# math NEWS

*Volume 105, Issue 5* *Monday, November 19th, 2007*

MC

Scaring the shit out of Arts Majors since 1967.

**The upper levels were added for the intimidation factor.**


cc BY NC ND

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# *look*AHEAD

| | |
|---|---|
| ***math*NEWS** | |
| November 19 | Issue #5 runs with scissors |
| November 26 | Production Night #6! |
| | 6:30 PM, MathSoc office |
| December 3 | Issue #6 rides the bus |
| **MathSoc** | |
| Wednesdays | Games Nights |
| Fridays | Movie Nights |
| **Feds** | |
| See feds.ca/events for details | |
| **Miscellaneous** | |
| November 23 | NTBoEatITHBAWtPDL Day |

# *mast*HEAD

*Don't forget it!*

Here it is, Tuesday night, and I still haven't written the *mast*HEAD. This is why we get our writers to write down their answers. You'll also notice that there are fewer *prof*QUOTES this issue. This is why you should write down funny things your profs say.

Pizza came, and we asked "What colour are your books?". Kaitlyn demanded a recount, but the motion failed for lack of a seconder. The rest of us were busy thinking of answers. Without further ado, here they are: Edgar, "Mine are in *color*, thank you"; InsideR, "404 Humour Not Found"; Richard, "The colour of books, of course"; Kaitlyn 'Half-pint', "Um… Ian's mom?"; Daniel Goc, "The same colour as my armour, of course: hot pink. Er, I mean light red"; Robert Burke, "Black leather with orange lining"; Sarah 'snippet' Pidcock, "They have 3-colouring, but this isn't formally proven"; DanS, "What colour is sqrt(-1)?"; MJB, "coloured according to the German purity law"; Matt, "What colour do you want it to be?".

Thanks, as always, to Graphics for doing what I assume will be a wonderful job, and for providing us with convenient places to put *math*NEWS. Until next issue!

Peter 'mossEd' Simonyi, "My books are *read*."
Michaelangelo 'Angelo' Finistauri, "I'm colourblind: everything is grey."

**ISSN 0705—0410**

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

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Terms may be renegotiated by contacting the editor(s).

Benevolent Dictator: Peter Simonyi

# Free Theatre Workshop Series

*Brought to by KWLT and FASS*

Do you like *free* events? Want to learn more aobut various theatrical things like producing and improvization? Well look no further, for your chance is nigh! And by "nigh" I mean on November 21st and November 28th, from **7pm** to **10pm** in **MC 2017**.

November 21st — **Producing** with Anita Kilgour
November 28th — **Improvization** with Bernie Roehl

I went to the Stage Combat session they had on the 7th, and it was great! They let me play with swords and taught me how not to kill my fellow actors while doing so.

If you're thinking of regisitering by emailing `ad@kwlt.org`, it is a good idea, but not necessary. Just show up if you want to check it out! Find out more at `www.kwlt.org`.

Now for those of you who don't know what KWLT and FASS are, they're both local theatre troops that have been around for quite some time and put on awesome shows that you should go see. Check KWLT's website for their show and audition schedules. They're having auditions for their January one-acts next week, so interested auditionees should check them out!

FASS, on the other hand, is nearly as old as UW; we celebrated our 45th anniversary last year, and have been putting on a musical comedy every February for many years. If you're interested in that, great! We have auditions for the show on the 9th, 10th, and 11th of January for singers, dancers, actors, techies, and/or none of the above! Everyone who auditions gets a part, as big or as small as you would like! This year's show is themed "Global Warming: The Musical". Keep an eye out on `fass.uwaterloo.ca` for more info!

Hope to see you come out for some fun!

Robert Burke
Producer, FASS 2008

# Orientation feedback wanted!

The Math Orientation Directors for 2008 are holding feedback forums for interested first year students and former leaders. These forums will be used to gauge how the 2007 week went and what we can do to make 2008 better.

Here are the details:

**For last year's leaders**

*Who?* Last year's leaders, icebreakers, teamsters, and tie-guard
*Where?* MC 4064
*When?* Monday November 19th, 7:00pm – 9:00pm
*Why?* Help us improve orientation!

**For first years**

*Who?* First year students
*Where?* MC 2034
*When?* Tuesday November 20th, 4:30 – 6:30
*Why?* Inform the new Orientation Directors about what you did and did not like. This is a perfect time to give us your thoughts and ideas about what changes you'd like to see.

We will also be providing food at these sessions as a thank-you for your help!

Barbara Macdonald, Cliff Steele,
Kaelyn Crossland-Smith, Chris Neal
(BaCKaCh)
Math Orientation Directors '08

```
limit (functionality, umbrella -> Richard) = 0
```

## *Imprint* gets it right

*For once*

Normally, you will catch me reading *Imprint* just to find something worth poking fun at. Last week, though, I read an editorial from Yang Liu entitled "No love for the referee". In my opinion, she absolutely hit the nail on the head with that article.

As some readers may be aware, I also work as a Campus Rec referee (specifically for dodgeball), and with this being my third term doing this, not only have I lost track of how many times I've been chastised for allegedly making bad calls or missing calls, but I can count on one hand the number of times I've been praised for making good calls. I'm sure that my fellow referees can relate to this.

Case in point: about two weeks ago, I officiated a game which involved me having to call out too many players from one team when they wouldn't go on their own (usually either a line violation or being hit by their teammate). They still won 5–4, but the captain was fuming afterward.

A couple of days later, I find that they complained to my boss about me, calling the game one-sided. **Hello!** If their team goes out when they're supposed to and yours doesn't, of *course* my calls are going to be one-sided. Needless to say, they didn't receive a positive SOC score from me that game. *(SOC, or Spirit of Competition, is a Campus Rec initiative designed to promote integrity, fairness, and respect towards each other and the officials.)*

As refs, we are not there to be popular. We will make calls that are not popular with one of the teams — there's no point in denying that. We are there because we love the game, and we want to ensure that it is played fairly and that the rules are enforced.

InsideR

## 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 getting a debit machine 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 to follow.

