EngSoc President Cat Hay Rejected from Mathematics

Doesn't stop her from expressing Mathie Pride

Cat Hay, the current President of Engineering Society 'B', was painted pink last week after Math won the Eng vs Math Penny Pinchers Competition.

While Engineering raised more funds than Math ($527.67 vs $201.20), the rule where non-pennies deducted points from the affected society resulted in many non-pennies being donated to Engineering Society jars. The final tally was -10,343 points for Engineering and -6,920 for Math.

Software Engineering students are believed to have played a role in both sides finishing in the negatives, though the extent of their involvement is currently under investigation. According to SE student Jeff Bain, "We [SE] won. That's all that matters."

The initiative raised $728.87 for HopeSpring Foundation, a cancer support group in Waterloo Region.

InsidED

*look*AHEAD

*math*NEWS	
March 20	Issue #5 abuses its mandate
March 30	Production Night #6
	Meet at MathSoc office @ 6:30 pm sharp
April 3	Issue #6 prepares you for exams

MathSoc	
March 23-24	Elections (3rd floor hallway)
Wednesdays	Games Night (MathSoc Office)
Thursdays	Movie Night (Comfy)

Feds	
March 27	Annual General Meeting (SLC)

Math Faculty	
Questions about these? See an academic advisor!	
April 3	Last Day of Lectures
April 7	Last Day to Drop a Course
April 8-24	Exams

CECS	
Ongoing	Interviews, job matches

Miscellaneous	
March 20	Nowruz
March 22	World Water Day
March 23	Day of Polish-Hungarian Friendship
April 1	Pull A Prank On A Random Mathie Day

The Cake Is A...

...yeah, we don't know either

Last fortnight, I published a tutorial for Imprint on how to properly continue a flame war without looking like noobs. However, they either didn't read it, passively brushed it off, or actively went against it last week.

If you see page 34 of last week's Imprint, you will find a cake with "Imprint: *math*NEWS = *bad*NEWS" drawn in icing. The caption also left our staff confused: "Poor *math*NEWS: even pastries don't like you."

Perhaps Imprint needs a reminder that pastries are inanimate objects, and as such, do not have the cognitive ability to like anything. Therefore, for the exact same reason that pastries don't like us, pastries do not like Imprint either.

The message on the icing left us all wondering whether this is supposed to be an insult or not. I mean, not only do we recognize that *math*NEWS = *bad*NEWS, but we take *pride* in making it that way. Note to Imprint: trying to insult us by pointing out our mission makes you look like an assclown.

I will forgive them for forgetting that they released their whatever-they-call-it on Pseudo-Pi Day. I mean, we don't expect a lot from Imprint in that regard. But they could have at least invited us to take part in the consumption of this cake so that I could throw it in their faces.

InsidED

Hand Wave This is not the whitespace you are looking for. Carry on.

*mast*HEAD

Celebrating Spring since 1973

At 6:44 this morning, we saw the official start of Spring in Canada. And we at *math*NEWS have started to enjoy the season, the warmer temperatures, the lack of snow, and the return of creatures roaming about. Unfortunately, for many of us, assignments are still on the rampage, and... yeah.

However, there's one thing that comes with every spring that everybody here loves to hate. That's right, readers! The Dreaded Geese are returning to their nests on the UW campus. And so, taking the initiative to make things better, we asked our staff how they plan to counter the return of the geese. With a friendly reminder that some of these ideas are illegal, their plans: Sector Corrupt (Catapults. Laser-sighted, flaming cow-firing catapults. The only kill is overkill.), Brucey-π (Unleash InsidED's mom.), snippet (Do what the University of Wisconsin – Madison does: let the Archery Club hunt on campus), unja (I believe that these geese are the PhD dropouts. Ergo, we should treat them with utmost respect. Well, at least they tried), Sexy Whore (Do that sound that they make when you pass them, and chop them), Megaton Panda (With a paper clip, some string, and a gatlin gun), Baxter (Let my dad and a shotgun on campus), The Hee Ho (Feed them to the king), Angelo (Recite one of the past exchanges between *math*NEWS and Imprint), Lich (Science vessels with irradiate).

As always, thanks to Graphics for doing what they do best, though I have yet to figure out what that is, as well as to Plant Ops for putting my BLACK BOX back up. Thanks as well to the warm weather for allowing me to take brief walks around Waterloo Park. Finally, thanks to my RTOS project for not allowing me to make those walks longer and more enjoyable.

InsidED (Throw their own droppings at them, using gloves of course.)

[It's because he tells good stories – CorruptED]

Prez Sez
Pi Day happened!

Elections are happening! Voting will start on Monday! For the Spring 2009 term, Nadia Novikova will be replacing me as President, the VPF will be Phillip Keung, and the VPA will be Matt Lawrence. Running for VPAS (which you can vote for on March 23, 24) will be Jared Hebert and Ian Charlesworth. For the Fall 2009 term, Will Sellier will be replacing me as President and running for VPF are Sarah Pidcock and Nikolay Hrsitov.

We're working on a bit of an overhaul of our society and how it is governed. The executive workload and transition committee has been meeting to review the current exec structure and see how it can be better done so that our exec have time to put smiles on your faces!

Math beat Engineering in the Math vs Eng penny pinchers competition. So I was painted pink because we both had negative scores but since Math won, Cat Hay was also dyed pink and you can find her on the cover of *math*NEWS.

As always, if you have any questions, or are pondering about things like the Hairy Ball Theorem as always let me know!!

Chris "Brucey-Pi" Neal
MathSoc President
`pres@mathsoc.uwaterloo.ca`

VPAS Sez

I hope you've enjoyed Psuedo Pi Day!!! We've got ONE MORE thing for all of you out there! AN ELECTION! Yepp! A fun loving political election!

As you know, Chris Neal, current president of MathSoc is graduating. Will Sellier was acclaimed as our new President of MathSoc for Fall 2009. However, Ajnu Jacob, our current VPF, is stepping down. We need a NEW VPF! We're also getting elections ready for the Spring 2009 term.

The following people have been acclaimed: Nadia Novikova, Phillip Keung, and Matt Lawrence for Pres, VPF, and VPA respectfully. Now... we need a VPAS!

