

YOU KNOW IT'S MIDTERM SEASON
WHEN THINGS GET

PEAD NUTTY

"WHAT IS THE BEST HALLOWEEN COSTUME?"

JUST B URSELF - R/UWATERLOO

Hello again, readers, and welcome to another issue of **mathNEWS!**

There's not much to say about this issue; it's a pretty short one, considering production night was the night before Halloween and people were thus very busy with a combination of studying, costume preparation, and having social lives outside of attending a biweekly production night. We do have plenty of **profQUOTES** for you, though!

On another note, no one answered the question I posed in the space last issue. So I think the only reasonable conclusion is that no one reads this section, ever. Seriously, it makes me feel kinda sad. Please send an email to mathNEWS@gmail.com with the subject line "I read the **mastHEAD**" to make me feel better about dedicating precious time to writing this thing.

Anyways, I guess I need to fill more space with Halloween-themed stuff. Thus, I present to you: **mathNEWS** gothic.

- You show up to production night, only to realize there are no other non-editors present. They don't seem to know you're there.
- The chairs are all armless. One day, you peer within the massive bin at the side of the room to find a graveyard of chair arms, some broken, but most still intact and seemingly undamaged. You wonder what led to their exile.
- You call the number you've always called to order pizza. The number is out of service.
- You don't recognize the plates the pizza guy hands you. You look up, meeting his gaze. He gives you an unfamiliar smile.
- For the first time in as long as you can remember, the cheese pizza is not completely gone after everyone has taken three slices.
- No one moves at the call of "free-for-all!".

itorED

quizED (Zishen Qu)

Zethar

Be whatever suits your fantasy honestly; a contemporary creature, your favourite video game NPC, or some figure from forgotten eons past—come to think of it, a convincing aqrabu-amelum or girtablilum costume would be pretty cool to see.

Silverchase | The spookiest costume is being yourself.

TheUndecided | Mine.

Teemo | Bird Person.

Beyond Meta | A comfortable one.

ExtrovertED | Any cosplay.

itorED | Sexy Slavoj Zizek.

quizED | The Mathematics and Computer Building.

ARTICLE OF THE ISSUE

The article of the issue is "A First Years Guide to the Bathrooms on Campus". One of the most basic human needs, neglected until this moment, has finally been addressed by **mathNEWS** through this article. Before this treatise, to attempt to reach a bathroom suitable to the needs of the individual was hard, if not incomputable, but from this day on, we will no longer need to scurry back to our own homes just for the slightest bit of comfort and discomfort. No, now we can find the subpar bathroom of choice, directly on campus.

Perhaps this precedent will encourage writers to write more articles on basic human necessities, such as **mathNEWS** distribution locations, wi-fi locations, bubble tea stores, free pizza events, etc.

Anyway, the prize winning author that wrote the prize winning article is "I've never seen a proof before coming here $\in \mathbb{Z}$ ". Come to the **mathNEWS** office to pick up your prize, the contents of which are not mentioned in this column.

We couldn't decide if last issue or this issue would be the Halloween issue, so now they're both the Halloween issue! Which is a bit of an issue, because neither one has much particularly spooky content.

MICHELLE ZHU, **mathNEWS** EDITOR FOR FALL 2017
ALONG WITH SHAUNDALEE CARVALHO, ANGELA LE, ZISHEN
QU, CAMERON ROACH AND HEATHER STONEHOUSE

mathASKS 135.4

FEATURING JASON BELL

Hi,

Thanks for your questions. I'm attaching my answers along with my "profTHOUGHTS" below.

ZETHAR: WHAT IS A MATH FACT THAT YOU WOULD LIKE TO SHARE?

Well, let me tell you a fact that's one small corollary of a very general result called Hilbert's Irreducibility Theorem. If $P(x)$ is a polynomial with integer coefficients and $P(n)$ is a perfect square for every integer n then $P(x)$ is actually the square of another polynomial $Q(x)$.

OSCAR: WHAT'S YOUR FAVOURITE MATH JOKE?

What's an anagram of Banach-Tarski?

Banach-Tarski Banach-Tarski

But, seriously, anti-shark cab is a much better anagram.

HARRISON BALLS: DID YOU INVENT THE TELEPHONE?

Yes. You're welcome, BTW.

TILL TANTAU: DO YOU USE THE ANN ARBOR THEME WHEN MAKING BEAMER SLIDES?