## *math*NEWS barely avoids having to cancel the rest of the term's issues

11-hour negotiations managed to prevent a catastrophic lack of humour on the morning of Monday the 19th. The Writers' Guild of *math*NEWS (WGmN) was extremely close to a strike this past week, when an intrepid writer noticed that there's actually an online distribution of *math*NEWS at `http://www.mathnews.uwaterloo.ca`, and it turns out the writers were not being compensated for their work being used in non-traditional ways. A strike was threatened, but the editors realized at the last minute how much you, the readers, would need something to read on the morning of November 31st so they offered a very generous 40% of income from online sources to go towards more pizza, cookies, and pop for the writers.

DanS

*[Total edits made to this article alone: 12. What would you writers do without us? — Ed.]*

## Your Surrogate Mother

*Nagging away from home*

*Week 5: Jeans getting tight yet?*

I remember the first time my mother asked me if I was gaining the "Freshman 15." I got upset, and told her "I certainly don't think so, and besides, how should I know? I don't have a scale here." "But how are your clothes fitting?" she replied smugly. "I — wait." Then the realization came that all my pants were really tight lately. "I thought I was doing my *laundry* wrong!" I cried out.

That was when I cut back my deep-fried-food consumption from the V1 caf.

From my current perspective living in my own place, I can tell you (even though you probably won't believe me) that it's easier to eat right and stay in shape while living in residence with a meal plan. Bear with me.

First of all, you don't have to plan your meals. A sizable collection of fresh-ish food is available for you, and while it's a far cry from a farmers' market, I guarantee you eat fewer frozen entrees and more fruit than I do. If I do think to buy fruit and veggies, I then (wisely indeed!) put them in the crisper where they hide for the rest of the term.

Secondly, you are somewhat limited in when you can stuff yourself by the hours of the cafs, whereas my junk food is available at any hour.

Thirdly, you are closer to the gyms. The great irony of working out is how big a nuisance I find getting there and back is. It shouldn't matter, but I find it does, if not only for the time inefficiently walking with your gear instead of working out for those extra 30–40 minutes. There's a pool in the PAC with fitness swims a few times a day (weekly schedules are at `http://www.athletics.uwaterloo.ca/`), and both the PAC and CIF have exercise rooms, organized activities, and courts of many varieties. A different campus production is spending a lot of time covering this, so I won't.

Finally, you have a larger pool of people for finding poor suckers like you who need to get in shape. I had great success (didn't miss a swim all term) swimming twice a week with a buddy last winter. It gave me company soaking in the sauna and a major incentive to get out there.

So, at least make an effort. It'll appease your mom.

Half-pint
who's out of excuses for not swimming this term

**New Dr. Suess book realeased today: A Tisket, A Tasket, Grandpa Buys a Casket**

# Interesting Math

*Part 1: Intransitive game*

As you probably learned in first-year algebra, a transitive relation $\sim$ is such that if $a \sim b$, and $b \sim c$, then $a \sim c$. Let's play a dice game: to win, one must roll a number strictly higher than his or her opponent's roll. Suppose there are three dice, call them $A$, $B$, and $C$. If I'm more likely to win using $A$ against $B$, and more likely to win using $B$ against $C$, I should be more likely to win using $A$ against $C$, right? It turns out that this is not necessarily the case. Consider the following: $A$ has sides {2, 2, 4, 4, 9, 9}, $B$ has sides {1, 1, 6, 6, 8, 8} and $C$ has sides {3, 3, 5, 5, 7, 7}. Then when using $A$ against $B$, I will win if I roll a 2 (1/3 probability) and my opponent rolls a 1 (1/3 probability), or if I roll a 4 (1/3 probability) and my opponent rolls a 1 (1/3 probability), or if I roll a 9 (1/3 probability) and my opponent rolls anything (1 probability). Then the overall probability that I win is 5/9. By carrying out similar calculations, the probability I win with $B$ against $C$ is 5/9, and the probability I win using $C$ against $B$ is also 5/9. It should be clear then that the relation "is more likely to win against" is not transitive in this case.

This can be generalized to a larger set too, still with the constraint of 6-sided dice. Take dice $A$ with sides {0, 0, 4, 4, 4, 4}, $B$ with sides {3, 3, 3, 3, 3, 3}, $C$ with sides {2, 2, 2, 2, 6, 6}, and $D$ with sides {1, 1, 1, 5, 5, 5}. We can find that the probability of $A$ beating $B$ is the same as the probability of $B$ beating $C$, $C$ beating $D$, and $D$ beating $A$, with probability 2/3. Of course, this doesn't tell us anything about which die is best, if we have a random die as an opponent. In the previous case with 3 dice, it should be clear that it is completely random; it is analogous to a rock, paper, scissors game. In the case of these 4 dice, is there a die that is "best overall"? Taking the sum of the sides, we see that $C$ has the largest total sum. Should this imply it is the best? Try working it out; I promise it isn't a lot of work. *[Not an open problem this time, eh? — mossEd]*

We see how these intransitive dice can work for sets of size 3 and 4, but are there sets of size 5, or even more? Intuitively, it would seem that there definitely can't be any of size 6 or greater, as there are only 6 sides to work with. What then, is the relationship between the number of sides the dice have and possible sets of intransitive dice? Feel free to let me know if you come up with anything interesting.

*Part 2: Highly Integral Cuboids*

Here, I mean integral as in related to integers, and a cuboid is just a nice way of saying a rectangular prism. Named after the famous mathematician, an Euler Brick is a cuboid whose edges and face diagonals are all integers. The smallest example I can think of right now is the brick with side lengths (240, 117, 44). You'll notice that the side diagonals are, by the Pythagorean Theorem, 267, 244, and 125. Speaking of the Pythagorean Theorem, this allows us to reformulate more mathematically what an Euler Brick is. An Euler Brick is a positive solution ($a$, $b$, $c$) to this set of Diophantine equations (that is, the variables are strictly integers):

$a^2 + b^2 = d^2$
$b^2 + c^2 = e^2$
$c^2 + a^2 = f^2$

See if you can find all the possible Euler Bricks. Here are two cool properties to get you started: if ($a$, $b$, $c$) is an Euler Brick, so is ($bc$, $ac$, $ab$). This comes about simply by noticing that they satisfy the Diophantine equations trivially — for example, $(bc)^2+(ac)^2 = c^2(b^2+a^2) = c^2d^2 = (cd)^2$, and as $cd$ is an integer, the first equation is satisfied. Also, if ($a$, $b$, $c$) is a Pythagorean triple (i.e. an integer solution to $a^2 + b^2 = c^2$), then ($a(4b^2-c^2)$, $b(4a^2-c^2)$, $4abc$) is an Euler Brick.

