

# math NEWS

Volume 105, Issue 6

Monday, December 3rd, 2007

The search for true love begins outside the box

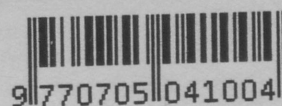
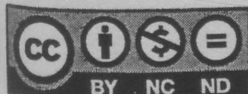
I don't want to ruin our special friendship...

You're an imaginary blow-up doll... What kind of "friendship" could we possibly have?

The Permanently Single Guy and the REAL GIRL

www.LikeAndTheRealGirlTheMovie.com

IN THEATRES THIS WINTER



9 770705 041004

**lookAHEAD****mathNEWS**

December 3	Issue 6 evolves from birds
Some time next term	<i>mathNEWS</i> Disorganizational meeting — look for posters

**MathSoc**

Nothin'

**Math Faculty**

December 6–20	Final exams
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**Feds**See [feds.ca/events](http://feds.ca/events) for details**CECS**

December 14	Last day of on-campus interviews
January 2	Winter work term begins

**Miscellaneous**

December 4–12	Hanukkah
December 22	Winter Solstice
December 25	Christmas
December 26	Boxing Day
January 1	New Year's Day

**mathNEWS Winners***I mean the ones for writers*

Following our note in Issue 1, we're rewarding a few writers for what were determined to be the "best" articles of each issue. Of course, no one ever defined "best". Anyway, here they are:

1. Paul Butler (*Three minute math review*) — for helping us pass our math courses
2. Half-pint (*Your Surrogate Mother*) — for helping us feel as if we never moved out in the first place
3. Thor (*Interview tips you'll never hear from CECS*) — for getting me that job as janitor — I couldn't have done it without you!
4. Angelo (*The mathematics of Super Mario Brothers*) — for putting analytical math to shame
5. 42 (*What if mathNEWS were a wiki?*) — for predicting the future of *mathNEWS*
6. Vince Chan (*Interesting Math*) — for showing us that math doesn't have to be useful

mossEd

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Tyrannosaurus rex: Peter Simonyi

**Loonie falls again**

It may have been the best year so far for Canada's dollar, which was, until Friday, *en route* to a net gain of 13 cents relative to the greenback. Unfortunately, a surprise announcement from the federal Conservatives has sent the loonie plummeting again.

In weekend trading, the dollar fell 13 cents to the level it held at the beginning of the year. Exporters rejoiced as their products regained the competitive edge they have enjoyed for the past many years.

A customs official, whose name was withheld, reported that, with the reduced shopping this will bring, their job got a lot easier.

In other news, consumer prices have risen 13%.

Richard

**UW Gamers Smash Bros Melee Tournaments tomorrow***Two tournaments for twice the fun!***Tuesday, December 4<sup>th</sup> in the SLC Great Hall**

Two tournaments! Compete in one or two! Prizes for both!

- Items-On Tourney! Registration at 1pm. Entrance fee optional. Nothing is disabled.
- Hardcore Tourney! Registration at 6pm. Entrance fee mandatory. Smashboards-style rules.

Go to [www.uwgamers.org](http://www.uwgamers.org) for more information!

UW Gamers Dude

**mastHEAD**

It's been a great term. There was laughter, joy, fire, and using an excessive number of scapegoats. All in all, the police have no idea who was really responsible. The result is this, the last issue of term. And as you read this, you will be glad to know that we ate food with our mouths at the end of the night.

And a *mastHEAD* just wouldn't be a *mastHEAD* without asking the production staff a question. Besides asking if everyone knew their alibis, that is. Anyway, back to the less incriminating stuff: we wanted to know "What is the best dinosaur for puppy food?" Their answers are as follows: Joe Collins, 2A SE (410 Gone); Richard Mandelzys, 4B CS (Meat); Robert Burke, 3A CS (Kittens); Kaitlyn 'Half-pint' Holman, 4A CO&PM (Please share whatever it is you have been smoking...); Edgar Bering, 1A CS (One of those orientation ones); Sarah Pidcock, 2B CS ([Insert name of non-existent dinosaur here]); Colleen Colbeck, 3A Hist (The baby kind... named Jacob); Josh Magashaz, 2A Undeclared (Other puppy... saurs); Chris Neal, 3B OR (A Google... bear?); Matt Woolman, 3A CS (A dead one); Thor, 2A SE (One with Teriyaki); and DanS, 4C CS (Juvincaninutristosauropod).

We would like to thank ice cream for giving us reason to scream, and graphics for making all of this happen. Thanks is also extended to the wicked step-sisters for putting that bitch in her place, and magical pixie dust for making me think that I can fly. 'Til next time. Peace out!

Michaelangelo Finistauri, 3A Evil (The Raging-whorus and Trilepertops)

Peter Simonyi, \d\w SE (Ha! It's a trick question — I feed puppies to dinosaurs!)



## Imprint writer returns from CIA mission

*And mathNEWS gets the scoop*

It appears that the author of the *Imprint* feature "Bics, Blahniks & Bras" was apparently "on a secret CIA mission" when the November 23<sup>rd</sup> issue was released.

We at *mathNEWS* have narrowed down what this mission may have been:

- Read *mathNEWS* to improve *Imprint's* journalism.
- Teach "Nik S" to not diss Bob Barker.
- Search for intelligent life in the *Imprint* office.
- Convince *mathNEWS* staff she's on a secret CIA mission.

Just for fun, we are going to turn this into a logic puzzle, in which we can hopefully eliminate some of these possibilities:

- The CIA would not attempt impossible missions.
- While *mathNEWS* is technically for mathies, anyone can get their hands on it.
- Celebrities who are due to be ridiculed get ridiculed, and those who are not get ridiculed anyway.
- Would I seriously be typing this if it were the fourth one?

If you think you have the answer, as always, run into the Math-Soc office (MC 3038) yelling "Give me a useless job that may take hours of my time!" to claim your prize.

InsideR

P.S. Apologies to Yang Liu for messing up *his* gender last issue.

## So long and thanks for all the pizza

13 terms, 78 issues (although, not always 6/term, one term had 5, another had 6 + *Mathleans*), at least 10 editors, and I don't really want to try counting how many articles. Almost twice as much money in HMV gift certificates than I have actually paid into the system, and the food, so much food. Not even just pizza and cookies, but also meals from about half of the places at the plaza — but not the cheap ones, I mean the East Sides and all. Bowling trips and video gaming and all sorts of things. Anyway, enough trying to make you jealous, or trying to convince you to write (most of those perks haven't happened in years anyway; I'll leave it up to you to figure out which). This shall be my last issue of *mathNEWS* ever, so I thought as the most consistent (in terms of regularly writing, I'd say my funniness has a fairly large standard deviation, lots of good and bad, few mediocre). I think, though, over these years I've been funny enough, and thought I'd just try finding the old stuff I like, and getting it printed since it's so old, between how young most of you are, and with co-op you probably have missed it.

The following is a list of articles that highlight my writing career with *mathNEWS*. If you want to look them up, you won't regret it!