Well, nominations are in! It's going to be a show down between Sarah Pidcock and Nikolay Hristov for VPF in the Fall 09 term; and Ian Charlesworth and Jared Hebert for VPAS for the Spring 09 term!

Remember to VOTE VOTE VOTE on March 23rd and 24th ONLINE. You can find the link on the MathSoc website (`http://www.mathsoc.uwaterloo.ca`).

Maria Christina Greco
Vice President, Activities and Services
`vpas@mathsoc.uwaterloo.ca`

BLACK BOX Returns to MC
After nearly a term of absence

As we were starting layout in this issue of *math*NEWS, Plant Ops were finishing the re-installation of our beloved BLACK BOX.

As some may know, earlier this term, the submission box somehow left its perch in the third-floor corridor. We found it a week later, and decided it needed a makeover.

Now you can submit all *prof*QUOTES, articles, *grid*WORD submissions, angry letters, and loose change to our New and Improved BLACK BOX, located right outside of Comfy.

InsidED

DC Exam Study Zone
Coming Soon!

In response to student demand, DC staff will be taking a firm stance on noise, transforming the Library into a quiet Exam Study Zone for the exam period of March 29 to April 24.

The Davis Centre Library will be divided into two zones that will be colour-coded Red and Yellow. Red zones are Silent Study Zones: no talking will be permitted. Yellow zones will be Quiet Study Zones: quiet talking will be allowed. In both cases, headphones must be used with any device that could be heard by others.

Additionally, to help reduce noise and other disruptions, students will be required to turn their cell phones to silent prior to entering the Library. As well, hot or aromatic food will not be allowed (though covered drinks like coffee will still be permitted). Students disregarding these rules will be asked to leave the Library.

The Exam Study Zone is being created in direct response to students' many requests for reduced noise and increased quiet study space in Davis. Students have provided feedback to this effect through comment cards, discussion groups, and numerous surveys.

Nancy Collins
Communications and Liaison Librarian

ElseWhen
Where we compare how witty we are now with those folks 25 years ago

And so, looking back on the *math*NEWS articles of yesteryear (March 16th, 1984), we quote some highlights. So without further ado, whoosh:

- An article done in the style of a work report, about how *math*NEWS articles should never become like a work term report. (*How very meta!*)

- Proposing administrative personnel have a game involving frustrating the student body. Even in the '80s, nobody wanted to go to the sixth floor of MC apparently.

- A page full of mad scribblings about a MathSoc Wine and Cheese. Apparently Pink Tie wearing got you free wine. (*MADNESS! (obligatory "This is Sparta")*)

- An article generally mocking programming languages for being bad to use (only recognisable ones these days - C, FORTRAN, COBOL … unsurprising)- Most interesting excerpt: C is almost as typeless as B, its predecessor. However, more people know (or at least have heard of) C, so it is harder to be incomprehensible. Further, many implementations lack floating-point capability, which is always a nice lack of a feature. (*rather low opinion of C at the time*)

So, we see that *math*NEWS has always been, and always will be, mostly about making fun of things for the lure of pizza.

Sector Corrupt

Thanks, Plant Ops, for putting our box back!

*math*NEWS*mail*BAG

Re: Re: Yo! First Years! (March 6, 2009)

I'd like to thank Ms. Mahoney for her response to my article "Yo! First years!" In the article, I have tried to talk about the PD1 format only, and to write in a tone suitable for both *math*NEWS and the audience *[There's a tone not suitable for* math*NEWS? — InsidED]*. I do apologize for slipping up and calling PD1 "stupid" with little justification – my bad. The purpose of this article, then, is to supply the overdue explanation, and to talk a bit more about the motivation behind my previous article. Both, I hope, will encourage you to think more critically about your resumes.

PART ONE: WHY I DISSED PD1

There is no doubt that PD1 is a great source of information and a good starting point for first years. I'm glad that some of the specific techniques I mentioned were in PD1 – I got something right for once! Yay! However, I used these only as examples of "thinking outside of the box" (the box being the rules that PD1 imposes). Saying that these suggestions were in the box to begin with does nothing to fix the crux of the problem: that PD1 encourages students, perhaps unwittingly, into thinking in a framework based on fitting into boxes and moulds.

As an example, Ms. Mahoney mentioned that PD1 provides a number of resume templates, including the functional resume template. The question then becomes, "Which template/mould would I fit in?" – sorry, the actual wording on PD1 is: "Choose the resume style that is right for you." Well, what if none of them are right? The focus of the student then becomes: "How do I make my information fit into this template?" rather than "How do I change the template to better communicate what I need to?" The difference is subtle, but important. It is why in my article, I tried to emphasis communication, as opposed to specific templates. Co-op employers really don't mind if you use your own format to get the point across!

The idea of using a rubric to give resume feedback seems counterintuitive as well. Sure, there are rules that every resume should follow: like spelling and grammar and making sure your degree name is spelled right (thank you PD1 markers!). But beyond that, would an employer really penalize you for not having 4-6 points in skills summary, without regard to the content? What if a student decides to remove "skills summary" altogether? (Heck, I almost did it!) Explaining acronyms that employers will know but markers won't makes no sense either. True, most first-timers are probably not going to be creative. Yet harm is done when the idea that a resume has to be formatted a certain way becomes ingrained.

I mentioned being docked marks for the resume assignment for not including all required headings. This is a true story. I didn't include the 1-3 relevant assignments still listed as a requirement in the rubric. I failed. In order to maximize my chances of continuing co-op, I did something a student should never have to do: I wrote a "crappy" version of my resume to pass PD1, and a "real" version to get interviews. This is where PD1 crosses the line into – and I really have to use this word – stupidity.

The trick of benefiting from PD1, then, is to recognize that the course is limited. I think PD1 would be less "dangerous" if it clarified its own limitations: it is a guide to resume writing, not a bible. Pointing this out once or twice isn't going to work. One would need to word the readings in a less restrictive manner, allow the students to be creative, and refrain from penalizing them for using novel ideas. What would be most effective, however, is if we students took charge to take everything we hear or read with a grain of salt.