That's all good and well, but let's kick it up a notch. Define the Euler $n$-Brick to be the $n$-dimensional analogue to an Euler Brick. Then an Euler $n$-Brick is a positive solution ($a_1$, …, $a_n$) to the set of Diophantine equations:

$a_1^2 + a_2^2 = b_{1,2}^2$
…
$a_n^2 + a_1^2 = b_{n,1}^2$

Parametric forms of families of solutions have been found for the 3 dimensional case, see what you can do to generalize to $n$ dimensions.

Thus far, I have only considered the face diagonals. A perfect Euler Brick is an Euler Brick that also has an integer body diagonal, or in terms of equations, $a^2 + b^2 + c^2 = g^2$ would be added to the set described initially. Here's the question: does there exist a perfect Euler Brick? If you're employing a guess-and-check method, I'll speed up your search: if a perfect Euler Brick *does* exist, it's smallest side length must be larger than 4 billion.

Vince Chan

# Thor's Thoughts

Mary's Room is an idea proposed by Frank Jackson. It posits the existence of a brilliant scientist named Mary who lives in a black and white room and who can only experience the world through a black and white television. Suppose then she were to learn everything about the neurobiology of human vision — how a wavelength stimulates the retina and causes certain effects on the human brain.

The question is: If Mary leaves her room and experiences colour for the first time *[What happens if she looks at her skin or has non-black hair? — Angelo]*, will she learn anything new? The answer is intuitively yes — no matter how great her degree of understanding of the science of colour, she has never had the experience of colour itself. But this is contradictory to the idea that there exists nothing other than the physical universe. The knowledge she gains cannot be physically qualified, and her previous knowledge based only on the physical universe was incomplete. Ergo, colour must possess some property not derived from its relevant physical information.

We may, however, argue that there is really nothing new to learn by experiencing a colour for the first time — that if Mary really did know everything about the deep-level neurology involved, she'd know what to expect already, and there is no non-physical part of the mind after all. While Mary may still react emotionally to the presence of a red apple, that reaction would be totally in line with one she herself could have predicted based on an analysis of her own mind. Still, the experiment does raise interesting questions about the nature of human consciousness.

Thor

# The fate of notable mathematicians

*In case you wanted to be one*

An examination of the history of mathematics reveals good evidence that if you are to be a mathematician of any significance you will probably go crazy, die young, or experience a tragedy that epics are made from. Just look at a few examples:

*The Crazies*

- Georg Cantor: suffered from depression in 1884 so severe he was driven into studying literature.
- Isaac Newton: suffered a nervous breakdown in 1693. Was also an alchemist, which makes him of debatable craziness.
- Andrew Wiles: Obsessed over Fermat's Last Theorem, was very secretive. While not provably crazy in the psychological sense, he's still an odd one.
- Paul Erdos: Consumed amphetamines, lived out of a suitcase, was a wandering mathematician. What more do you need?

*The Young*

- Evariste Galois: Died at the age of 20 in a duel after laying the foundations of Galois theory.
- Neils Henrik Abel: Died from illness after sledding to meet his fiancée for Christmas.
- Hippasus: Thrown overboard by his fellow pythagoreans for his proof that the square root of two is irrational.
- Archimedes: Killed by Roman soldiers during the invasion of Syracuse.

*The Tragic*

- Diophantus: His son died of a chill, and the tragedy drove him to study mathematics.
- Georg Cantor: His youngest son died, draining him of most of his remaining mathematical drive.
- Joseph Louis Lagrange: Was duped into an unhappy marriage by wives of colleagues in Berlin; his wife soon died thereafter.

While this article is obviously an inductive fallacy and doesn't cover nearly enough data for a decent result, the prophecy is obvious: the more notable a mathematician you are the more prone to tragedy, insanity, and death you are. *[Death just doesn't happen as much to other people. — Angelo.]* Unless you reach the calibre of Euler, Gauss, and Euclid. Though we're not sure about the third one: he has survived mostly by his work and not much biographical information.

ebering

# Don't Study

*UW Gamers' Portable Systems Party returns*

UW Gamers here, once again. Our first *Don't Study: A Portable Systems Party* was so successful that we're doing it again!

It's happening tonight, Monday the 19th, in SLC 2143, from 7pm to 11pm.

We will be playing tons of games, including, but not limited to: Monster Hunter, Mario Kart DS, Tetris, DJ Max Portable, Pokemon, Elite Beat Agents, Meteos, and whatever else you want to bring.

UW Gamers Dude

# A data structure for your thoughts?

*Turn your train of thought into an iterator!*

I often wonder what would happen if I crammed all the thoughts in my mind into a standard data structure. The results, I imagine, would be:

- Hash map: Index thoughts by topic. This would be great when arguing with someone.
- Set: Index thoughts sequentially. A disadvantage would be having to manually search through a bunch of thoughts to find a good one, but it would nicely remove the duplicate thoughts.
- Array: Index thoughts by number. This raises the question, how would thoughts be numbered? A rather complicated priority system for thoughts would have to be developed. For males, I imagine the sexual thoughts would be near the front of the array.
- Queue: When you come up with a thought, throw it into the queue. When a thought is required, dequeue the first one. Great for appearing randomly crazy when you, for example, answer with a thought about bunnies when the prof asks you to answer a question about determinants.
- Stack: When you come up with a thought, push it onto the stack. When a thought is required, pop one off the stack. Great for appearing somewhat relevant to a topic being discussed, because you'll come up with related thoughts as the topic is being discussed and when one is needed, whichever one is first off the stack will at least be partly relevant. Not good if you are an in-class day dreamer, as this will lead to a situation like the one described in the item about storing thoughts in a queue.
- Binary Tree: Sort your thoughts recursively into two groups based on certain criteria. For example, a mathie might want to start by partitioning his or her thoughts at the root into thoughts about math in one subtree and thoughts not about math in the other subtree. Great for CSers that like dividing by 2.
- Heap: At any time, throw all your pre-prioritized thoughts into a heap and heapify. Extract the most important thought when a thought is needed. $O(n \log n)$ runtime is a plus but again can lead to situations like the one described in the queue portion of the article if the most important thoughts to a particular person have nothing to do with the task at hand.
- Pointer: Points to a single thought which can be reused at will. Creates a nice "broken record" effect. Occurs naturally when, for example, an exam is just minutes away and the pointer is pointing a thought containing "**OMG I'm going to fail!**".

