the lost and found searching for riches and awoke a fiery demon who slew him utterly.

Another excellent place to stash bodies is the HAM Radio Club. Last conclusively seen in the fall of 1976, the HAM Radio Club is a mysterious room which exists on the boundary between the world of the fae and the main Waterloo campus. The Club can only be found by wandering through the Engineering buildings at midnight on the night of the new moon, but there is a new moon tomorrow night and so the club should be available for

Strangers consummate meeting after kegger

After much speculation we have confirmed that two students have officially consummated their fateful meeting at the beginning of the kegger. Reports from various sources had come in as early that 11 at night stating that "... that chick is totally going all the way with [him] tonight!" Accounts of an inappropriate lap dance on the front porch have not yet been confirmed.

The couple in question have been identified after a series of embarrassing photos of them were posted on Facebook.com. Timothy Peters was identified from pictures of him throwing up on three distinct party-goers as well as losing his pants between the hours of midnight and 1:30 AM. A new pair of pants (different from the original pair) appeared shortly thereafter. Peters' newfound mate was confirmed to be Kimberly Burke as friends tagged her flashing Timothy.

When asked what attracted him to her, Burke was quoted approving of his winning streak in Beer Pong and how manly he looked against the dim and blurry lights of the party. Peters was so shitfaced that he even would have gone after Francesca, which would have totally ruined relations with neighbouring boyfriend, Paul.

As it stands right now, neither party has released a statement on further plans to consummate sobering up or gnawing off an arm to get away. It is expected that without Mel's any progress towards naked fun times will be postponed indefinitely or until either one learns how to cook eggs.

The Hee Ho

stashing bodies. Be careful not to step off the path leading to and from the Club, though, as those who do are never seen in the mortal realm again, although they are sometimes glimpsed in various arts courses, a dead and haunted look in their eyes.

The final suggestion is perhaps the most complicated, but also the safest. Using the well-know technique of Banach and Tarski, and a very fine diamond saw (obtainable from the unsecured Engineering labs), divide the planet into finitely many pieces, disassemble them, and reassemble them into two copies of the planet such that all the living police officers and other people who could get you in trouble on one copy and the bodies on the other. Since the second copy is not technically Canadian soil and hence not subject to the laws of Canada, murder is absolutely acceptable there, and no one can get you in trouble.

As a final word, remember, they can't convict you unless they can prove you guilty beyond a reasonable doubt, and no one can even prove that the world exists beyond a reasonable doubt. If all else fails, use the same defense Descartes did to get away with murdering the entire population of the small French town of Cartesia. (Incidentally, this massacre is what led to his discovery of, and the subsequent naming of, the Cartesian plane.)

—image

Dear CUMC folks: Our Guide to Local places to grab a bite or entertainment

Because you never know what you're missing out on

We have guests! Thanks to the CUMC being hosted at Waterloo soon/now/maybe two weeks ago by the time you read this, we have decided to be the helpful individuals that we lie and say we are and write a handy guide to local businesses providing food/entertainment. We're lazy, so it's just a quick blurb for each, but it should help anyone unfamiliar with the area. You're Welcome!

- **Warrior Pizza:** The Pizza here is absolutely excellent, and the only really bad thing you can say about it is that the hours sort of stink these days.
- **Mr. Sushi:** This place makes some damn good sushi. Admittedly the last time I was by here I could have sworn the fish was being cooked, but that can't be right.
- **Sugar Mountain:** Not a restaurant, but full of delicious, delicious candy nonetheless. The only unfortunate thing is that the selection has been a bit poor as of late.
- **Fubar:** A local club in the university plaza. It's a pretty decent place to meet people, although it's sometimes closed unexpectedly.
- **Tabu:** Very similar to Fubar. Full of fun, and certainly has the potential to spark some hot happenings.
- **Mel's Diner:** Mel's is a campus favourite amongst a great deal of the student body. Cheap food, friendly staff, and tolerant of crazy drunk people at 3 in the morning. The only problem is that this term the food has been crispy as of late.
- **mathPUB:** Everyone knows that Mathies are clearly heavy drinkers, it's the only explanation for mathie behaviour. That said, this place can be pretty hard to find, so be forewarned.

CorruptED

Ways to make *mathNEWS* longer

Because 10 pages is too little

As it turns out, my article last issue worked only too well. *mathNEWS* shrank from 16 to 10 pages, which is a decrease of 37.5%, so if *mathNEWS* was a financial investment, our editor would be an American banker.