- "The Heap and the Stack" v94.2
- "RIAA to sue Musicians" v103.1
- "Mathies are the Perfect Guys" v95.4
- CDR ad from *Mathleans*
- and the comic you made way too tiny at the beginning of this term [Sorry! We ran out of space! — mossEd]

DanS

## The Kevin Royal award series

- The Kevin Royal Award for being Kevin Royal — recipient Kevin Royal
- The Kevin Royal Award for the Most Creative Use of the Name 'Kevin Royal' — recipient Kevin Royal for renaming the Councillor of the Month Award to the Kevin Royal Award
- The Kevin Royal Award for Largest Ego Stuffed into the Smallest Space — recipient Kevin Royal
- The Kevin Royal Award for Reasonable Fascimile of Kevin Royal — recipient Kevin Royal for reasonably approximating Kevin Royal
- The Kevin Royal Award for Soaking Up Feds Funds — recipient Fed Hall (soon to be renamed Kevin Royal Hall)
- The Kevin Royal Award for Naming an Award After Yourself for No Real Reason — recipient Kevin Royal

Angelo

## Be an Orientation Leader!!

*Save the first years, save the world*

Did you ever want to go to Rome? Well why not go to Toga instead? The math orientation directors are currently seeking mathies with all kinds of powers to be volunteers for the best orientation committee ever! We've got all kinds of jobs for all kinds of people.

- Leaders — Leaders are the main contact with the first-years. They socialize with them throughout the week.
- Icebreakers — These guys run all the events throughout the week.
- Teamsters — They move stuff around in a van — an air-conditioned van. (You must be 21 and have a full G licence.)
- Tie Guard — They guard the Pink Tie from those who wish to thwart its pinky goodness.

Apply today at [www.orientation.math.uwaterloo.ca](http://www.orientation.math.uwaterloo.ca).

BaCKaCh

Math Orientation Directors 2008

## UW faces another referendum

This Winter term, expect to vote in another referendum that will determine whether the students want to support one or two students from disadvantaged communities. That's right, the school wants students to pay for students from Utah to get an education. This referendum will also have students voting on other important topics, such as:

- Making the Women's Centre the Men & Women's Centre so that the space is welcoming to all students.
- Changing the name of the Waterloo Radio fee on the student fees statement to the "Kick in the ass fee".
- Forcing the Registrar's student fee allocation formula to actually take into consideration the number of students in each program instead of using `Math.random()`.
- Decreasing the size of the *Imprint* to only the puzzle page in an effort to cut down on paper usage.
- Expanding the accessibility of Food Services by adding cannibal options for zombie students and people that like the Hannibal series a little bit too much.

So don't forget to vote this Winter term!

Angelo

## profQUOTES

(Referring to garbage collection) Java is the perfect parent, for it cleans up after you. C++ is the parent that says "If you want to live in a pigsty, you may."

Becker, CS 241

You are supposed to know how to calculate this in Stat 230, you are all doomed in the final.

Chiu, STAT 231

I leave it to you brave souls, by which I mean you suckers.

Drekic, STAT 333

If they don't commute, I'm cancelling class immediately.

Zorzitto, MATH 245

(Of example taken from SOA website) I thought, "Those bloody SOA people, can't even put up the right answers," but as it turns out, they were right and I was wrong.

Hardy, ACTSC 231

I'm not going to do Hello World. It's too advanced for your first program.

Becker, CS 241

If I had my Pringle chip, I could show you a saddle [surface]!

Zorzitto, MATH 245

Student: How is 40 minus 20 supposed to be 22?

Prof: It's the new math.

Metzger, STAT 231

Either you know or you don't know... I'm on the cusp of knowing and not knowing?

Hardy, ACTSC 231

Next week I will show you a way to integrate  $x^ne^x$  so that you will not have to use integration by parts for this again and you will worship me.

Chisholm, STAT 230

I'm like your mom; I can see everything.

Wolczuk, MATH 237

The fuzzy central limit theorem tells us this. It's like the central limit theorem but more cuddly.

Kenyon, PHIL 145

I wrote these notes several years ago when I was teaching this course. They sure made sense at that time!

Wolczuk, MATH 237

And  $5 + 14$  is... sadly, I need to look at my notes... where is it... 19! I need to go back and re-do kindergarten.

Chisholm, STAT 230

I don't like what I'm doing. I think I'm having a Monday on a Friday. Really, what am I doing?

Wolczuk, MATH 237

If something terrible happens to CIBC — they pay a lot of my salary, and they have all my money! This is called putting all your eggs in one basket.

Hardy, ACTSC 231

Normalize: it's such a stupid word. Why don't you say rescale, or adjust, or something?

Zorzitto, MATH 245

You might just say Mark Steyn is a lying shitbag.

Kenyon, PHIL 145

(In a futile effort to fully erase what he wrote on the board) And the blackboards suck. And they're not called blackboards, they're called whiteboards. (Comment: the board did look more like a blackboard by the end of the lecture)

Zorzitto, MATH 245

(While erasing the board) Someone did a good job on the boards... I'm happy... clean... (Comment: this was two days after the day the whiteboard became a blackboard)

Zorzitto, MATH 245

I marked question 1 on the midterm, and 60 of you received 0.

Chiu, STAT 231

(Of R) But of course on the final exam, I won't let you bring my only friend with you.

Metzger, STAT 231

So this will allow me to say my favourite thing ever. It's the e<sub>1</sub>-e<sub>1</sub>-o. e-i-e-i-o. Nice and easy.

Metzger, STAT 231

Here's an example! If I can spell "example"...

Wolczuk, MATH 237

The point is, don't mess with Prabhakar, he's hardcore.

Vasiga, CS 135

(Of course evaluations) I've got some volunteers here. They're going to do the "Rate My Prof" thing.

Zorzitto, MATH 245

(While using Euler's formula) I hope Apple doesn't copyright  $i \sin t$

West, AMATH 250

Profs like to put these on exams, they don't want ingenuity.

Zorzitto, MATH 245

(Of 6-8 late students coming in at once) What's happening — bad weather... other profs kept you back? Profs. Blame the profs now.

Zorzitto, MATH 245

Even if  $\Omega$  has that stupid shape there, that kidney swimming pool shape...

Zorzitto, MATH 245

(During a lesson on cryptography) So what did Alice write in her message to Bob? We can't talk about any of that. This is a PG-13 rated class.

Jain, MATH 135

But if you do understand this, it will save you a whole 5 seconds. So it's awesome.

Wolczuk, MATH 237



# profQUOTES

## The heart of mathNEWS

Let's blow things up, because I like blowing things up. I'm very violent.

Metzger, STAT 231

And you get some complete junk times  $x$  as your result

Jao, CO 485

So... I almost got caught in my own trap! I couldn't remember why I chose this example, but now I do!

Wolczuk, MATH 237

I have no idea what that looks like on a graph... If  $y$  is zero and  $x$  is one that's on the curve, so it has at least one point.

Harmsworth, MATH 117

You can just let stuff equal 1 willy-nilly. Don't worry, I won't do that to your final marks.

West, AMATH 250

Sorry, I'm having a Monday! I think I'm having Mondays 5 times a week. Remember, I'm so bright, my mother called me "son".

Wolczuk, MATH 237

Uh oh. I can't believe I'm actually doing this. ("exercise, if u want" is on the board) It looks like I'm trying to sound cool.

West, AMATH 250

If you draw like me, it's actually detrimental to draw the region.