PART TWO: WHY IT IRKS

You might ask, why is this important? Because it affects how you think! For example, a friend once asked me whether including a particular activity from over 4 years ago is allowed. If you work within the "fitting in a mould" framework, this is a typical question: am I allowed to do this, or not? Yet I could equally well ask: shouldn't she be the one deciding what she wants employers to know? Who else but she can understand the importance of that activity? Who am I to tell her what she can and can't tell employers?

Others may insist that after all, this is a resume. It's supposed to look a certain way. Well, why? Is it because everyone else does it too, and you'd be a fool to do things differently? Or is it because you feel that the templates do work well for you? Would you think the same templates would work for everyone? Do you think there exist a finite number of templates that would work for infinite number of people? (Don't give me a math proof, please.)

How should you write your resume, then? Well, I won't help you more than PD1 would if I gave you a list of rules. So instead, I'll give you just one rule: don't be afraid to break other rules! I listed some examples in my original article, but if you want more ideas, here they are:

- Don't draft your resume by filling in a blank template. Start with a blank piece of paper and a single question: "What do I want to tell employers about myself?" Write everything down, and then figure out how to organize it. You can get ideas from other peoples' templates, but feel free to change it around.

- Try talking about things you learned on your own, outside of school/work/extra curriculars, that will set you apart from others.

- Have the main part of your resume consist entirely of a list of projects – from school, work, personal projects – then include work experience and education at the end as one-liners. This template looked weird the first time I saw it, but it can be effective: it puts the focus on what you've done, rather than where you did it.

These ideas won't work for everyone. What's important is that you should be unafraid to be innovative. Don't worry about whether saying something a certain way is "allowed". Think only about whether it makes sense. No one else can tell you; you have to think for yourself.

In summary, PD1 can give you good advice, but it can also hinder your ability to think creatively. Of course, my knowledge and experience is limited, so I encourage you to decide for yourself whether you agree. CECS does their best to help us, but we do need to evaluate what we're told. Incidentally, there is a resume critique program run by CECS that I heard great things about, so check that out!

arcsin

Interesting Math

German Tank Problem

You are an Allied intelligence analyst during World War II, trying to estimate the number of tanks the Germans have produced in a given month, N. We make the assumption the tanks are labeled from 1 to N, and you are given some of the numbers from captured tanks. Based on this information, how can you estimate N?

This problem was raised in WWII, and was applied to great success (much to the chagrin of the conventional intelligence people). We try a point estimation — that is, using the data to calculate a single value as the guess for N. The estimate for N is $m(k+1)/k - 1 = m + m/k - 1$, where m is the largest serial number observed and k is the number of serial numbers we have (the number of data points). Why does this work? There exists a rigorous proof why this is a good estimate, but it involves too much statistics for my taste. Instead, here's an intuitive idea. We start with the sample maximum, m. To adjust for the bias, we add in the average gap between observations in the sample data, because a gap should extend past the maximum observed in a similar fashion to how the gaps occurred prior to m. Thus, we add $m/k - 1$, with the shift of 1 appearing as there 1 less gap than data points.

Let's try out an example to see how this works. Suppose there are 20 tanks, numbered 1 through 20. You have captured tanks 2, 7, 10, 12, 18 (I choose these at random). By the formula presented, we have an estimate of 20.6, which is pretty close to the actual number. Now suppose you get hold of the information that a tank is numbered 8 (also random). Then k increases to 6 while m remains at 18. The formula now yields 20, which is correct (honestly, I choose the numbers at random)!

Here is a little bit of historical data. In June 1940, conventional military intelligence estimated 1000 tanks produced. The statistical estimate using the above method put the number at a much lower 169. The captured German records: 122. Again, in June 1941, conventional intelligence estimate: 1550; statistical estimate: 244; actual production: 271. And finally in August 1942, conventional intelligence estimate: 1550; statistical estimate: 327; actual production: 342. Not too bad, right?

Generalizations: This estimate can also be used if there is an unknown lower bound, say from n to N, by applying a similar analysis for the lower bound, and utilizing the sample min instead of the sample max. Rather than using a point estimate, we could attempt a interval estimate with a corresponding confidence. For example, for a pth lower quantile and a qth upper quantile, the interval estimate is given by $[m/q^{1/k}, m/p^{1/k}]$. You may notice that for large symmetric confidence intervals, say 95%, we have $p=2.5\%$ and $q=97.5\%$, and $q^{1/k}$ is approximately 1. For example, take $k = 6$. Then $p^{1/k} = 0.541$ whereas $q^{1/k} = 0.996$. Thus we may assume an asymmetric interval with a downward bias for simplicity. For example, if $k = 2$, then the interval is now given by $[m, 4.47m]$. If $k = 20$, then the interval is given by $[m, 1.16m]$. You can try out a few more points if you'd like, or believe me when I say that if k is small (i.e. a small sample size), then the confidence interval is very wide, as there is a lot of uncertainty associated with a small data set. The intervals shrink exponentially as per the formula, associated with the exponentially decaying likelihood that all samples will be significantly below the maximum (below m – notice we always have a fixed maximum sample size).

I did remark in my last article that this could be related to the puzzle problem of determining N for an N x N puzzle, given C pieces. Well, some people like to number the backs of the puzzle pieces in order, so that they have a safety net if they want to redo the puzzle at a later date. We could then apply the German Tank Problem formulae to this problem, and combine this information with that which we already had by using the capture–recapture methods to get a better estimate or higher confidence. So now you know how to estimate how many tanks have been produced (under certain assumptions) having seen a few of their serial numbers … I mean, if you ever needed it.

Vince's problems of the issue 1) Prove or disprove: there exists a non–Lebesgue measurable Hamel basis for the real numbers over the rationals.

2) Give an example of when the conclusion of the Radon–Nikodym Theorem holds even when neither measure in the hypothesis is σ–finite.