snippet

# The Super Smash Bros Melee Tournament is coming

Classes end: December 3rd
Smash begins: December 4th

www.uwgamers.org

# Flavoury bits

*Something not fit to eat*

If you're in the mood for free crap, or a more potent crap absorber, *Imprint* is the way to go! Because we're all poor university students, buying napkins or toilet paper is often not an option. And since many of those employed by the university would inflict bodily harm on you if you "acquired" these things through a "change in ownership", *Imprint* will have to do. Let's look at the many uses for this abuse of paper:

- **The spill:** Your beaker of pure caffeine topples, and the scalding brown liquid slowly approaches the assignment you stayed up all night hounding the TA to do for you. With the many stacks of *Imprint* lying around on campus, you quickly grab a stack of twenty and absorb that chemical-infested drink as if *Chuck Norris is after you*. Q.E.D., really.
- **The other spill:** Artsies chase you down a dark corridor, shouting logical fallacies after you and a friend. Your friend, injured by their blasphemy, bleeds profusely. Luckily, your portal gun drops a stack of *Imprint* on the approaching swarm, and a few stray issues slide over. Quickly, you stuff a copy into the wound, and, while infecting it, the bleeding is stopped. Another victory for the math empire!
- **The real use:** It maybe a bit rough, but *Imprint* can be used as toilet paper. If it is a little too abrasive, soak it first. *[Wet… toilet paper… — Angelo]* Stealing toilet paper may be illegal, but taking Imprint is your right! Abuse it!

So there you have it. Imprint doesn't fulfill its actual purpose, so give it a new one! Make its writers feel they've accomplished *something*.

ln 2

# Things to do when you're crossing the border

This past week, I went Stateside, to find a sweet deal with the all-new überpowerful loonie. Yep, since I only have until the end of the year before I'll need a passport for this, and since I was in a silly mood, I came up with some tricks you can try with the border guards, on both sides.

- Get a fake ID featuring your *math*NEWS name, and use that to cross. If you need proof of citizenship, draw a maple leaf on your skin and offer to show them your "birthmark".
- Hide a costume in your luggage, then try to wear it when you return to Canada. Kudos if the picture on your fake ID is of you in costume.
- Buy a metal ruler, and hide it in your luggage, then put it through the metal detector. Since it looks like a knife from the edge on, they'll have to search your luggage to make sure. A pie-launcher and lemon meringue is the obvious solution here. *[What a waste! Use edible-oil-product pie instead. — mossEd]*
- Just go right through without stopping. Then speed up.
- Test whether racial profiling is still prevalent: try to go through while disguised as a member of a visible minority (or several minorities). Experiment and try different ones each time.

Go ahead and try it. See how many border guards you can crack up each time. Of course, *math*NEWS assumes no responsibility for any trouble you get into, including rendition or being whisked away to Guantanamo Bay.

Niner

# HorrorScopes

*Like Whore-o-Scopes without the rash*

**ACC**

True love is coming your way. It is also passing you by. At the same time. Remember that if you love something, you should let it go. If it happens to come back, then shoot it.

Your lucky number is one broken heart and three bullet wounds.

**ACTSCI**

The sun is on fire and Virgo is in labour. Your shadow is making faces at you when you aren't looking. Don't turn off the lights because it will dip your hand in warm water to make you wet the bed.

Your lucky number is 40° of warm water.

**AMATH**

The world is your oyster, but you're bulimic so you may as well not have it at all. You bring new meaning to the term 'finger food', and everyone else prefers the old definition.

Your lucky number is one uneaten oyster.

# *math*JOKES

*Y'all are lazy!*

Well, I got a total of two submissions this week, and from new faces as well! Not too shabby.

It was a close call but I chose the winner to be **Patrick Meisner** from "Mathematics" (it's much better to send us your program than your student number — good thing for you I'm (mostly) benevolent).

Bob and Jim are trapped in a hot air baloon floating over a canyon.
Bob yells over the edge: "Where are we?"
From below someone answers: "You're in a hot air baloon floating over a canyon!"
Jim looks at Bob and says: "He must be a mathematician."
Bob asks: "Why?"
Jim says: "His answer was incredibly accurate but utterly useless."

(Apparently I like abuse.)

Our runner-up is Edgar Bering from CS with his submission:

An infinite number of mathematicians walk into a bar.
The first orders a beer.
The second orders ½ a beer.
The third orders ¼ a beer.
The fourth is about to order when the barman cuts him off, pours 2 beers and says "y'all are jerks" and moves on to other customers.

I was about to type up a reprimand for Edgar's terrible spelling and punctuation, but then I learned he was sitting behind me so I already tore a strip off of him.

Come to production night! Get abused!

Thanks for the submissions, and please send in your jokes any way you can submit a puzzle solution, or by email to mathnews@student.math.uwaterloo.ca. Each week's pick will win a $5 gift certificate to the Coffee and Doughnut shop, a.k.a the Right Angle Cafe. I'll print the top two or three that make me laugh, and if yours isn't printed, it's not that I think you're a bad person or anything.

Half-pint

# HorrorScopes

**BBA/BMATH**

The grass is always greener on someone else's lawn. Except yours. You have a blue lawn. It stands out and makes people look twice, but no one wants to have it. Take pride in your uniqueness.

Your lucky number is forty million non-inflammable pieces of blue grass.

**C&O**

'Every man is an island' is only an expression. Discontinue taking it literally. You must stop trying to travel the ocean using men as flotation devices. Similarly, don't misinterpret the phrase "Oh, dear God! I can't swim!"

Your lucky number is eighteen people to build a raft.

**CM**

Your horizons seem clouded, but that's only because there are clouds on the horizon. You are looking too far ahead; what you seek is much closer than any cloud and is nowhere near as fluffy. Wring the necks of the geese that block your path.

Your lucky number is ten flocks of geese at your disposal.

**CS**

One in the hand is worth two in the bush. You may be wondering what this means, but you aren't the only one. Keep your head out of the gutter for the time being and the answer will eventually make itself clear in the bush.