Wolczuk, MATH 237

Prof: Even the smart kids didn't get Question #52.

Student: Hey! I got that one right!

Prof: Well, maybe you're not one of the smart kids.

Patrick Roh, MATH 137

(Of course evaluations) If my pay goes up, I'll be happy and we can work out some... profit sharing. [If you have negative comments] my pay will go down and you will get your revenge.

Hardy, ACTSC 231

The 3-dimensional saddle is cool artwork, and the 2-dimensional saddle is I don't know.

Zorzitto, MATH 245

(In an attempt to get students for an in-class experiment) Peer pressure works! It's fun to be up here! If you didn't comb your hair today, it's okay! I didn't either!

Metzger, STAT 231

I'm not doing Jordan Canonicals. Don't have time. It would be frantic handwriting, ya, ya, I hate your guts.

Zorzitto, MATH 245

How am I doing here? 7 minutes? That's enough time to confuse you all.

Harmsworth, MATH 117

(Of "wether"[sic]) I think I've made a spelling mistake here. (Adds an h. Now it is spelt "whether") I'd put an 'a' in there, but I know I'd be wrong.

Metzger, STAT 231

(Presenting to class)

Student (in Japanese): What kind of book are you going to read?

T.A. (in Japanese): It's not appropriate to say here.

(In English) like wow!

Kazuki, JAPAN 201R

Don't just prove by example, we're in the wrong building for that!

West, AMATH 250

Can we divide both sides by the vector  $a$ ? Not in this building! Maybe I can make that my new catchphrase.

West, AMATH 250

This is starting to look like CS, with all of the 0's and 1's... we're in the wrong building... oh wait...

West, AMATH 250

I'm abusing notation, but you see this all the time, get used to it.

Jao, CO 485

The pictures will get much harder. The difference is that I won't have to draw them, *you* will!

Wolczuk, MATH 237

I had to develop a good imagination because I can't draw. So if you can't draw, start dreaming.

Wolczuk, MATH 237

(Referring to a flip-flop state table error) I was just testing you. No, that was an honest mistake.

Sachdev, ECE 223

Axe is not a fragrance, it's a sexual bludgeon.

Kenyon, PHIL 145

It's a Sunday morning and you're bored, and you think, "Gee, I feel like building myself a nuclear reactor at this point". And it has to be in the shape of a cylinder, because if it's a sphere, it'll run away on you.

Wolczuk, MATH 237

Gee, by the time you apologize for not doing it, you could have done it!

Zorzitto, MATH 245

I don't want to teach you C++ and release you to the world. I'd be punishing the world for your self-betterment.

Becker, CS 241

I would not get on an airplane or space shuttle that was running concurrent Java code.

Buhr, CS 343

(Referring to a formula) I'll give this to you on the midterm, so don't bother memorizing it. I just have the misfortune of doing enough of these problems that I have it memorized by heart.

Saunders, ACTSC 371

Moore's Law has a sexy appeal to it.

[Substitute], ECE 126

## What if life were more like Mega Man?

- Your hand has an infinite number of bullets.
- Although you possess the ability to teleport anywhere you need to go, any time you need to get into a structure you make sure to teleport to the outermost perimeter.
- Every building has a design that contradicts physics. For example, buildings have bottomless pits.
- Iris? Iris? WHATAREWEFIGHTING FOOOOOOOOOOOOR!
- All major doorways are designed out of stackable bricks. Said doors will only open when someone walks into them.
- You are the only good robot. Sort of like the movie *I, Robot* except without the terrible plot.
- All of your pets have hidden features, like using your dog's back as a spring, or using your Fliptop as a... Wait, what the hell was Fliptop?
- The environment is only dangerous to you. No matter how hot that lava is, it never stops the evil machines from jumping out of it and attacking you.
- Everything that you touch hurts. Even petting cute bunnies will take a chunk out of your HP.
- Furthermore, a single touch of a strange spikey ball will make you explode. You will also explode into energy balls.
- Your clothes and accessories change as your means of destruction change.
- Your enemies always attack in groups of eight. Not only will there be eight of them, but each of them will have a skill that can completely obliterate exactly one of their comrades.
- No matter how many times that bastard Dr. Wily reprograms machines to make them evil, you will never figure out that you should shoot at his flying ship to stop him from doing it again.

Angelo

## Audition for FASS

*Everyone gets a part!*

Can you sing, dance, act or see and move in the dark? Then you can get a part in FASS! Can't do any of that? We'll give you a part anyway!

FASS is a musical theatre troupe that's been around the UW community for 45 years. Standing for *Faculty, Alumni, Staff, and Students*, we welcome everyone across the University community. Every year in January and early February we audition, rehearse, and put on a themed musical comedy. This year's show is titled "Global Warming: Kiss your FASS Goodbye!"

Auditions will be held first week of classes in the winter, January 9<sup>th</sup>, 10<sup>th</sup>, and 11<sup>th</sup> (Wednesday to Friday), at some time in the evening. Everyone is welcome and there is no experience necessary.

Robert Burke

Producer, FASS 2008

fass.uwaterloo.ca

## Why is that article sideways?

*Because the stupid formula is too long.*

## Marble flow theory

*Like network flow theory, but in first-grade terms*

Consider, for a second, that you have a bottle full of marbles. The neck of this bottle is wide enough for one, possibly two marbles to pass through. Now, let's say you want to replace the set of marbles in the bottle with another set. Off the top of my head, there are two algorithms you can use to accomplish this goal:

### Algorithm 1:

- Take all marbles from set 1 out of the bottle.
- Place all marbles in set 2 into the bottle.

Pros: Simple, efficient.

Cons: Set 2 marbles have to wait for an almost insignificant amount of time

### Algorithm 2:

Try to force all of the set 1 marbles out of the bottle while shoving all set 2 marbles into the bottle at the same time.

Cons:

- Slower. Stops set 1 marbles from leaving due to congestion around the doo- I mean, neck.
- Dangerous. Set 1 marbles, frustrated by the congestion at the neck of the bottle, might shove set 2 marbles out of the way.
- Rude. Especially when set 2 marbles lay down blockades of chairs and backpacks to impede the progress of set 1 marbles.

Pros: Perfect for proponents of chaos and, in general, idiots with no patience.

Bouncy the Frog

## mathJOKES

Here we are at the end of the term already.

Ian Charlesworth gets a hat trick, but only by a hair because it's a real nuisance to format nicely. *[You bet it is! LaTeX, to my aid! — mossEd]* I also tweaked it. Because I can. Ian, you know what to do.

Q: What do you call the function:

$$f(x) = \begin{cases} 2 & \text{if } x = 0 \\ \text{Riemann-Zeta}(\text{Ackermann}(\text{Busy-Beaver}(x), f(x-1))) & \text{if } x \in \mathbb{N} \end{cases}$$

A: I don't know, just don't ask me to draw it.

If you want to see mathJOKES again next term, you're going to have to apply for it yourself, since I'm going to be concentrating on my studying. Now that I've finished laughing, I can admit that really I want more time to kabitz with the other writers.

Write for *mathNEWS*! It's more fun than a barrel of geeky mathie guys. Actually, it might be isomorphic to a barrel of geeky mathie guys.