Anyway, since there's a tradeoff between quality and quantity (ask the 1 girlfriend who didn't dump me after my last article. She's too sophisticated to read *mathNEWS*.) here are several suggestions on how to increase *mathNEWS*'s length, to ensure it remains at a pleasantly-readable state.

- Publish news and real, actual articles. Nobody reads that, but it's good filler
- Increase the amount of VP-Sez stuff. They may be unable to spell 'Says', but they're still our 'V-Prez'
- Publish more articles that make fun of Imprint! Hire good lawyers first though
- One word- Censor. NOTHING.
- Move production night back to Monday so that everyone knows when it is. Also, advertise them well in advance.
- Put all the *prof*QUOTES in one place. It may not increase space, but it'll really help
- Publish everything I write. I suck.
- When publishing news, stories, or generally 'wide' articles, consider using 1 column per page.
- Increase the font and shrink the margins. Duh!
- Advertise production nights with catchy messages, such as 'Did you know? If you don't write for *mathNEWS* every term, you can't graduate!'
- Publish *mathNEWS* in 1-D and print it out single-sided.
- Continue publishing who won the \$25 gift certificate every single issue, and elaborate extensively on why they deserve it. And give all the certificates to me
- Use those freakishly-annoying mini-sized paper sheets, (like those stupid MUO slips that get lost oh-so-easily)
- Print each comic on its own page. The amount of funny will increase exponentially.
- Publish more sub-headers for every article. Make articles of sub-headers only (and call them filler just to confuse everyone).
- Publish this article. It's a total waste of space.

Now compare this article with the one I wrote last time and then you'll get why this is funny.

I thank you.

Space-filler Orange Crush

The Single *prof*QUOTE

This is the only *prof*QUOTE we managed to get this week besides the ones one of our editors ran off with. Please, send us more!

You're only an alcoholic if you go to meetings

Stiles, ENGL 109

Zombie Orange Crush 5

With the giant battle you've all been waiting for!

Hello everyone, Orange Crush here, with the 5th part of the stupid story about Zombie Orange Crush. One more and we're done! Anyway, we're jumping right in this time around.

So last time, I somehow managed to evade anything plot-related and I think I wrote about Dracubot, and now the big battle is set up to go.

So, Zombie Orange Crush was first to deliver a bone-shattering blow to Dracubot, by kicking his shoulder. Luckily for Dracubot, since he was a cyborg-vampire, his shoulder was coated in metal, so Zombie Orange Crush (okay, that's it, from now on I'm using Z.O.C. for short) just broke his foot. Now Dracubot saw an opportunity! He stepped on Z.O.C.'s broken foot. Sadly, Z.O.C. was a zombie (that's what the Z stands for), so he couldn't feel pain.

And so the battle raged on for centuries. And by centuries I mean like, I don't know, 20 minutes? Who cares. Z.O.C. ripped out Dracubot's spinal cord, so the cyborg electrocuted him using a few plugs from a computer lab, so Z.O.C. sneezed in his face, and then Dracubot threw him off the roof of the MC, but Z.O.C. ran back in and ripped up a white-screen from an empty classroom and smacked Dracubot on the head with it, and after that Dracubot cut Z.O.C.'s head off, so the zombie used his flamethrower to incinerate Dracubot to cinder.

Or something.

Anyway, eventually Dracubot bit Z.O.C.'s neck. At that point the zombie fell to the ground, so Dracubot grabbed a quick shower from one of the huge faucet-tubs at the MC washrooms, and he flew up to the 7th floor and slept for a couple of decades.

But Zombie Orange Crush wasn't dead yet...

To be finally concluded next time! Thank god, this is awful stuff.

Zombie Orange Crush

*ultra*CLASSIFIEDS

Serving the student body with all important classifieds!

MISSING: CorruptedED has his top hat kidnapped by scoundrels. If you happen to see it, leave it in the *mathSOC* office. Or, wear it until I find you and ask for my hat back. It's a pretty sweet hat.

WANTED: more *prof*QUOTES. We're going to keep guilt tripping you about these things until they're coming out the wazoo. We love *prof*QUOTES and so should you!

FOUND: Recently discovered on the 7th floor of the MC is a dimensional wormhole. If you've been looking for one of those, feel free to come up to the 7th floor and grab it. If you're unable to find the 7th floor, you may not be worthy. Continue leveling up.