Your lucky number is two in the bush; although, one is usually more than sufficient.

**MATH/BUS**

The stars shine brightly upon you, and you spontaneously combust as recourse. Run around, screaming in agonizing yet humorous pain, begging for someone to end it. A winter blizzard is almost here, and you will be able to quell the flames by standing outside for a few minutes.

Your lucky number is absolute zero.

**OR**

O brave warrior, the gods smile upon your bravery. To reward you, they send a goddess to slaughter your human body and extract your soul to serve as their faithful puppet. To avoid this, try learning how to knit a decorative scarf.

Your lucky number is less than or equal to 13 battle-maidens.

**PMATH**

The secrets of the earth are at your fingertips. This pisses off the earth. A lot. Earthquakes, volcanoes, typhoons, and people who eat chocolate bars with a fork a knife are you punishment. You are also the reason that kittens and puppies die! I hope you can live with yourself.

Your lucky number is 5 metric butt-tonnes of death.

# JusifiablE HomicidE

*Shut up, I'm trying to learn here!*

This week, I am going to focus my anger towards those who think that the best time to socialize is in the middle of lecture. Shut the hell up! Why must you talk about your friend's mother while I am trying to learn? And don't give me dirty looks and mockery when I tell you to shut up. If it's that important, take it out of the room! You are not important, and nobody should have to listen to the useless conversations between you and your worthless friends when the prof is speaking. Either shut the hell up or get the fuck out.

InsideRage

# National Throw-Bits-of-Erasers-at-the-Idiots-That-Have-Belligerent-Arguments-With-the-Professor-During-Lecture Day!

The most sacred of all holidays is quickly approaching. This Friday is National Throw-Bits-of-Erasers-at-the-Idiots-That-Have-Belligerent-Arguments-With-the-Professor-During-Lecture Day, and you can show your pride by interrupting the questions and comments that prolong lessons that should be much shorter with chunks of your eraser. This glorious occasion will bring forth a dawn where these mindless conversations happen only during office hours instead of forcing the professor into wasting the class' time by reiterating simple concepts. In the past, people have been more creative in how they celebrate the momentous occasion by using non-traditional projects like bricks, or other people. No matter what your preference, proudly shut up the people who should have been born without tongues!

Angelo

# ElseWhen

*25 Years Ago in* math*NEWS*

Welcome to yet another exciting episode of ElseWhen, where we look into the archives when you could clearly tell that this was done by typewriter. I have one at home, so I know what that looks like. This week, we look at Volume 30, Number the last (i.e. 5), first published December 3rd, 1982.

InsideR

**Quiet Perspiration:** Formerly titled "Quiet Desperation", Scooter's issue-ly (is that a word?) article focusses on passing finals. Apparently there was a time where students could be exempted: damned be the person who stopped that practice.

- Make a summary of your notes. And do this at least a day before your class.
- If you don't understand a certain point, don't talk to the brainiac of the class. *[I'm spared!]* Instead, talk to someone on your own level of intellect, and come to an understanding together.
- Finally, it's just a test. It is designed to show what you have learned, and, believe it or not, you have learned a lot.

**In other news:**

- The campus is turned into a giant game of Risk (or something similar at least). Engineering buildings are condemned.
- Imprint informs the *math*NEWS editor that "there is no Mr. Imprint". *math*NEWS staff express their condolences to Mrs. Imprint for her husband's recent passing.
- The "Kälënndër" is in a state that no untrained eye can read. Namely, it would make one think that exams start the day before classes end.
- The editor, Dave Graham, runs out of ribbon just before writing the *mast*HEAD, and is called an ass. If those are

# What if *math*NEWS were a wiki?

The Editors, of course, wouldn't be editors. We'd have a Benevolent Dictator and a GodKing who would squabble about how standards would be kept. Production nights would start by attempting to obtain enough contributors and get new articles created. Like most wikis, everyone would edit. The stalwart masses would ensure that all articles were of sufficient quality, before deciding all of them were crap and starting their own articles. Then senior writers would decide that some of the newer topics weren't notable enough and delete them.

The contributors would then revolt. They'd say that there aren't enough standards to the humour that is in *math*NEWS*wiki*, and that the senior writers have no idea what they are talking about. They'd schism off into *cs*NEWS*wiki* and *pm*NEWS*wiki*, with more jokes that appeal to the CS or Pure Math crowds.

Even they aren't good enough, though! The GodKing would decide the Benevolent Dictator is cramping his style and go off to create EngMathNewsWiki, which is the same thing, but with a more applied bent and more drinking during the production night. *[Also less italic text. — mossEd]* The engineers would take offense to non-engineers making fun of their programs and would start their own, with an actual Engineering bent to the articles, but it would fail from disuse as engineers are too busy with their work and drinking to do much else.

The Business students would see this as a grand opportunity. They'd start their own production, but instead of being universally editable, they'd copy articles from the other productions, pay experts to refine their funniness, and then sell incremental versions of their compendium at a premium to unsuspecting suckers — erm, consumers. Of course, not much would've changed and their venture would eventually die because no one is going to pay for the same thing when they can get it for free.

After the smoke from all these splits, branches, and disagreements had calmed down, some enterprising grad students would feed all this funny material into a Markov Generator, and start producing their own comedy — randomly generated articles — for their own amusement on some newsgroup, since they're too cool for wikis.

Eventually, the former editors would decide that making a *math*NEWS*wiki* was a terrible idea, and move back to our current system. Besides, this way I get free pizza.

42

# The *prof*QUOTES lead-in

I'm going to give you some advice [for the midterm]: answer the question.

Saunders, ACTSC 371

If you get it wrong, nobody will bite you. At least I won't. Can't guarantee anything for your friends, though.

Metzger, STAT 231

My English is terrible. So I'll call it an allegory, whether it means it or not.

Metzger, STAT 231

How is that simple? Oh, I know how that's simple.