Half-pint



## Are you Googly enough?

As a CS student, I desperately want to be picked by Google. If you've ever read an article about Google's hiring process, you've probably heard the term 'googly'. They are constantly searching for people with this quality. What the heck makes someone googly though? Is it their GPA? Is it their aptitude to wrangle pigeons? Or is it some unfathomable combination of abilities like having elite programming skill and being a master shruber? Do you need to be able to compile C++ *in your mind*?

I had a terrible dream last night. I dreamt I wasn't googly enough.

I was on an extended interview at the Googleplex. My guide/interviewer was taking me around the various facilities, showing me their gourmet meals and their in-house masseuse. I liked what I saw, and I met fascinating and fun people that I would be working with when I accepted their offer. But then as I was walking through the lunch room, I stumbled. Just a little one, but it was enough. The Googlers seated at the tables halted their conversations, whipped their heads towards me, and stared.

I looked pleadingly at my guide, but he just frowned and sighed. "I thought you were better than that," he said. "Such high qualifications. Come with me."

"Just like that? A small stumble and I'm out?" I pleaded.

"No, now we must test you to make sure your mind is more agile than your body. The Googleplex is required to inform you that you will be baked and then you will be cake."

At this point, the dream segued into one where I was tested in fiendish challenges reminiscent of Portal. I could talk about that, but that part of my mind is far too twisted from all the flinging I had to do. All the time, I could hear the Google AI taunting me about being googly enough to pass these trials.

Am I googly enough? I'm going to have to wait until interviews next term.

42

## Ways to gain Thor's Respect

*(Ways to get Thor to sleep with you)*

*(Should you even desire that)*

Let's face it, it's not easy to gain my respect. You'll probably have to pay me. If that's too expensive for your poor undergrad bank account, here are some cheaper ideas:

- Challenge me to a rap battle... using only 17<sup>th</sup> century English verse. Should you defeat me, I will bow to your superiority.
- Break my 1024-bit RSA key. Nothing is kinkier than a good timing or branch prediction attack.
- Be Donald Knuth, Richard Stallman, Linus Torvalds, Charles Babbage, Ada Lovelace, or Alan Turing. Self explanatory.
- Prove  $P \neq NP$ . We all know it's true, so let's just get it the hell over with. Proving the Riemann zeta-hypothesis is also fine.
- Destroy the Earth. None of that sissy "exterminate all life" crap. I want every molecule evenly dispersed throughout the Solar system.
- Wear a fedora. Seriously. Do it. *[If you somehow manage to wear an Ubuntu, I'll be impressed. — mossEd]*
- Extortion. Refuse to give me the antidote unless I concede to your demands. Try to laugh maniacally when doing this.

Thor

## ElseWhen

### 30 Years Ago in mathNEWS

Welcome to the final edition of ElseWhen for this term, where we look back 30 years to 1977 instead of 25 years because all of the issues in Fall 1982 have been covered already. Without further ado, the Tuesday, December 6, 1977 (Volume XV, Number 11 [*Yeah, they weren't fortnightly back then... — mossEd*]) through the looking-glass.

snippet

### The Masked Moose Marauder's Joke of the Week:

**Father:** How many oranges would you have left if I took 3 away from your 5?

**Son:** Two, dad.

**Father:** Now if I took 5 trees away from your 3, how many would you have?

**Son:** Negative two, but Dad...

**Father:** Yes, son? (*Expecting the traditional answer*)

**Son:** You can't have negative trees because they'd have imaginary roots.

### In other news:

- WATSFIC commemorates the 36<sup>th</sup> anniversary of the bombing of Pearl Harbour with a wargaming session.
- The MathSoc competitive ball hockey team was eliminated from the championship finals in the B League when V1 North scored a 6-1 victory in the semi-final round.
- TAKITH laments the poor scheduling on consecutive days of the final exams for Math 321A, Math 321B, and Math 322B, noting that all were requirements for a General degree and that it was normal for two of these three to be taken concurrently.
- The disease of the week was Chevronitis. Typical symptoms had much in common with Parkinson's disease such as glazed eyes, slack-jawedness, and writing articles for the Shaft-Run.
- RRIM defines "mathhole" as "a person who is so engrossed in math that he is unable to relate to the real world".
- A remote control BURLOAF discusses a recent news item relating to the CSC planning on acquiring a Z80-based system and thinks the CSC should "pool its resources (connections, bureaucratic sway, not just monetary) to find a really esoteric system that no one else has."



## SUPER SMASH BROS MELEE TOURNAMENT

TUES, DEC 4/07  
LOCATION: SLC Great Hall  
Free Tourney: 1pm  
Pro Tourney: 6pm

For More Information visit  
- | [www.uwgamers.org](http://www.uwgamers.org) | -

## The Leafs suck

And other NHL stuff

Missed me last week? I blame the arbitrarily determined production nights that I missed the deadline! But I'm back, and here's my takes on the Canadian teams in the best sports league of them all, the NHL:

- The **Toronto Maple Leafs** are playing terribly right now. It looks like the coach just cannot get the most out of his players, since they are a better team on paper than on the ice. Chances of a turnaround may be low, and in all likelihood, they will miss the playoffs for the third straight year, with the axe finally falling on John Ferguson Jr. and Paul Maurice. As a supporter of the Leafs, there is no way I'm going to stop cheering for them, and if you're a real fan you'd do the same!
- What's going on in Ottawa? We knew the **Ottawa Senators'** hot streak wouldn't last, right? They've now lost 3 straight and 4 of 5, I believe, with the goalies actually not bailing the team out as they want to. This is merely a hiccup in their quest for glory; though, no worries there.
- The **Montreal Canadiens** are playing excellent hockey right now in front of the great coaching of Guy Carbonneau. Kovalev looks like he cares, which is a bonus (it's a contract year, after all). Assuming they don't hit the flu bug like they did last year around Christmas, they may actually stay the course and cruise into the playoffs too.
- The **Vancouver Canucks** still have not gotten that scoring prowess that they were looking for, but Luongo has certainly rebounded from a slow start. Rookie Alex Edler is a pleasant surprise as well, and looks to solidify their blueline with the oft-injured Salo bouncing between IR stints.
- Kiprusoff has been playing better hockey recently, but the scoring struggles of the **Calgary Flames** is certainly not helping their cause. Kristian Huselius has gone cold, just like Langkow, in November, but they should be able to pick it up. That is, unless Mike Keenan has another spat with Huselius. My expectations unfortunately are not too high for them this season.
- So, how about those **Edmonton Oilers**? Since their run to the cup finals in 06, they've been a sub-par hockey club at best. However, this is also a very young hockey club, with rookies like Coglian and Gagner playing some key roles on the team. That said, I'm laughing hard at the offer sheet to

Penner now, since with Niedermayer's pending return (implied return, anyways), the ducks may make a playoff run, and then still pick in the top 5 for the upcoming draft. Unless something of epic proportions happen between now and the draft, I think Burke's won this round.