Vince Chan
v2chan@student.math.uwaterloo.ca

LOVE TRIANGLES

ISOSCELES — DOESN'T KNOW OR DOESN'T CARE

EQUILATERAL — CAN'T PICK BETWEEN THE TWO

SCALENE — HAS CHOSEN ONE — IS GOING TO FIND OUT IN THE WORST POSSIBLE WAY — WANTS TO INCREASE THIS

Snippet
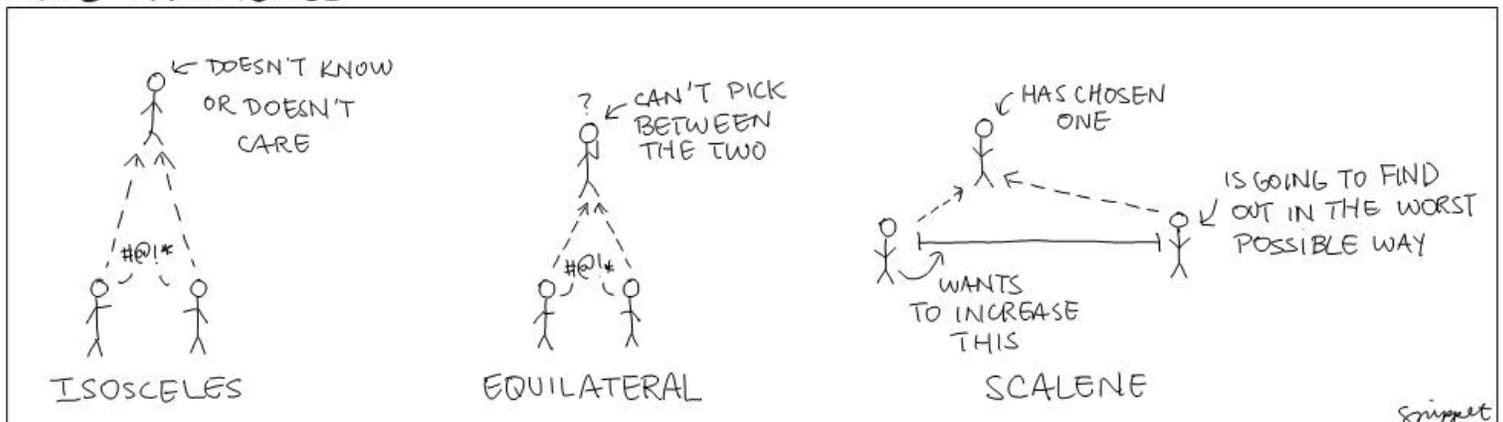
MathCooks!

Rather, math*NEWS is getting lazy and decides to just give shopping tips instead*

Remember two issues ago when I talked about taking shortcuts in cooking? It's great, but not always needlessly complicated. As university students, we're not expected to be the most healthy eaters, or the most varied. What's important, really, is not making the fancy foods, but have a certain plan of relatively simple meals that you can prepare, and cycle them. Here are some other ideas in dealing with relatively healthier meals:

- **Veggies in your diet:** Not eating enough veggies? You don't always have to buy fresh veggies from the store every week; that will become a hassle if you are in midterm season. A valid alternative? Frozen vegetables! Flash frozen vegetables pack essentially the same nutrients as fresh ones, so just steam (or microwave) and season to serve! When buying a package of frozen veggies, just make sure to read the ingredients to make sure there's no added preservatives or stuff like that. (For example, fructose is added to frozen fruits to make it sweeter than it actually is.)

- **Saving some $$$**: Look at fliers before you go shopping. In particular, the superstore in Highland Hills (Take the 12 straight there) is usually pretty price-efficient. Looking at deals on the web before you go shopping will help you come up with a shopping list before you go. Studies have shown that people who make a shopping list before they go shopping have a tendency to stick to that list so they will be less likely to splurge on impulse buys. That'll save you money two-fold!

- **Time Crunch?**: Short on time? Stock a few non-perishable essentials in your pantry for when you're running low on time. For example: A can of chunky soup doubles as a fulfilling pasta sauce (Or even just on its own!). It's a really quick way to make a really filling meal. Also, if you're really not that worried about the nutritional value, maybe buy a few microwavable foods when they go on sale. They keep in the freezer forever for emergencies!

- **Cooking ahead**: Save time on meal prep by overcooking on the weekends. For example, if you were making chicken breasts for supper on Sunday, cook a few extra (minus the seasoning), then you can use them for dinner prep on any other night easily. Alternatively, if you want to make a large dinner, for example a pot of stew, you can portion the stew into tupperware, add in the rice (or if you just eat it without it) and freeze it for some other night. An extra 10 minutes on Sunday can save hours over the rest of the week, especially if you're too beat to do anything after a long day of school.

I apologize for the lack of a recipe this week (Unless you count canned soup + pasta as a recipe), but hey, tips on streamlining your cooking endeavours while sustaining yourself through university! Huzzah!

Megaton Panda

[Insert filler here]

Thor's CS Problem of the Fortnight

Stealing interview questions, since 1822.

This Fortnight's Question: Produce a program to reverse a bitstring that will run in $\log(n)$ time on an n-bit string.

Last Fortnight's Question: What is the best way to sort records that are too large to fit into memory?

Its Answer: Long story short: I spent an interview arguing about this problem. Not a great employment tactic! It is a big industrial problem though, with huge programming contests like the MinuteSort contest, so the general theory behind it is important to know.

This type of sorting is called External Sorting, and there are all sorts of big programming contesnts dedicated to doing it really well (look in MinuteSort). Generally, however, the right thing to do is going to be something a lot like an external mergesort algorithm. In this algorithm, we find K, the factor by which the data to be sorted exceeds the memory we have available. For example, if we're sorting 10GB of data and we have 2GB of RAM available for storing the sorted data, $K = 5$.

We divide our target data up into K chunks, and we read each chunk into memory. For our example, we'd read in each 2GB chunk, sort it by eg. quicksort, and then write it back out again. Then we come to the tricky merge step: we allocate K input buffers and 1 output buffer for our main memory. Each of these buffers will be of size $(M/(K+1))$ for M memory, eg size $2/6 = 0.33$GB for our problem. We read the first 0.33GB of each of our 5 chunks into memory, and reserve 0.33GB for output. We then perform a K-way merge of the data in the input buffers: we walk down the records in the buffer and select the lowest at each step and write the lowest of the K values we are examining at any given time into the output buffer. When the output buffer fills up, we flush it and write the resulting data to disk in our final sorted list. When we reach the end of an input buffer, we read the next 0.33GB of data from disk into that input buffer, or marker it as empty if there is no more disk data to grab.