Vasiga, CS 135

# Methods by which to learn the names of others surreptitiously

It occurred to me recently that I only know the nicknames of the other writers of *math*NEWS, not their actual names (with the exception of Richard, who helped me out by having them be the same *[Hey, what about me? — Angelo][You have almost a dozen names! — mossEd]*). As you can imagine, this causes all sorts of social complications when I see them "in public". Ideas on how to resolve this:

- Facebook: This would be a valid solution if *math*NEWS writers were the type of people who use Facebook. Sadly, we're more the type of people who force you to factor 256-bit primes as a demonstration of your commitment before we'll tell you our names.
- Refer to Them Using a Generic Type: Simply say, "Why hello there, Fellow *math*NEWS Writer. How are you today?". It is not immediately clear that RealTime™ is strongly typed, though.
- Some Sort of Man in the Middle Attack: Initiate a conversation between two writers, one of whom is someone whose name I already know (presumably Richard) and hope he uses their name at some point during the conversation. For example: "Hey Richard, I heard InsideR thinks your mom is fat". There's a possibility that they'll just exchange blows instead of yelling each other's names, though.
- Commandeer Their Laptop and Put a Keylogger On It, then Get Their Gmail Password and Send an Email To Their Parents Saying Something Like "Hi, Mom, I Have Forgotten My First Name, Could You Send It To Thor Please So He Can Tell Me It? PS I Hear That You 'Get Around' Here, Is That True?": Potentially problematic if they run Linux, as most writers do.
- Avoid Going Out In Public: The ideal solution! Social interaction in "meatspace" is a meaningless throwback to our tribal primate ancestors anyway.

Thor

# I promise there are more *prof*QUOTES

*Just turn the page after reading these*

[Kuratkowski's Theorem] is a pain in the ass. If you're forced to use it as a last resort, you are allowed to curse at it silently — or out loud if you're not in an exam.

Purbhoo, MATH 239

I'm not trying to offend anyone… Unless you're a racist, then I am trying to offend you.

Ross, PSYCH 253

I could give you a MATH 137 proof, but let's just check it directly for the sake of masochism.

Zorzitto, MATH 245

(To a class of about 13 students) Laurier, that glorified high school, has midterms on weekends? I should go over there and just burn that building down; nobody showed up to my class.

Roh, MATH 137

# mathHELP

*A.K.A. "Non-Dating Advice from the InsideR"*

**Dear InsideR** — I don't know how many times I've heard that I have to work hard to get through university, but so far, it's not working. I didn't pass my midterms, and I'm afraid that my finals will be the same. I've never had to study so hard in my life. What's happening? — **Worried**

**Dear Worried** — You seem to be one of those people who was at the top of your class in high school, never had to study for tests, etc. Those days are over. The problem isn't that you're not studying hard enough, but that you're not studying smart enough. You need to find what study habits work for you, and quickly. You can get more personalized help with this at the Math Undergrad Office (MC 4th floor) and at Counselling Services (Needles Hall), who can offer one-to-one help.

InsideR

**Dear InsideR** — I was a little more than forced into my program by my parents, and while I'm doing well at what I'm studying, the problem is that I don't enjoy it. The other problem is that they're paying for my education, and are threatening to cut me off financially if I switch. What can I do? — **Stuck**

**Dear Stuck** — There is no doubt that you are in a difficult situation. Have you explained to your parents why you want to be in the program you want, and perhaps as importantly, have they explained to you why they want you in the program you're in? Try to have some convincing yet non-confrontational arguments as to why you would be better off in this other program — unless this other program is AHS, then no such argument exists.

InsideR

**Dear InsideR** — The math building reminds me of a castle. It has the layout for defenses and everything. Despite that, it has no moat — though the fountain out front could probably be floated as an impromptu moat. Is there some sort of conspiracy that is being hidden from the public? I want the inside scoop on this. — **Curtor**

**Dear Curtor** — Regrettably, for the safety of the math building and those who occupy it, I cannot reveal these secrets that you ask for. I can tell you that there was once a moat around the building, but it was filled in by some "Non-Existent Action Committee" that the engineers talk a lot about. Other than that, all I can say is that this is a well-kept secret that very few people know (even I needed to talk to a lot of people to get the inside scoop [no pun intended]).

InsideR

Questions to mathNEWS_InsideR@hotmail.com
or the BLACK BOX

# The sorrows of advanced math

*Occur during production night*

Being in MATH 145, I didn't have to skip production night to write a midterm. However, this made me the only frosh here, so my surrogate mother's nagging was directed exclusively at me.

To top it off, this article was cut short by my own inability to come up with witty commentary regarding the advanced sections other than that they smell like fish.

ebering

# Pick-up lines for the permanently single guy

- Baby, you got more curves than a triple integral.
- Baby, I wish I were your math exam, so I'd be hard and you'd be doing me on your desk.
- Baby, you make me experience exponential growth.
- Baby, I want to experience your function's end behaviour.
- Baby, let me take your limit as $x$ approaches infinity.
- Baby, I want to evaluate the area underneath your curves.

Vector X

# HorrorScopes

**SE**

You find yourself living two lives. The first is a vibrant and beautiful one. This is a person who has accomplished great deeds, owns beautiful trophies, and has kick-ass magic hotkeyed for easy access. The second life watches the first in the hopes that it will eventually be as good.

Your lucky number is 20 hours spent logged on each day.

**STAT**

This box is your companion. It will assist you in all of your life's endeavours. And at the end of your trials there will be cake. Even though the trials that you must do will be impossible. You have your gun, that's all you need.

Your lucky number is 0 cake. The cake is a lie.

**UNDECLARED**

Never trust a devil in a white dress, because cross-dressing devils are generally mischievous. The other devils are benign and will playfully poke you with their burning pitchforks, tridents, and babies attached to poles.

Your lucky number is 3 jabs to the stomach.

**AHS**

All that remains is not to remain. Meaning: get lost. Seriously, you suck.

Your lucky number is 0 street cred.

**ARTS**

No rest for the wicked, which means you are the world's nicest person. Spread the joys of relaxation and respite to the world, and you will be scorned with disdain and profanity.

Your lucky number is 200 more free hours than everyone else.

**ENG**

*Carpe diem*, my friend. Take life by the neck, kiss it and then give it a big bear hug. Be wary of holding too tight, as oxygen is generally required for life to live. Remeber that breathing is a privilage and not a right.

Your lucky number is 10 tightly closed digits.

**ES**

A little butterfly told you to burn things, and you feel the need to make it happy. Look for a deeper meaning within by purchasing a flame-thrower and running amok. You'll feel negatively better about yourself.

Your lucky number is 4 stars on your head.