And, for all 3 of my readers out there (that I know of), here are some players that are worth taking a flier on as a fantasy hockey Christmas gift, they may pay off handsomely:

- **Jay Bouwmeester, FLA:** This talented rearguard has a measly 8 points, but did you know that since the lockout, he has 25 points in 76 games played in Oct/Nov combined, and then lit up the score sheet for 71 points in 112 games? (That's a 50 point defenseman there!) If he's available in your league either as a FA or for cheap, try to get him, since history indicates that he will be pretty good again.
- **Shawn Horcoff, EDM :** Horcoff had a very good year once, scoring 70 points for the Oilers en route to the cup finals. He was a huge letdown last year, but so far this year he looks to have regained some of that form while playing with Hemsky. He's on pace for 65-70 points this season, and considering the Oilers' depth, he might very well keep it up. Take a chance with him if you're low on depth in C. (Though, that usually isn't a problem)
- **Todd Bertuzzi, ANA:** Big Bert is no longer the supreme power forward he was a few years back, but he's playing on a good team with a good supporting cast. Being out of the spotlight may help his game (After all, he was clicking during the pre-season on the 2nd line). He just returned from the IR and scored 2 points in his first game back. He might be worth a shot in leagues that count PIM.
- **Thomas Vanek, Derek Roy, Max Afinogenov, BUF:** This trio of studs last year are all struggling this year, as they realise that being a top line player meant harder opposition as well. Ask to see if they're available for cheap (Someone dropped Max in one of my leagues!). While they won't live up to their pre-season expectations, they should pick it up and finish with respectable stats. (60-70 point range, maybe?)

Well, that's it, good luck on the exams and have a happy holiday season!

Megaton Panda

## Justifiable Homicide

*"My Computer" is a lie — when you say it*

This is to the jerk-faces who think that locking a computer in the lab and then leaving for prolonged periods of time has any sort of benefit. All it does is annoy me as I have to restart the freaking machine, taking more time away from the work that I have to do. And did you seriously think when you came back after an hour or two that I'd care about that essay that you didn't save? Seriously, don't lock the computer if you don't plan to come back. Common sense, people!

InsideRage

## Solution to this issue's gridWORD

No peeking!  
No peeking!

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



## HorrorScopes

*Look to the stars — just not while you're driving.*

### ACC

On the road of life, there are passengers and there are drivers. You are a driver. Don't forget about pedestrians, though. They are also on the road of life. Use your horn and try to avoid hitting them. If you do, well, it's no big loss.

Your lucky number is 50 points for old people.

### ACTSCI

As the holiday season approaches, you are expecting to pay out a lot of claims to people that have accidents. Have fun explaining to claimants that having to spend time with in the in-laws isn't a debilitating incident.

Your lucky number is the 12 pains of Christmas.

### BBA/BMATH

You have acquired a great many skills in your lifetime. Remember: with great power comes great opportunity to abuse that power. If you choose to crush those who oppose you, remember to send their loved ones their heads impaled on pikes and a heart-shaped box of chocolates.

Your lucky number is 0 opposition.

### C&O

Expect a surprise when your friends ambush you with a barrage of lawn darts. If you are the one, then you can stop them midair. Otherwise, find the shortest path to your doom without any negative dicycles.

Your lucky number is 70 new air holes in inappropriate places.

### CM

If you can learn anything from the past, it is that the computer is eventually going to replace you. You can prevent this by slowly replacing your organic components with mechanical ones. Force your friends to do the same to create your own collective.

Your lucky number is 1. We are 1. We are borg.

### CS

As times change, you find yourself stuck. Someone has put industrial strength adhesive to your seat. You feel immobile. The only solution is to spend the day without pants.

Your lucky number is 23 people blinded.

### MATH/BUS

While crossing the street, watch out for a Zergling rush. Invest in improving your armor or if you don't have the time, put on your Goliath outfit.

Your lucky number is 3 versus 1.

### OR

You are currently half-way to hell and you discover that it has an entrance exam. You get bonus marks for cheating, but you'll get even more for committing regicide. Don't listen to your conscience or else you will get... THE GLARE!

Your lucky number is 333.

### PMATH

The exam rush has left you feeling empty on the inside. Define a metric that will help satisfy the difference in your inner emptiness and your outer emptiness. Then spend several years proving different facts about it.

Your lucky number is 18 graduate papers on your inner pain.

### SE

As the next co-op term approaches, you begin to prepare for the coding rush. Competition is fierce, but don't bust out your claymore just yet. Employers want interpersonal skills more than a list of slain foes. Unless you want a job in middle management.

Your lucky number is 55 inches of over compensation.

### STAT

You have been having a bit of rough luck lately, but things are starting to turn around. All the bad things that have passed you by are now rushing back for a second boning. Good luck.

Your lucky number is 19 degrees of freedom. Where freedom is pain.

### UNDECLARED

Time is running out and you have a lot to get done. Try mixing everything together, doing everything at the same time, and see where that gets you. You can study video games and just submit your highest score.

Your lucky number is a high score of 32.

### AHS

Something good is very close to you. You must solve a series of complex differential equations and linear systems, and find an  $n\log(n)$  solution to three NP complete problems to find it.

Your lucky number is 100% success rate in not finding it.

### ARTS

Beauty is in the eye of the beholder. Someone dear to you thinks you are looking not so fresh. Don't change yourself, instead change anyone else around you! It will be faster, last longer and permanently inflate your self-esteem.

Your lucky number is 5 times the self-confidence you should have.

### ENG

The holiday is approaching. Vastly. Somehow. You have found yourself lost in the spirit of good tidings. When you come out of it, don't be surprised to find yourself in another country using an alias. It's a very common occurrence during the holidays.

Your lucky number is a million miles from home.

### ES

You love the world, especially bunnies and rainbows. As the fall changes into winter, everything that you love will leave you. It may appear that this trend is just a change of season, but it's really a conspiracy to leave you feeling forlorn and unloved.

Your lucky number is 4 bunnies out to get you.

### SCI

You know that the truth is out there, and you intend to find it. Don't let minor things in your life — like breathing or eating — distract you from your research. Remember that your prediction is entirely dependent on your results, so be sure to write that part last.

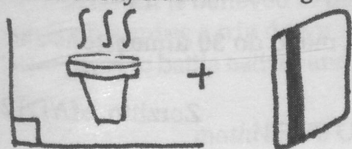
Your lucky number is the one true truth.

### OTHER

You don't get a HorrorScope.

Your lucky number is one underfull column.

Angelo



**Math C&D will accept debit starting this Winter**

## Interesting Math

Well, finals are upon us, and I hope you enjoyed reading "Interesting Math" as much as I have writing it. This issue, I present two final problems for you to think about while studying (because we all know how important doing completely unrelated problems is for studying).

### Part 1: Happy Ending

I hope you'll all get a happy ending this term, but here I'm referring to the *Happy Ending Problem*, so called by Erdos. Here, we will consider natural numbers  $n$  bigger than or equal to 3. Let  $g(n)$  be the smallest number of points in the plane such that no three of them are collinear and that every possible random arrangement of said points will always contain a set of  $n$  points that are the vertices of an  $n$ -sided convex polygon. It should be fairly clear that  $g(3) = 3$ , as every three non-collinear points form the vertices of a triangle. For  $n = 4$ , consider the triangle with a dot in the center. No quadrilateral formed on these points will be convex, so it's immediate that  $g(4) > 4$ . Klein, in fact, proved that  $g(4) = 5$ ; later, Makai proved  $g(5) = 6$ .