This algorithm has some nice properties. First, it doesn't matter if you have random or sequential access to the disk: it will work the same in either case. Secondly, it only requires a linear number of disk reads and disk writes, as long as you are willing to make certain assumptions. First, you need to be able to fit at least one key from each of your input buffers into main memory. If you can't, you're going to need to split the data to be sorted in some place, and perform this algorithm on each subset, and then merge the resulting lists by the same method again. The end result is that if you are willing to assume the memory is able to hold K keys, it can be done in a linear number of disk reads and disk writes. If you'd like to talk about the asymptotic case, however, the number of disk operations required is polylogarithmic ($n \lg n$) in the input size. This is what caused my minor disagreement with a Qualcomm interviewer: whether or not it was really possible to sort data in linear disk operations.

Thor

*math*NEWS: More Delicious than Cafeteria Food

Though, if you plan to eat this, you should probably see a psychiatrist.

SoundFM forces student refendum

Station not content unless they are wasting student money

The student's currently unfunded radio station CKMS (although, they are calling themselves "SoundFM" for whatever reason) continues in its campaign to waste student funds by holding a referendum to try and get them back on the student fee. CKMS, which probably stands for Can't Keep a Manageable Signal, hasn't met its quota for wasting student money for the year and needs to start doing so otherwise they won't be able to manage. The organization, whose funding was removed from the student fee recently, wants to try to get back on to continue to waste student funds. Even if they don't make it on the fee, they'll still blow some money with the referendum.

Angelo

A Fairy Tale

The Tale of Two Princes

Once upon a time, there were two princes. One prince took himself seriously, though none in his kingdom took him so. The other prince was jocular, yet none thought that of him. These two princes were at odds with each other. From atop their castles, they would shout obscenities at each other with juvenile animus.

Their exchanges were not regarded kindly by the village folk. The serious prince appeared petty in the eyes of his countrymen, and the jocular prince appeared as a child in the eyes of his. The villagers hid in their homes, praying to avoid the futile animosity which the princes displayed.

This fight, which raged on endlessly for days, slowly began to chip at the foundations of the castles. Fragments of their empires would fall and crush those in their demesne. Eventually all that remained was the towers from which the princes shouted vulgarities and unpleasantness. Neither prince dared to stop. That was the end of the two kingdoms and their princes.

The Hee Ho

*dissed*CONNECTIONS

We met in CS240, I'd heard of Big-O and Little-O, and Omega before, I was no dummy. I mean I abused notation, saying $f(n)=O(N)$, but everyone did. Looking back, I should have I remember clearly thinking you were either Big-O of N or perhaps little-o of N, but I had no idea that you could be \Theta(N). I went through the steps, using induction to my function was bounded above by yours, it certainly wasn't little-o, the bound above was tight. I'd wanted to try the new technique I'd learned earlier that class, so I checked to see what your lower bound. I'd already used induction earlier, so I decided to take of limit of you over top of me as time went to infinity. Imagine my surprise to find out you were Omega of N, I had to double check with CLR[S] but your bounds were tight, they were \Theta(N). Imagine my surprise to find than an infinite collection of functions were \Theta(N). They gave me the Big-O upper bound I craved, while providing the exciting tight lower bound allowing me to estimate how long it would take for large values of N.

Student apathy gets Satan acclaimed as society president.

Disinterest in student politics may have brought about the end of the world as we know it. Math Soc closed the nomination period for its executive for the Summer and Fall terms, with only one application submitted for the role of Society President. The applicant, Satan, Lord of Darkness, was acclaimed to hold domain over the math student body.

Satan plans on bringing unparalleled darkness and hellfire to the student body during his term in power. Many math students are glad that the status quo will remain within the society, but are more concerned about some of the extras that he plans on bringing to students into the society. Satan plans to implement a 666-step plan to get students more involved by sucking out their souls with a straw and forcing them into manual labour camps to build his throne using the bones of those not strong enough to endure his august aura of incendiary horribleness.

In his first week Satan vows to overthrow the kingdom of heaven and provide a delicious banquet of the flesh of the angels to all of his supporters. Unofficially this is a BYOB event. When asked about concerns the student body had about his upcoming rule, Satan commented that if he runs opposed then "really, who's going to stop me? Mwa ha ha ha ha ha ha ha ha ha ha ... ha ha ha ha... [ha] ha ha."

The Hee Ho

*prof*QUOTES 101

[when talking about ligature] *math*NEWS doesn't do it because it's not a real newspaper.

Terry, SE 382

[to InsidED] You and Imprint should have a break-dance-off.

Terry, SE 382

When I was on the beach in Miami I wrote *sin x*/*cos x* and said 'Oh look, I got a tan'

West, MATH 128

Maximum empty. Sounds like an action movie. It would have Keanu Reeves in it because he is maximum empty.

Kaplan, CS 115

It's like listening to Celine Dion... I don't take marks off for it but it's bad taste.

Shallit, CS 341

If you sent in more *prof*QUOTES

We wouldn't have to fill this space

Now, we're not saying it's your fault, but until we can harass our profs to write down their comedy routines and hand them to us directly, it's someone's job to write down every blunder, tomfoolery, and horrific pun your profs utter. Please, think of the Profs. For some of them, this is the closest they'll get to being appreciated *[though we do appreciate the quotes themselves – InsidED]*. Plus, since you can read this, you've got the literacy to write down a one-liner and drop them in the New and Improved BLACK BOX.

This has NOT been brought to you by a need to fill this space.

InsidED, CorruptED

Fun with SSH
Oh the hilarity

SSH is fun. If you didn't know already or if you already knew, Baxter and Sector Corrupt are here to help you along the way.

The world of SSH can be hilarious. Especially to those clueless Arts students. Whether you want to be hilarious, or just make your friend have a bowel movement on the spot. You can do anything to a computer with the sudo password.

Sadly, there are some limitations. In other words, I am a sad panda Windows. The computer you are SSHing into must be running MacOS, or some form of Linux. You must also find out the sudo/admin password for the said computer, which can be found through some Facebook creepin'. You will also need the computer's IP address, which you can find by typing `ifconfig` in the terminal window.

Once you have these two very important items we can start.

To even start SSHing you will need to setup your victim's computer for SSHing. For a computer with Linux on it you will need to simply open a terminal window and type `sudo apt-get install openssh-server`. To turn on SSH on MacOS go to 'System Preferences' > 'Internet and Networking' > 'Sharing' and check the box marked 'Remote Login.' Now the fun begins. Simply type the following to begin: `ssh -X <username on your friend's computer>@<your friend's computer's IP address>` You are Jack's sense of humour.