MISSED CONNECTION: I saw you running through some caves. I felt almost like you left a rainbow in your wake. I have only one thing to say. Always I want to be with you, and make believe with you, and live in harmony harmony all right?

Horrorscopes

Ooh, we have new people on our campus to frighten!

Carleton University

After mocking Ottawa for their lack of decent mascot, you decide to read *The Raven* by Edgar Allen Poe. You analyze the frequency and timing of the bird's use of nevermore, in an effort to apply it to your mascot. Meanwhile, someone from Ottawa steals your date.

Your lucky number shall be revealed nevermore.

Dalhousie University

You are asked to play bagpipes to the crowd of conference-goers. You explain to them that you are from *New Scotland*, and have abandoned these older traditions. After much insisting from the crowd, you decide to give it a try.

Your lucky number is 2 fingers in everyone's ears.

Memorial University

You come to realize that you are the only ones with a stereotypical Canadian accent. You will argue to others that this makes you distinctly Canadian. You then hear a newfie joke, and proceed to flip out.

Your lucky number is 1 joke gone too far.

Nipissing University

You hear people joking about people at your school having bladder problems. You explain that there is no connection with the name of your school and the rates of washroom use. You then suddenly piss yourself.

Your lucky number is 3 changes of pants per day.

Queen's University

You will suddenly realize that your university has absolutely nothing to do with Her Majesty The Queen. You realize that you now have no reason to be there, and you will die drunk.

Your lucky number is 99 bottles of beer on the wall.

Royal Military College

You realize that mathematics can be used in a context outside of the military. You attempt to transfer to another university, but the school demands you join the forces after graduation. You then begin preparing for your deployment.

Your lucky number is 8 months in Afghanistan.

Simon Fraser University

You attempt to explain to people that Simon Fraser is in fact a university. When asked who Simon Fraser was, you question the relevancy of their question. They, in turn, remind you that your McShift starts in an hour.

Your lucky number is \$1.39 Double Cheeseburger.

Trent University

I was one of the few in our family who were smart enough to leave that town. You will realize the error of your ways and follow our lead, though you will bring your terrible driving skills with you.

Your lucky number is 5 accidents before you leave town.

Université McGill

Personne ne vous aime parce que vous êtes français. Si vous voulez notre amitié, vous allez parler seulement en anglais et en grec. Honnêtement, on ne parle pas la «belle» langue ici.

Votre chiffre de bonheur est 5000 personnes qui vous détestent.

University of Alberta

At the CUMC dance, you attempt to show off your cowboy skills to an easterner. A Calgary student comes up to lasso your

date, and a fight ensues. You meet at high noon the next day.

Your lucky number is 1 cleared city.

University of British Columbia

Andy Sandberg would be proud of your impression of "I'm On A Boat". However, you will soon realize that you will soon need to get off of said boat. Try not to be too fresh.

Your lucky number is 250 people rushing off the boat.

University of Calgary

A uAlberta student lassos your date at the CUMC dance. You confront him in the name of your honour, and challenge him to a duel at high noon. Meanwhile, your date has left.

Your lucky number is 2 more singles on the market.

University of Guelph

Your mathematical intuition will improve the efficiency of your family farm. PETA, fearing that you are now subjecting the animals to inhumane methods, will set them free. All that math will have been useless.

Your lucky number is 53 animals missing.

University of Ontario Institute of Technology

You come with the expectation of showing off your powerful mathematics to the world. You then realize that you've spent more time presenting your findings than realizing it's been well-known for years.

Your lucky number is 12 months to prepare for next year.

University of Ottawa

You attempt to explain to other universities what your mascot is. You realize that the reason your school doesn't have a mascot is because nobody knows what a "Gee Gee" is. You design a new mascot for your school to little fanfare.

Your lucky number is 286 people laughing at your mascot.

University of Toronto

You will soon realize that you are lacking a girlfriend. That is because you have as much personality as my pet rock. Your attempts to compensate for this will have you arrested.

Your lucky number is 5 assault charges.

University of Waterloo

Your ego will be crushed by the fact that you're not the only people who know how to do math around here. You will then try to prove that you're good at something, only to have your driving skills laughed at by Trent.

Your lucky number is 1000 students transferring to Arts.

University of Western Ontario

You join the football team in an effort to jock up and attract women. During your first practice, a minor tackle breaks three bones. You are not only off the team, you are the laughing stock of the school.