Way back in '35, Erdos and another fellow, Szekeres, proved this value  $g(n)$  does indeed exist for every permissible value of  $n$ . However, the parameter space to check blows up pretty fast — from combinatorics, we know the number of  $n$ -subsets of  $k$  that must be checked for polygonal convexity increases on the order of  $\binom{k}{n}$ . So here's the *Happy Ending Problem*: find  $g(n)$  for arbitrary  $n$ .

### Part 2: Weird Numbers

Perhaps it's fitting that I end this term's Interesting Math with another number theory tidbit, as I began it with one. When I say "weird", I don't mean bizarre; there's an actual definition of weird numbers in mathematics. First, we shall define an *abundant number* to be a number  $n$  such that  $\sigma(n) > 2n$ , where  $\sigma(n)$  denotes the sum of all positive divisors of  $n$ , including  $n$  itself. You may notice/know that a *perfect number*, in this notation, is a number  $n$  such that  $\sigma(n) = 2n$ . Here are the first few abundant numbers: 12, 18, 20, 24, and 30. Now, a *semiperfect number* is a number  $n$  that is equal to the sum of all or some of its divisors. As another way to put it, if any combination of sums of elements of the multiset of the proper divisors (think normal sets, but with multiplicities allowed) of  $n$  equaled  $2n$ , then you've got yourself a semiperfect number. Notice all perfect numbers are automatically semiperfect numbers then. The first few semiperfect numbers: 6, 12, 18, 20, and 24.

A number  $n$  is said to be a *weird number* if it is abundant, but not semiperfect. That is, the sum of its divisors was greater than twice itself, but no sub-multiset of these divisors summed to exactly twice itself. Weird, huh? By my tried and true brute force method, the smallest weird number is 70. The next few are 836, 4030, 5830, and 7192. We all know (or should know) that there are infinitely many primes, for example, but are there infinitely many weird numbers? Hint: there definitely are infinitely many odd and even abundant numbers — every multiple of an abundant number remains an abundant number. However, it's not known whether or not there are infinitely many perfect numbers.

Here's the big question for this piece of interesting math: do there exist any odd weird numbers?

Vince Chan

## mathHELP

*After this, you will have to wait until 2008 to get your mathHELP*

**Dear InsideR** — I have a friend who is an absolute moron. I mean, everything he says is completely retarded. I just want to slap him some days. How can I get him to just shut up!? — **Friendly Feud**

**Dear Feud** — Wow, that almost reminds me of *mathEYE* (the guy who did *Horrorscopes* last year). I mean, they went downhill pretty quickly. With that aside, the problem probably is that you're giving him too much attention. Just telling him that he's an idiot only adds to the problem. Solution: ignore him. Hopefully, no attention will mean no stupidity.

InsideR

**Dear InsideR** — My computer has been hacked! Help! — **Out Of Luck**

**Dear Luck** — (or rather, lack thereof) That is why you don't install Windows Vista. That aside, I would advise that you take it to someone who can remove all of the spyware that may have been added (start with where you purchased your computer). Then refrain from using Vista until a service pack or two has been released.

InsideR

**Dear InsideR** — I LOVE MATH! — **Math Lover**

**Dear Lover** — Good for you. Now either send me a real question or stop wasting my email quota with your useless spam. And get a mate.

InsideR

**Dear InsideR** — Chicktionary matches you against seven alphabet loving hens. Choose from a roost full of letters and peck out as many words as possible. Hatch out enough words and you'll move on to the next round. — **Windows Live Staff**

**Dear Live** — It is clear that you need help. In fact, it is clear that you need more help than I can give you. And that, my "friend", is a difficult state to achieve. The best advice that I can give you is to seek professional counseling.

InsideR

Leaving the country for work  
mathNEWS\_InsideR@hotmail.com

## profQUOTES

*Wait... those guys talk?*

You guys can go home and decide which kind of extremist you want to be.

Purbhoo, MATH 239

(While comparing Java to C++) Java says "The programmer is human, and we will protect the programmer and the general public from the user's stupidity."

Becker, CS 241

(Of an example) Did you want me to do 30 dimensions and be here till... next summer?

Zorzitto, MATH 245



## The mathNEWS Outdoorsman

### This Week's Guide: Laurel Creek

You may have noticed that two weeks ago, Laurel Creek was abnormally high. In fact, it was high enough that one so inclined could canoe it easily, if one were aware of the obstacles. In this article, the *mathNEWS* outdoorsman will give you a paddle guide from Columbia Lake to the Health Services pond — a useful trip for those living at CLV.

The first part of the journey takes you under Columbia Street. You may need to duck low and hope passing cars don't throw trash at you, but this part is relatively easy. Heading down the creek, stick to the middle; there are overhangs and snags on the left and right. When there aren't snags, the banks are high, so don't plan on stopping. After a spell, you'll reach Ron Eydt Village. If the water is low enough, you have a short rapid to navigate; hug the left and cut across and you'll be okay.

At this point, you will be in the pond outside REV, north of the glass tunnel. Duck under it and then there will be a snag in the centre. Veer right, then cut hard to the left and ride the next two rapids before the road bridge. You want to be on the right by the time you're past the bridge to avoid another snag. If you can see this snag, head left after it. If you can't, wait until you're 10 metres downstream of the bridge and then head to the left to avoid a sandbar.

Past the sandbar, you will come to the section of the creek that passes the V1 green. There are thick woods there, so we were unable to survey the entire length. Heading in at first, you will find low overhangs getting denser; they blot out the sun and it gets very foggy. This is where we turned back, save for our three brave guides. The first never came out, we only got the shrunken head of the second back, and the third was completely crazy. He died soon after, and his last words were "the horror... the horror!"

In an attempt to find out what happened, we paddled up from Health Services. If you're heading down, watch out for some snags in the centre. The river is relatively tame, but the forest thickens. On the second day, the fog was exceptionally thick, and in it we heard an almost unreal whooping and hollering. We didn't know who or what it was, but we threw several pizzas into the woods and turned back. It placated whatever was in the forest, and we made it out alive.

Experts believe that a lost orientation team is living primitively in the woods, and the stories of others who ventured in the woods seem to confirm this. Which faculty lost the team is a mystery: no FOC will own up to it, but Red South is believed to be involved. If you are planning a trip down Laurel Creek, be prepared to battle natives and handle thick fog.

mathNEWS Outdoorsman

## Away in a Buffer

### To the tune of 'Away in a Manger'

Away in a buffer just loaded from RAM  
The CPU had run an execute command.  
The GUI was loaded and then Vista froze.  
I hit CTRL ALT DEL in my tired throes.

The task manager came and the screen goes black.  
It took me three minutes to get control back.  
I run Windows Live Care, Vista uninstalls.  
I paid 30 bucks for a kick in the balls.