Linux Commands:

- Control the volume on the computer: sudo alsamixer
- Opens the VLC player on your computer to play music through their computer (I suggest 'Leave me to Love - Imogen Heap' at full volume, or the obvious Rick Roll.): `vlc`
- Install anything (be dirty): `sudo apt-get install <program>`
- Espeak (I suggest using -f to get it to read from a text file, and setting the speed with -s): `espeak`
- Eject the CD (close with -t): `Eject`
- Making folders (in other words, cover their desktop with hundreds of folders): `mkdir file1 file2 file3 … filen`
- Echo (send a message to everyone on the current server): `echo "words" | wall`

MacOS Commands:
```
(check-expect (as-fun-as-linux? 'mac) false)
All tests passed!
```

- Say (Make the computer say something, just like espeak): say "words"
- Open (Open a program): `open <program>`

Got any other ideas, or fun commands (especially for Mac, we need to have more fun with the oblivious Arts students.) toss me an email at `Baxter.MathNews@gmail.com`.

Baxter and Sector Corrupt

We just spent an hour figuring out how to fill this space.

*prof*QUOTES

There are some interesting typos on this slide. [points to "portiono"] Looks like [the author] was trying to go Italian.

Bishop, ECE 327

[from slide] Overclocking: running chip at a clock speed faster than which it was rated for (and hoping that your software crashes more frequently than your over-stressed hardware will).

Bishop, ECE 327

Nobody works [in the labs] unless it's very cold in E2. Call it a cold day in hell.

Bishop, ECE 327

[sees student reading *math*NEWS in class] Am I in?

Struthers, STAT 450

As n goes to infinity, you should get a narrower posterior.

Struthers, STAT 450

Statistical consultants are like bank CEOs: completely ethical.

MacKay, STAT 435

[talking about where things come from] Where do babies come from? Everyone knows that storks bring them...which is odd because there are no storks here, but a lot of babies.

MacKay, STAT 435

They take the 100GB drive they got in their box of Shreddies, and store all of Bob's messages on their Shreddies drive!

Goldberg, CS 458

How many of you have never run software with a remotely exploitable bug? *cough*Windows*cough*

Goldberg, CS 458

[Correcting a smudge on the overhead slides] This would look better if I hadn't cried about it here.

Shallit, CS 341

[While describing an assignment] So after you've found your body parts...

Terry, SE 382

Oh, it's in *math*NEWS?! There is so much education to be had in *math*NEWS. I mean, not only are there those marvelous quotes where my colleagues usually show up, but there's actually education in it.

McLeish, STAT 240

You can bring a pink tie calculator, but don't punch any of those statistics buttons or I'll come and punch your butt[on]. I may be old but I'm tough.

McLeish, STAT 240

Basically, vertices of degree 2 don't really matter when it comes to planarity, because you can just squint and pretend you can't see them.

Wagner, MATH 249

Of course you get much more of a headache working with matrices in infinite dimensions, but that's why they invented coffee.

Marcoux, MATH 146

Horrorscopes

Coming up with random crap is harder than you think

ACC: An elusive number will slip by your examining eyes like a sliver of mercury, its consequences catastrophic. Your efforts at rectifying it will be like digging a beach for a grain of sand. Your lucky number is 4 hours regretting that you weren't more careful.

ACTSCI: You will realize how hollow human greed really is, so you seek more, like unlimited control of space and time. Once you realize that is too great a task, you will settle for some cake. Your lucky number is 8 slices.

AMATH: Things can be applied to do good or evil. Unfortunately, it requires great power to be able to properly execute evil acts and get away with them, so you will just help an elderly woman cross the street. Your lucky number is 5 minutes to cross the street.

BBA/BMATH: You find it very difficult multitasking two fronts at a time. The micro is simply too demanding. You try to make compromises between economy and tactical maneuverings, but such decision may not always turn out to be correct. Your lucky number is 2 reavers dropped in your mineral line.

C&O: You examine the order in things to infer some higher purpose for their existence. But you will eventually realize that chaos is the only end. Your lucky number is a long but inevitable 10^{100} years

CM: An analytical mind's greatest enemy is a painful static shock at the most inopportune moment. Think twice before reaching for that doorknob. Your lucky number is 5000 volts.

CS: You will feel better/worse (depending on your attitude toward things) knowing that your creations will be capable of killing many people. You will also feel better/worse knowing that the fruit of your labor can make the world a better place. However, you will most likely not care. Your lucky number is 1 decision you won't make.

MATH BUS: Your ear will start to bleed, and your brains shall be siphoned out by a giant octopus. It is better to mind one's own business. Your lucky number is 1 nose you shouldn't have poked somewhere.

OR: Disillusionment is but temporary. Blindly stumbling through thick fog can prove to be a rewarding experience, unless of course, you don't manage to get anywhere. Your lucky number is 4 cardinal directions mixed up.

PMATH: You feel a surge of immaturity and idiocy manifesting in your vicinity as someone mocks the name of your program. "Ha ha, you're in 'pee' math". Your lucky number is 1 painful cringe.

SE: An insensitive colleague will be cruelly judgmental towards your work, and swift retriubution is in order. However, be wary of entering contests of cruelty, for failure to win can bring dire consequences. Your lucky number is 12 complaints you should have swallowed in silence.

STAT: Sometimes it is not best to examine all possibilities, for there are things people do not want to know. Perhaps the engineers had the right idea all along. Your lucky number is 3 examples.

UNDECLARED: Luck will be upon you in the near future, and good fortune will in turn be granted. However, you better hope it will last a while, because it will not be given to you again in 89 years. Your lucky number is 10 more lottery tickets you should have bought.

Lich

How to Legitimately Get out of Class

and meet a nice guy

Well, it's nearing the end of the semester. Midterms, tests, or quizzes (or whatever name your prof has decided to give those things that measure your knowledge and are worth at least 25% of your grade) are coming to a close. And unless you didn't pick your electives wisely, papers are not a worry. With the nice weather, and motivation dwindling, who really wants to be in class?