Your lucky number is 4 years of extreme emotional pain.

University of Windsor

You will begin to realize that the large scholarship you received to attend your school comes at the much higher price of having a terrible faculty. You decide it's better worth your time to jump off the Ambassador Bridge to see what country you land in.

Your lucky number is 50% odds of becoming an illegal immigrant.

Wilfrid Laurier University

After seeing students from various other schools, you realize that it's not only Waterloo that sees you as the high school down the street. You decide to begin applying for real universities, but are harshly rejected.

Your lucky number is 4 more years at Laurier High.

ElseWhen: Beating the Summer Heat

mathNEWS Friday, July 12, 1996. Vol 71, No 5.

With the summer term in full swing, most of you are worried about one thing, and one thing only; how *do* they get that soft creamy caramel inside the Caramilk bar? Without proper speculation, there is little evidence that *mathNEWS* can use to rival such world class publications such as the *Weekly World News*. However we can offer you tips on methods of proper environmental control. This week, we present you with procedures that will keep you cool and comfortable.

One of the most basic principles of thermodynamics is that of entropy. The tendency of the universe and, by extension, level of disorder in the universe cannot be decreased, and order can only be imposed on a system locally, while the surrounding disorder is increased. Thus, at best the net change in order of the universe is zero. The long term effect of entropy is that is commonly called "heat death," where the energy of the universe is spread out evenly, allowing no more transfer of heat or energy. Surprisingly, this seemingly harmful entropy can be used in a beneficial manner in the following ways:

Promoting universal heat death: Given that 99% of the energy of the universe is focused in matter comprising 1% of the universe's volume, (and in addition, given that 99% of all matter is empty space,) the average temperature of the universe is extremely close to absolute zero, -273 Celsius. Therefore, increasing the universe's disorder as much as possible, by means of non-reversible processes, such as combustion, inelastic deformation, magnetic hysteresis, letting cats out of bags, opening cans of worms, buying gifts without gift receipts, and so forth, will lower the temperature of the universe sufficiently to allow the rest of the summer to be comfortably cool. In fact, disorder in general will help achieve this goal. Therefore cleaning up your room is a no-no. Air turbulence is a good way to increase disorder. I suggest turning on a fan.

There are several drawbacks to this method, most notably, in order to prevent the universe from becoming *uncomfortably* cool, all actions and/or processes in the future must be reversible. At our present level of technology, this is not possible. Also, things would get pretty damned cool during the winter.

Local heat death: Since universal heat death is not possible, local heat death seems like a logical alternative. This is in fact surprisingly easy to accomplish. All you need is a completely isothermal expandable container. Enter the container and seal it completely, thus fixing the amount of energy it contains, then expanding the container until the average temperature suits your needs.

In fact, this is the ideal environment to carry out several physical experiments. If you can equip the inner walls of the container with frictionless surfaces, you can set up the physicist's dream lab. If you are feeling bolder, you can bring into the container a radioactive element, then postulate whether you are alive or dead (or both) after a certain time period.

Raising the room temperature: As in all reactions, there must be an equal and opposite reaction. Therefore raising the temperature of a room must be matched by an equal decrease in energy elsewhere. If you can ensure that everything in the room is increasing their energy levels, (I find that a flamethrower is good insurance,) that energy must come from you, cooling you off in

the process.

Raising your own temperature: On the other side of the coin, if you can warm yourself up, (again, I recommend a flamethrower as very effective,) the energy is needed to raise your body temperature will be taken from the room, thus allowing the room to cool, making the environment nice and comfortable.

It would be noted that the above two procedures are local only, and you may wish to help your roommates out by lending them the flamethrower. Be warned, however, that letting the flamethrower travel between rooms is on par to an external heat transfer, and will thus lead to unpredictable results.

With these four tips you should be able to keep yourself cool and in control for the rest of the summer.

Chris "Little Boy" Calzonetti

The Art of Comebacks

And that is not what she said!

A good comeback can be the difference between being the hero of an argument or the loser in corner. You want to be the former (but most likely are the latter). So here is your first lesson. Generally speaking there is about a eight second window in which you can make your witty comeback before it becomes too late to save yourself. Now this is a very short amount of time. In fact, if you don't have a razor sharp wit it is nearly impossible to respond that quickly in a heated argument.