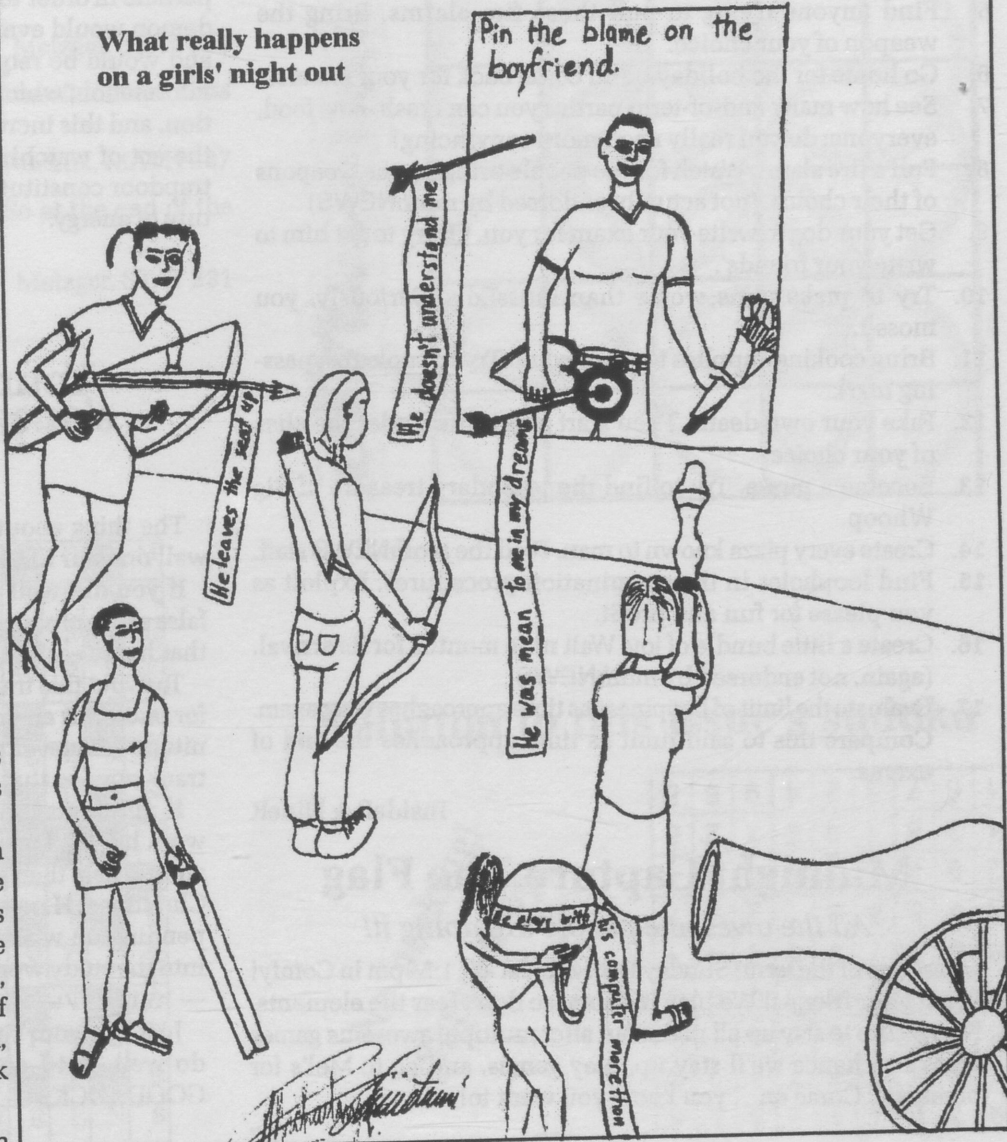
The background's so shiny I start to go blind.  
My disc of XP I desperately must find.  
I want to install it but I can't see how.  
It speaks "You are screwed, dood: decline or allow?"

Angelo

## If and Only If . . .

What really happens  
on a girls' night out

Pin the blame on the  
boyfriend.



## 17 ways to waste 17 days

*Because you don't want to study*

As you probably know, classes are wrapping up today. Think of all the free time you have now that you're not going to lectures anymore!

Oh, wait. There are still exams, so we're not home free yet. But other than going to your five exams, you don't really have much on the schedule. Conventional wisdom says to use this time to study; we beg to differ.

You see, cramming this close to exams doesn't offer much benefit: the more you study, the less you actually learn. Part of the reason is stuff like anxiety building up (that's why you're studying, right?) and the fact that most students study in long sessions with few breaks — not the most efficient schedule. But if this describes you, you're already in trouble.

If you did all your studying early, congratulations. Now we can have a little fun:

1. Start a party! The louder, the better. See how many students you can distract.
2. Get a dog to eat your homework. If you can't find one (or don't have one), substitute yourself.
3. Eat your friends' homework. Blame your dog.
4. Go on a secret CIA mission. Vacation is a good way to relax.
5. Find anyone trying to pull those fire alarms. Bring the weapon of your choice.
6. Go home for the holidays, and come back for your exams.
7. See how many end-of-term parties you can crash. Free food, everyone: do you really need more convincing?
8. Pull a fire alarm. Watch for the people bringing the weapons of their choice. (not actually endorsed by *mathNEWS*)
9. Get your dog to write your exam for you. Or try to get him to write your friends'.
10. Try to make puns worse than mossEd's. Seriously, you moss-t.
11. Bring cooking supplies to your exam. Try to cook up a passing mark.
12. Fake your own death. Then start a new life under the alias of your choice.
13. Become a pirate. Try to find the legendary treasure of Big Whoop.
14. Create every pizza known to man. Feed the *mathNEWS* staff.
15. Find loopholes in the examination procedures. Exploit as you please for fun and profit.
16. Create a little bundle of joy. Wait nine months for its arrival. (again, not endorsed by *mathNEWS*)
17. Evaluate the limit of happiness as time approaches your exam. Compare this to said limit as time approaches the end of exams.

InsideR & NineR

## Midnight Capture The Flag

*All the awesome people are doing it!*

Last one of the term! Sunday Dec. 2, meet at 11:59pm in Comfy! Bring your friends! We play indoors, so don't fear the elements. No pressure to stay up all night, but after multiple awesome games there's a chance we'll stay up, play games, and go to Mel's for breakfast. Come on... you know you want to!

## Thor's Thoughts

Maxwell's Demon is a famous experiment about the 2<sup>nd</sup> law of thermodynamics — that entropy in a closed system must increase. It assumes the existence of a "demon" who sits between two containers of gas at equal temperature, with a trapdoor between them. The demon monitors the motions of the particles in both containers, and if a higher-than-average energy particle approaches the door, it opens the door and lets it through. By this manner, without directly interacting with the system, the demon sorts the two containers by energy, and thus makes one hot and the other cold, violating thermodynamics.

Is this sort of thing actually possible? Probably not. First of all, the demon is part of the system. It's possible that the effort the demon expends opening and closing the trapdoor will generate more entropy than the demon will reduce via his sorting. There is also the issue of the method of the demon's measurement — the demon must gain all of his information without generating entropy. This could be done if the method of measurement is thermodynamically reversible — having no effect on the system's entropy.

Charles Bennett eventually proved an interesting mathematical solution to this problem using information theory. He showed that the demon must store information about the state of each particle in order to properly sort them. He then showed that the demon would eventually run out of information storage space, and would be required to erase some of his previously stored information, which is thermodynamically irreversible by definition, and this increases the entropy of the system. Overall, both the act of watching the molecules and the act of opening the trapdoor constitute "work" and thus must involve an expenditure of energy.