Perhaps skipping class is not your style. Or you realize after writing that brutal midterm that maybe you do need to go to at least some classes. A second alternative is available, and means you can miss class time without missing class material…collapsing. Yep, that's right - fainting, passing out, whatever you want to call it, it works well.

Now, I haven't had a chance to experiment with it, but with five or ten minutes left, class stopped in the middle of a proof and was let out early. I would definitely suggest fainting sometime in the second half of class, far enough in that the prof doesn't think any lecture time is salvageable. Feel free to experiment with location as well. On the way to the door worked for me, but at your desk might also work well. Definitely closer to the front of the room will have more of an impact: more people will get to witness it, and the prof will be less able to ignore it.

So, as long as you don't mind making 5 new friends (3 paramedics, a firefighter, and a police officer), and being known as the girl who fainted in class, you'll be out enjoying the sunshine in no time.

As for dating advice, what's better than 5 muscular, uniformed men attending to your needs?

feeling fine

Rejected *math*NEWS Articles

- Dating Advice from the Angry Italian (too angry)
- Things I Found In My Socks This Morning (in bad taste)
- A certain person's Erotica (ummm… need I say more)
- Guide to the Voices in [Sector Corrupt's] Head (scary)
- Things Engineers Can Do Right (too short, even for filler)
- What to Do in 1962 (it came a little late)
- Dating Advice From the InsideR (obvious reasons)

The Editors

How to be Hardcore

Because if you're gonna be a geek, might as well be good at it

Hey, you! Yeah, you boring geekface. Are you sick of being looked down upon for being run of the mill and nerdy? Then I've got a deal for you! Having dedicated my life in general to the trawling the great wastes of the interwebz searching for 1337-ness, I give to you my simple guidance on how to get started on the path to being a hardcore geek. If you're gonna be a geek it might as well be an impressive one.

1. **Use Unix. No Exceptions.** Why? Because I said so and I'm the one who wrote this guide, so clearly I must be qualified. It's being printed, no? Besides, everyone knows that nearly 40 year old operating systems are clearly superior. Just ask all those hardcore nerds on the tubes.

2. **Use the command line for everything.** This one springs naturally from the last one. You're on a system whose strength is the fact that unlike Windows, using it won't make you cry yourself to sleep and curse at Bill Gates. Besides, Hardcore means making people around you stare in awe as you make things happen by typing words.

3. **D0/√'7 741]< 1/]<3 d/z.** Everyone who spends 5 minutes on the net can understand it, and most can write it. It doesn't make you any cooler, so stop wasting time that could be used to learn regular expressions.

4. **Learn regular expressions.** They're handy and they make you more awesome. Plus, Thor went out of his way to give us a taste of them last term, so give 'em a shot. It'll save some time, plus it's cool to be able to do something normal users might spend forever on in one command.

5. **Sleep is optional.** I don't sleep, I code. You too can make this change, all you need is a pile of caffeine and contempt for your own natural body clock. Besides, if you sleep more than you reinstall/reconfigure your operating system, you're just not hardcore geek enough.

6. **Spurn User Friendliness .** Friendly and hardcore ***Don't Mix***

7. **Pray to Cthulhu.** He may be a devourer of worlds and the darkness that will undo you at the end of time, but I bet he also codes better than you do, so asking for his favor might give you that extra kick. At the very least, you'll be able to brag your mind has been broken by one of the great old ones … *you know, when you're not gibbering in insanity*

8. **Love? Sunlight? These things, a hardcore geek craves not.** Listen to the Yoda voice you should have heard there. If you didn't hear Yoda's voice, you're probably not very well on your way to even normal geekdom and I've been wasting my time here.

9. **Wit.** In the end, being hardcore also includes being able to outclass you fellows and that means you have to be on top of the witty remarks. Sarcasm might do you some good, as will generally being a magnificent bastard. Remember, nowhere in this guide did I promise that you were trying to be liked, merely feared and respected.

10. **Pop Culture References.** Well-placed references will cement your geekdom and at least earn you my respect. Which means about nothing, but hey, maybe someone who actually *DOES* matter might be impressed by your reference to an obscure/not-so-obscure 80s show or interwebz fad. (obligatory Chuck Norris/Excuses me Princess/Likely to be eaten by a Grue/More than meets the eye/All Your Base/*meta joke*)

11. **I'm lazy now.** But I will add that laziness has lead me to do lots of cool geeky things in an attempt to save me some effort. Like half of everything I've ever programmed.

Hopefully, you've learned something. Actually no, hopefully you're already so hardcore you just rolled your eyes at this. If so, good. Enjoy not having a date, ever. If not, best get to work, or we might lose you to the normies. Either way time to eat pizza or some such thing *math*NEWS writers do.

Sector_corrupt

Another *math*NEWS Love Letter

Making "Desperate Housewives" look like life's under control

This morning, I have received love the Internet Dispatch, from the unknown person to me of the addressee. In the given letter, it was spoken about Love relations between people. In the list e-mail addressees, I have seen Your address *[Shows how desperate I am – InsidED]*. I long thought before writing to you. I consider, that The given chance for me unique *[You got that right – CorruptED]*, therefore I have decided to write to you. I I wish to find the true love! I would like to begin acquaintances with The small story about me. My name is Hasmik. To me of 27 years. I The quiet, young, purposeful girl *[and we're the snarky publication editors – CorruptED]*. I conduct the healthy Way of life *[while we eat little more than pizza, chips and soda – CorruptED]*. I do not smoke and I do not take alcohol. I have work, Which very strongly I love. But I do not have not enough love *[Your photo*

suggests differently – InsidED]. On the Internet I more recently *[Anyone care to finish that sentence? – InsidED]*. I have no wide experience in The Internet acquaintances *[No shit – InsidED]*. I wish to get acquainted with you more close, by means of the electronic Mails *[So you want to contact the electronic males? – CorruptED]*.

Please reply only to my personal e-mail: *[removed for obvious reasons – CorruptED]*

I with pleasure will answer you your letter as I will send you my photo. I with the big impatience *[I must see this impatience – InsidED]* will wait from you the letter with the full story about myself *[So you want me to just hit Return To Sender? – InsidED]*.