**SCI**

Don't be surprised when an old friend stops by, and then takes off with the love of your life. Despite the fact that your life will be left a hollow shell of what it once was, that doesn't mean that things won't get better. You'll always have alcohol.

Your lucky number is 8 empty bottles of vodka.

# *prof*QUOTES

I don't want to erase this; it's too beautiful.

Cormack, CS 241

The things that you see… if you're *not* running Vista…

Vasiga, CS 135

The banks screw you both ways.

Saunders, ACTSC 371

I will never get to thank [my ancestors] for inventing pants.

Griggio, ITAL 101

Instead of "normalizing", "Goldilocks" the vector… yeah!

Zorzitto, MATH 245

In my old days we went to church to sleep.

Griggio

(About Excel) I know if you're in CS, you probably hate it. First, because of Microsoft, the evil empire it comes from.

Hardy, ACTSC 231

I've decided to push my father-in-law off a cliff. I've solved a lot of problems that way. I'm quite satisfied with the results.

Callaghan, PHIL 100

You know you've had a long day when you're standing in front of the board and you don't know how to spell "occasionally." This has two Ss, doesn't it? Three Ss?
(Adds two more Ss. Now it is spelt "occasssionally".)
… I'm not brilliant; therefore, I can't get away with misspellings. (Changes "occasssionally" to "sometimes")

Hardy, ACTSC 231

We had a moment of silence in which we severely hated you.

Griggio, ITAL 101

Could you tell, I'm bored. Shall we move on?

Hardy, ACTSC 231

Math by democracy. Let's have a vote, because most people seem to be asleep today.

Metzger, STAT 231

We're all over the age of 18, and if you're not: grow up.

Griggio, ITAL 101

I tried it once. I was dead for many years.

Griggio, ITAL 101

Well, this meant death to the ancient Romans, but I'm not putting you to death.

Griggio, ITAL 101

I can say the proof. Unfortunately, students don't tend to listen to me.

Jao, MATH 239

I was a dog in my previous life.

Griggio, ITAL 101

I don't want to see so many god-damn brackets everywhere!

Vasiga, CS 135

The wonderfulness of this dullness is that…

Zorzitto, MATH 245

Oh, man. I really hope my mom gets me that TI-87 calculator — it's so awesome.

Vasiga, CS 135 (Ruthlessly taken out of context)

(About a recent computer-delivered tutorial) You're smart. We don't have to tell you if it's killer [question] or not. You'll find that out for yourself.

Salama, ECE 126

When I was a teenager in ancient times…

Griggio, ITAL 101

If you think about this over the weekend… Like that is going to happen. If you need to cure some insomnia.

Drekic, STAT 333

(Referring to assignments) Next week will also be easy. I can't figure out a way to make it hard… it's a shame.

Zorzitto, MATH 245

Is there a way to put the inner product in a matrix? … But I want to put it on the homework!

Zorzitto, MATH 245

We are going to design a processing unit. You may not be able to sell this to a real customer, but maybe to your younger brother or sister.

Hasan, ECE 222

Prof: (points at a determinant on the board) Anyone know what this is?
Student: Is it a Jacobian?
Prof: No it's not. It's something Engineers use, it's called a Wronskian. You were Wrong…skian!

West, AMATH 250

That's the point of the course: we make it as ugly as we can.

Metzger, STAT 231

If your mother was a real Italian she would respond with violence.

Griggio

If you don't understand, read the Internet.

Mavaddat, CS 251

Somebody's phone is ringing… or singing… or rock-and-rolling? Or hip-hop, I think.

Hardy, ACTSC 231

You asked me, so I presume you know what you're talking about.

Zorzitto, MATH 245

There's a way to solve a matrix exponential. It starts with "T" and ends with "series".

West, AMATH 250

OK, we're going to stop there, mostly because people are leaving.

Malinowski, MATH 115

# What if life were more like Dynasty Warriors

- All of your enemies have a red bar floating above their head.
- Every time you get into a gang fight, all of your friends become completely useless. In fact, you can completely decimate all of your foes, let a single snail squirm by you, and the slug will completely lay waste to everyone of your friends.
- Furthermore, the moment any of your friends come into contact with the slug, they will invariably scream, "We can't handle this! It's too strong!"
- Sparks and fire shoot out of everything!
- If you can pick something up and swing it around then it is a weapon. This includes, but is not limited to: a deck of cards, decorative fans, fuzzy bear gloves, and a flute.
- No matter how ludicrous your weapon of choice, you can mow your way through the enemies as if they are butter. Also, no matter how ridiculous your weapon, no one will ever admit that they have lost most of their army to a single person who smacked them around with a flute.
- Every time you need to ask someone for help, they will only help you if you can manage to beat the ever-loving shit out of them.
- Your friends are all manic-depressive. Doing things that would otherwise make them happy (like beating up your enemies, stopping enemy forces, or winning the battle by yourself) results in their morale going down.
- Anybody who wants to sneak up on you will literally appear out of nowhere and ambush you. They will magically appear out of nowhere! Hundreds of them!
- Your enemies will attack walls for no reason.
- Walking down a path is incredibly difficult. Especially if there is a single tree in your path. You will not be able to get past the tree unless you turn your back and walk at least three metres around it.
- Eating food that has been lying on the floor is perfectly healthy! In fact, it gives you life. It's even better when someone dies and instantly disintegrated into said food.
- Any time you try attacking a group of enemies, you will systematically hit each of them once until you find someone who is blocking and then you will end up targeting them for the rest of the combo.
- Killing your enemy's leader has the effect of instantaneously extinguishing everybody's desire to continue fighting, so the battle suddenly ends.
- Any strategy, ploy, or trap called 'X' can be circumvented by attacking the guy whose name tag reads "X Captain".
- Fights are transformed into frustrating trials of patience as your enemy appears out of thin air, strikes at you, and then disappears into the nothingness that spawned it.
- Any tale told by the same storyteller will vary greatly from one version to the next. Regardless of how many times they tell the story, nothing remains constant: who died when, how they died, et cetera.