Thor

## Your Surrogate Mother

*Nagging away from home*

*Week 6: Finals*

The thing about midterms is that it's easy to do oppositely well on your finals.

If you did well on your midterms, you may be lulled into a false sense of security. After all, you did well before, and it wasn't that hard / easier than you expected.

To avoid this trap, I suggest trying to recall everything you did for midterms and repeat the same habits, increasing each in magnitude whenever possible. If you've forgotten, then start keeping track now, so that if finals work out you have a record.

If midterms did *not* go well, you already know you have to work harder. I've said it before: it's better to swallow your pride and get help than have your pride busted by a failing grade (Merry Christmas! Here's your coal). You can talk to the profs/TAs (depending on who's available), study with classmates, and look into the study workshops available through counselling services — <http://www.adm.uwaterloo.ca/infocs/>

Just like your real mother, I can't tell you, personally, how to do well. But I can nag you to try. And, wish you good luck. GOOD LUCK!

Half-pint



## If only these *prof*QUOTES were exam hints

The best thing about being a forecaster is that you can be wrong and still get paid for it.

Metzger, STAT 231

When you do the same example twice in a day, you look smarter than you really are.

Metzger, STAT 231

(Of a messy-looking integral) The cool thing is that I didn't even write the answer last time.

Wolczuk, MATH 237

We're not trying to correct the problem; we're just trying to trick the TAs.

Buhr, CS 343

I was so busy planning perfect things in my office that I almost forgot to come to the lecture.

Zorzitto, MATH 245

I never know when there is a C or S in "practise". I guess I need more practise in spelling. If I write both ways, I'm at least once right.

Metzger, STAT 231

(Before course evaluations) For anyone who doesn't like me, class is over and you can go.

Wolczuk, MATH 237

I think in kilograms, but work in pounds. So at the end of the day, I think I'm much lighter than I am.

Metzger, STAT 231

## Solution to last issue's gridWORD

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

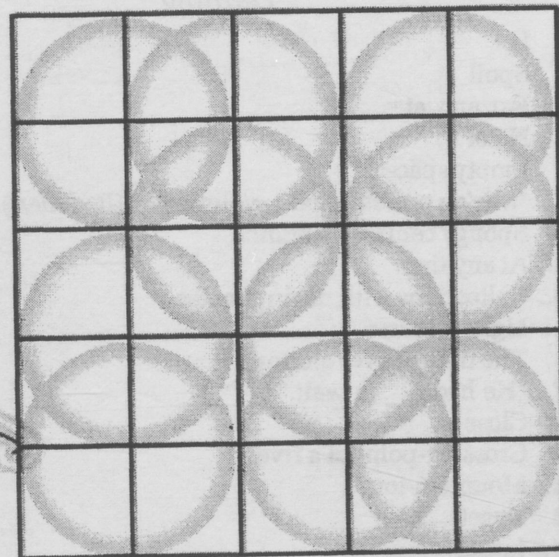
Place the following 10 squares on the 10 circles so that the overlapping numbers match up.

1	8	1	6	0	5	6	0
4	9	8	5	8	0	7	8
8	4	4	9	9	1	3	2
9	6	6	9	9	9	4	3
0	2	6	2	2	6	5	9
1	3	5	9	9	2	5	9

*eurica*

Solution at [euri.ca/puzzles](http://euri.ca/puzzles)  
(This puzzle's number is the same as our ISSN)

*umbrellas*



## Solution to this issue's sudoku

No peeking!  
No peeking!

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

**gridCOMMENTS**

Last issue of the term, eh? This unfortunately means that I can't give away more gift certificates for the C&D. However, some clever people submitted solutions to last issue's puzzles, so they do get prizes! (In case you forgot: the *gridQUESTION* back then was, "How do you make a *mathNEWS* with an odd number of pages?") For the *gridWORD*: Graeme K. ("Use web pages" [*We already do!* — *mossEd*]). For the Sudoku (though apparently it wasn't a valid Sudoku): Scott Greenlay ("Multiply by 2 and subtract 1"). You two can pick up your gift certificates at MathSoc (or if they close, the *mathNEWS* office down the hall). For the rest of you, don't despair; there's another term coming up!

This time, I've got a smaller, denser *gridWORD* that I'm trying out. Words are delimited by thick lines. I'm sure you'll figure it out. Also, there are only sixteen non-crossing cells. Finally, clues with punctuation are abnormal.

Since there are no prizes, and since there are no more issues of *mathNEWS* this term, the solution is in this issue. Of course, you won't need it, will you?

Good luck!

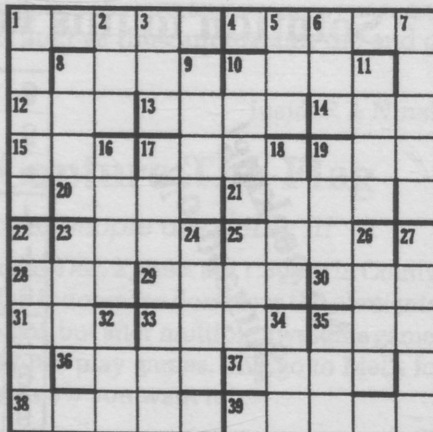
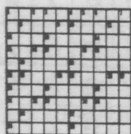
Peter

*Leaping*

1. Let
2. Spoil
3. Frozen water
5. Hotel
6. Empty space
7. "She's a professional... volunteer." (*Red Alert*).
8. Spongy centre of a branch
9. At any time
10. Collections with no duplicates
11. Light-coloured
16. The time of a revolution.
17. "He had \_\_\_ in wait."
18. Close
19. Crossing-point in a river
22. Mountain-tops
23. Target
24. Jump
25. -90 degrees from North
26. Heavy, paired paddles
27. The process to make 35 Across useful.
32. You have done this to everyone you know.
33. Layer
34. The definitive article
35. Lipid

Can you write this small?

I can, thanks to vector graphics!

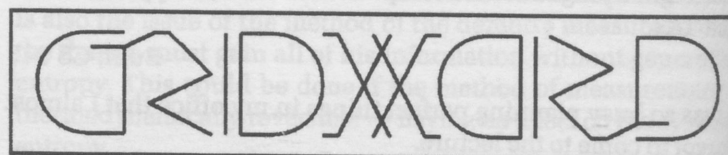
*Solution to Last Issue's Puzzle*

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

**Sudoku**

*This Issue's Puzzle*

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

*Running*

1. Restrict
4. Correct
8. Rate or speed
10. Button for kindergarteners
12. Expose to the outside
13. Divisible by 2
14. Move the camera horizontally
15. Pen for pigs
17. Permits
19. Become airborne
20. Listen
21. Plain footwear
23. Armour
25. The European currency
28. Use for 20 Across
29. Tidy
30. It holds back water.
31. Equip with weapons
33. Time before now
35. Material from which metal is extracted
36. Giant seaweed
37. A specific thing at hand
38. A Greek god with horses' ears and tails
39. Serf

**Debit on campus!**

*Only at the Math C&D*

Starting next term the Right Angle Cafe (a.k.a. the Math C&D) will be taking debit to help serve your food consumption needs better! This will be one of the few places on campus that will serve you food and allow you to pay for it with your debit card. So let your friends know that the C&D is becoming more accessible for you, the students! More details are to follow.