*math*NEWS*spam*BOX

$25 Gift Certificate

An excuse besides pizza to give us your articles

This week, after much deliberation, aka eeny-meeny-miney-moe and then some coin flipping, we've decided which article gets the coveted "Best this issue of *math*NEWS", which is almost like being the most intelligent person in the engineering faculty. Zing!

Anyway, without further ado:: Baxter! congratulations on showing us how to be an annoying git to any and all of our soon-to-be ex-friends. Keep up the good/bad/absolutely pointless work, and you can claim your gift certificate at MathSoc, 3rd floor MC, anytime. Except, you know, don't come back in like 3 years saying "yeah, I like... won for best article in 2009? do you have my gift certificate for me?" or we will be forced to replace you with a shell script.

Now go, my pretties, and bring me more articles so that we can continue justifying our pitiful existance as the best campus publication that doesn't make you pass out from boredom.

InsidED

Mathematical Foundations of Life

As a C.A., I must base my foundations in the concepts of mathematics. Addition, Subtraction, Multiplication and Division all play parts in the organisation of the financial standings of corporations.

The basis for these concepts comes from the foundations stated by a world-famous mathematician, Antonious Johann Lamprchio McFluglehorn Graaf:

*   If A = Boy
*   and B = Girl
*   and C = Chaperone

then by the philosophy and simple brilliance of this famous mathematician, we discover that
*   A+B+C = 0

HOWEVER, the brilliant deductive reasoning combined with the mental powers of mathematical deduction Antonious J.L.M. Graaf concluded that
*   A+B-C = A/B

Which in turn shows the evidence that:
*   A/B = X
where X is a variable.

This final equation thus reveals that mathematics is the true essence and foundation of life.

Der Liebemeister
reprinted from 30 September 1988

Puzzles courtesy euri.ca

SigInt

The precious 10x8 grid that we call home has been infiltrated. Signals intelligence tells us that the following agents are somewhere nearby, all they can tell us about their locations is

*   How many squares in a row or column are occupied
*   They've been ordered to disperse so they aren't touching, not even diagonally.
*   Remember: they can rotate.

Horse Tin Man T-Bone Double Cross The Rock
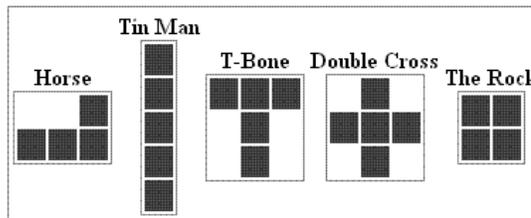
Drywaller

"Listen up. Our client isn't picky, as long as each square has the right number of walls surrounding it. Sounds a little tricky, but we didn't get to be the #3 drywall outfit in town by being lazy."
Also:

*   There's a wall around the outside
*   They want exactly 16 rooms

Umbrellas
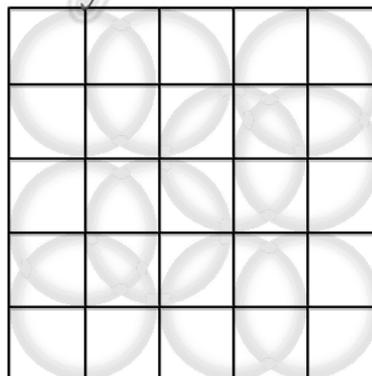
Place the following 10 squares on the 10 circles so that the overlapping numbers match up.

*grid*COMMENTS

Are we done with grids yet?

[One more, just to torture you — InsidED]

Wow, so apparently the difficulty of the *grid*WORD doesn't actually matter, since we still got a few submissions this week. Unfortunately, the clue "Extremely Thirsty" tripped my favourite *grid*ANSWER (The answer is SoDry), so we give it to my second favourite submission, from ffej! ffej apparently deals with the stress of my unborn child with nigh-impossible *grid*WORDs and beer, which is certainly commendable! On a random note, "I Love You, Man" is in theatres this weekend, so bring your best bro and catch it? (Don't make out with him though after the movie. Or during. Or before. In fact, just don't make out with him at all!) This week's *grid*WORD is another blast from the past: we visited volume 3, issue 7, and the submission deadline is going to be, as usual, the Monday of the next production night: March 30th, 2009 at 6pm! You can now submit your solutions to the BLACK BOX outside of Comfy!

This week's *grid*QUESTION: How are you going to ask your bro out for a man-date this weekend?

Megaton Panda

The Filler

Yeeeeah this is FILLER!
FIIIIIILLLER NIGHT,
For when you're doing layout
And some whitespace gives you friight
You knooow it's FILLLLER,
Taaaakes up space
Ripping off Michael Jackson
God I'm glad I don't have his face!

Movin' On Over

1. Greatest society
10. Pronoun
13. Primitive weapon
14. French laugh
15. Encounter
16. Uncommon
17. Most beautiful woman
19. Real ____
20. ____ bear
21. Set again
22. Aluminum
23. List of events
28. Hockey player
29. Sick to stomach
34. Come out of
37. Commerical
38. Reptile
39. Church part
40. Snotty
42. Long winded speeches
44. Redact (abbr)
45. Take out
46. French birds
50. Iridium
51. Result of hypnosis (2 wds)
53. Interjection
55. Electrode
57. ____ redding
58. This (fr)
59. Small child
60. French negative
61. Year
62. ____bag
63. Spanish cheer
64. Suppose
66. Line (abbr)
67. Open ____
68. Add up

Comin' On Down

1. Women's lib
2. Looked for month
3. Sports group
4. Very prolific mammals
5. Before
6. Toronto statue
7. Bathroom walls, floor
8. Anger
9. Canadian export overseas (abbr)
10. Collections
11. Not there
12. French state
15. ____-west
18. Horse dance
19. Removed
20. PPP machine for waste paper
24. One of many in a system
25. Tie up
26. ____ and behold
27. Patron of misdeeds
30. Tavern
31. Cereal grain
32. Great Britain
33. Sow
35. Motherly
36. Read again
37. Fire crime
41. Again (pref)
43. Goes to
44. Precisely
45. Microscopic plant
47. Religious paintings
48. Place (2 wds)
49. Dutch beer
52. Preposition
54. Breadend
56. Poems
61. Enzyme, suffix
64. To be, 1st person sing.
65. Mother (coll)

Previous Solution

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