The solution to this is having a couple of general comebacks ready at any given time. These are usually made up in off times or about 10 minutes after a missed chance for a comeback. Note these in your mind and do your best to remember them. It is important to have them ready on the tip of your tongue when push comes to shove. I'm sure many of you can think back to a few good lines to use but I will give you two freebies. First of all, you can alleviate the tension using humour with the simple line of "Witty comeback not found." There are...meaner ways to make a comeback. The following line only works on females and only when they are being particularly....well not very nice. At this point turn to them and respond with "I would call you a cunt, but you lack both depth and warmth." Naturally this is not a very nice line, and you should never use it with someone you ever wish to speak to again.

So there you have it. The basics that you need to know to be able to rip someone a new one while crossing your verbal swords. Use it as you will...just don't be a bastard.

Comeback Kid

profQUOTES

Some of you may have noticed the distinct lack of *profQUOTES* in this issue of *mathNEWS*. As much as it hurts us, there is a very good reason for this being the case.

YOU DIDN'T SUBMIT ANY!

You see, the editors don't have the ability to visit every class to gather humorous words uttered by the finest of the faculty. That is why we rely on you to share the humour you encounter in your lecture with the rest of our readership.

Hopefully next time, you will submit your *profQUOTES* either to the **BLACK BOX** outside of Comfy or to mathnews@student.math.uwaterloo.ca.

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Cryptic Clues

Forward March

- Linear healed wound around Louisiana (6)
- Small space not open endlessly before phoning home (6)
- Fat prune begins partying (5)
- Forgetting name turning Asia after the beginning (7)
- Exaggerated statement rights male to place me inside short remote control (8)
- Diagonal distortion (4)
- Concrete facts, not unstarted image in a trimmed stiver (13)
- Whirlpool stuffed bear without small tea (4)
- Possessing ten emergency departments acted swiftly (8)
- Accumulating an evil, so I hear? (7)
- Outlaw found in iron instrument (5)
- Head of yak's listening organ lays oddly every year (6)
- Scrambled calf in common era followed closely (6)

Off the Cliff

- Standard unit for each northern flightless bird rising above rarity without it in excess (13)
- Shade of purple a certainty, by the sound of it? (5)
- Applying value after read-only permissions (8)
- Sounds like borrowing money by oneself (4)
- Raw fish slices scarf starting in empty martini (7)
- Railway vehicles without me starting darts in scene necked without odds superiority (13)
- Sarcastically mixing IIRC above alley without last ape (11)
- Alabama south of church minister of shepherds (8)
- Postal markings I see inside India (7)
- Japanese mercenary pirates' enemy (5)
- Blunt contained in fondu llama (4)

REMEMBER: Cryptic Clues and Quick Clues are separate! If you try and solve both, you will have a very large headache!

If you must do both, we recommend grabbing another mathNEWS

The Rules of mathNEWS

The first rule of mathNEWS is you do not talk about mathNEWS. The Second rule of mathNEWS is you DO NOT talk about mathNEWS

The third rule is we love pizza

The fourth rule of mathNEWS is that mathNEWS is never gonna give you up, let you down, or desert you

Quick Clues

Across

- Nauseous
- Snare
- Improve
- Advent
- Reassign
- Cavity
- Accusation in return
- Rostrum
- Short dagger
- Mine, to Farragut
- Mexican chip
- Revert
- Sacristy

Down

- Army officer who deals with supplies
- Swelling caused by liquid
- Cruel
- Average
- Stuffed pasta variety
- Study reliant on fossils
- Farewell speech
- Idiom
- Nightclub, perhaps
- Implicit
- Terror

gridCOMMENTS

The cryptic is back

I have been informed that this week there will be two sets of clues again for the gridWORD. Given that the only two solutions that were submitted last week could be considered to be completely incorrect, I hope that the cryptic clues will result in better submissions.

The winning solution for last week was from Ian, whose answer to the gridQUESTION, "What do you do with your vuvuzela?" was, "They were killed by dividing by zero". While the answer is to the wrong question, it is much more succinct than the other option, which accompanied a solution composed entirely of Greek letters and was thus even more incorrect than the winning solution which used all valid English words none of which were suggested by the associated clue.

For all those who did not submit, this issue's grid is the last opportunity to win a prize. If you want to win, be sure to submit to the BLACK BOX before it's too late. Remember to give an answer to the gridQUESTION: What is the bain [sic] of your existence?