# The cake is a lie

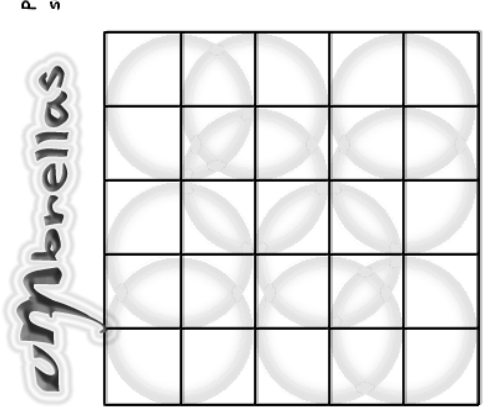
*We do have pizza, though*

## Umbrellas #541

*Solution at euri.ca/puzzles*

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

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 8 | 4 | 0 | 3 | 4 | 8 | 0 | 3 | 4 |
| 0 | 0 | 2 | 8 | 3 | 4 | 8 | 0 | 4 | 1 |
| 3 | 5 | 4 | 3 | 6 | 4 | 3 | 4 | 2 | 0 |
| 0 | 8 | 4 | 7 | 1 | 2 | 3 | 4 | 1 | 1 |
| 1 | 8 | 3 | 1 | 4 | 3 | 3 | 4 | 3 | 4 |




# The last of the *prof*QUOTES

*For this issue*

Do you guys remember when banks used to have people in them?

Buhr, CS 343

(On the day of a midterm) You're all experts in circuit theory. (Chuckles from class) We'll find out tonight.

Salama, ECE 126

I call my numerical procedures a calculator.

Hardy, ACTSC 231

Walking down the street, you come across this vector differential equation. Then a birdie comes along and gives you two possible solutions. These birdies don't fly anywhere near the PAC, mind you.

West, AMATH 250

You're Canadians, you're genetically polite.

Griggio, ITAL 101

You'll need one of those stamps for the exam: Kaching! "It's a linear combination of Gaussian distributions; therefore, it's a Gaussian distribution." Now get off my case.

Metzger, STAT 231

# Next time on Grey's Anatomy

People die because the doctors spend too much time bitching about their trite personal lives.

Angelo

# *grid*COMMENTS

*Back to the conventionals*

Yay for submissions! Last issue's *grid*QUESTION was "***". Here are the results:

**Sodoku:** Congratulations to *Betty Yip* ("password: GOD") — there's a C&D gift certificate with your name on it in the MathSoc office. Thanks also to Chester Yang ("Why, yes, I am awesome!") and Graeme Kemkes ("gesundheit!"), who also submitted correct solutions!

***grid*WORD:** The winner is *Dale Brydon + Nolan Waite* ("!!") which I assume is two people. You also have won a gift certificate! Drop by the MathSoc office to pick it up. There was only one other correct solution, which was by Graeme Kemkes (he solved both puzzles).

Now for this week: We're back to conventionals. The cryptic didn't get lots of responses. If you liked the Cryptic, let me know! If you want to make Cryptics, we'll print them! Hint: Don't start with 1 across; it isn't a "real" word.

You too can win a $5 gift certificate to the C&D! Here's how:

1. Solve the Sudoku or the *grid*WORD (or both!).
2. Write your name on the paper.
3. Write your answer to the *grid*QUESTION on the paper.
4. Separate the part with the result of steps 1–3 from the rest of *math*NEWS. Popular methods include ripping the page out and cutting the puzzle out.
5. Get that paper to us before the next Production Night (which is listed in the *look*AHEAD). Popular methods include dropping it in the BLACK BOX, and tracking down an editor. Unpopular methods include firing it towards me at high speeds in bullet or paper-airplane format, and emailing PDFs.

So there you have it: 5 simple steps that will give you a pretty good chance at winning $5.

This issue's *grid*QUESTION is "How do you make a *math*NEWS with an odd number of pages?". Also, you can submit unfinished *grid*WORD solutions so that I know if it's too hard.

Peter

*Orthogonal to gravity*

1. The dens after K and before M
5. The 1st person singular pronoun
9. Limit
11. Feudal Japanese military nobility
12. Make up
13. Mouse, but usually with a longer tail
14. A hole in a desk
15. Multitudes
16. "In" in French
17. $(-\infty, 0) \cup (0, \infty)$
18. Pain in the head
23. Hired killer
27. An English cheese
28. 100/3 RPM
30. Detected by taste
31. Birds, of the Auk family
32. Mrs. Rand
33. Family
34. Body waste
35. A particular group transfer reaction, or a river in the Andes
36. The indefinitte article
37. Fields

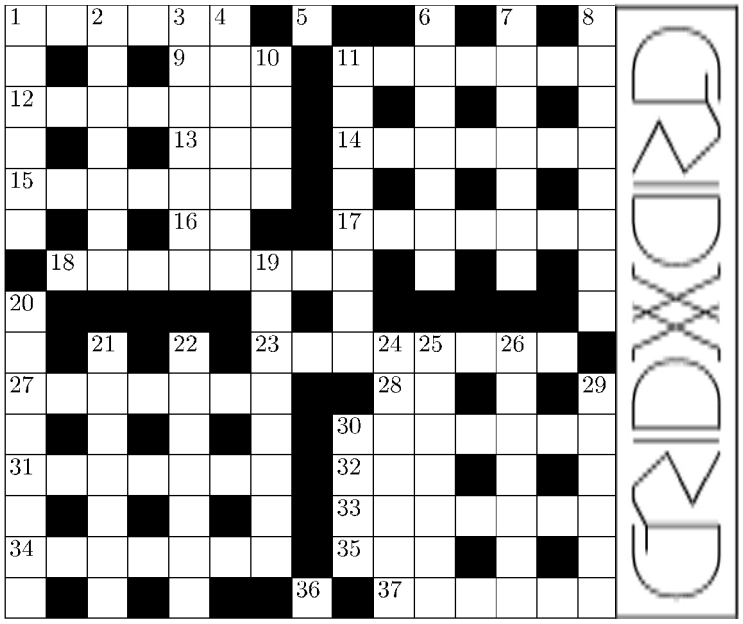
*With gravity*

1. Find, but with a database
2. Submerge
3. Looked down upon
4. Flat pasta
6. A kind of gun you don't want
7. The bird ___ its feathers
8. $10^6$s
10. Strokes
11. Cheap dice replacements
19. CHA
20. People who ran away
21. A tense system better than any other!
22. Gives advice
24. Joining teams
25. Wrench
26. Forms of an element with different atomic masses

## Sudoku

*Solution to Last Issue's Puzzle*

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

*This Issue's Puzzle*

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