No, I don't, but I looked it up and I must admit that I find the blue and yellow colours to be quite soothing.

ALEX BELL: DID YOU INVENT NON-COMMUTATIVE GEOMETRY?

Sadly, no. The only thing I've ever invented—other than the telephone—is a particularly delicious vegetable-based soup, which can today be procured in upscale eateries throughout North America. I should point out that by "upscale eateries throughout North America" I just mean my house, and you can't actually get it there due to an aversion on the part of my wife to me selling vegetable-based soups out of the garage. But that's a story for a different profTHOUGHTS.

SANDY MCSANDFACE: HAVE YOU EVER WATCHED SAMURAI JACK?

Never. But I did look it up on Wikipedia and it looks like it might be loosely based on my life.

ALSO SANDY: HAVE YOU CONSIDERED PLAYING SQUASH WITH ME INSTEAD OF TENNIS WITH YOUR FRIEND RAHIM?

Admittedly, playing a spirited game of squash against someone with the last name "McSandface" is one of the remaining items of my bucket list, but it is probably best that I stick to tennis.

DIANE: HAVE YOU CONSIDERED CONTINUING TO PLAY TENNIS INSTEAD OF SWITCHING TO SQUASH?

Yes, I have!

YABOI: $2+2=2\times 2$ $3+3=3\times 2$ $3\times 3=3^2$ $3^3=?$

Hmm...when in doubt, the answer is '42'.

YOUR FUTURE USRA: HOW DO SO MANY OF YOUR USRAS END UP WITH A PUBLICATION?

Good question. Let me indirectly address that in my profTHOUGHTS article.

SIMON Y. HUANG: IS EVERY FINITELY GENERATED TORSION GROUP FINITE?

If the group is abelian then the answer is 'yes'; in general, the answer is 'no'. The first counterexample was made by Golod and Shafarevich back in 1964, who constructed an infinite group generated by a finite set of elements, where every element has order equal to a power of a prime p . More recently, there have been groups like the Grigorchuk group, which is a finitely generated subgroup of the group of automorphisms of an infinite binary tree and every element in this group has order equal to a power of two. This later example is notable in that if one looks at the number of distinct elements you can make by multiplying n of your generators together, then it grows slower than $\exp(Cn)$ for any $C>0$ and it grows faster than any polynomial in n .

QUIZED: HOW DO YOU BECOME THE EDITOR OF A MATHEMATICS JOURNAL?

You get asked and then say 'yes'. And then the nightmare begins.

N WAYS TO AVOID HAVING YOUR BIKE STOLEN

- Lock it to a bike rack
- Tie piece of string around it to a bike rack to convince thieves with bad eyesight it's actually locked
- Use a high quality lock with a really old bike and don't bother locking it—thieves will steal the lock and instead of the bike because of the better profit/effort ratio
- Keep your bike at home and walk everywhere
- Hire an old lady to stand near your bike and harrumph disapprovingly at would be thieves
- Disassemble your bike at your destination and carry its components around in your backpack

HOW TO FIND THE RIGHT RESEARCH PROJECT FOR YOU

I've decided to use the immense power of the **profTHOUGHTS** pulpit to talk about how one should pick a research project and how one can know whether it is the right problem for you. I should point out that a large part of this was inspired by ideas from my friend Chelsea Walton, who is a very strong researcher in her own right and whom I saw giving advice on this.

So how do you pick a problem? The short answer is that it's not easy and several criteria should be met, which I'll now discuss. The first criterion is that you should find the project interesting. If it's not something you can become addicted to and devote large amounts of time to solving, it will be a chore and doing research should ultimately be something you look forward to. It's easy to know whether or not you find something interesting, so let's move on to the subsequent conditions that should be met.

The next thing you should ask yourself is: Is this something that's interesting to other people? If the project is interesting only to you, that's OK, but it should then be something you do on the side as a hobby and not as a main part of your research program. This can of course be harder to ascertain and sometimes one writes something that only gains some following after several years, but you should at least be able to convince a reasonably open-minded person that what you're working on is interesting. A project is not just a problem—there's a story to be told and you should think hard about how to best tell that story to an audience. That means sometimes agonizing over your words as you write, writing multiple drafts, and looking at how your project fits into the larger body of literature. It can be a lot of work, but if you care about your project, it is worth spending considerable time on this step.

The third thing to ask yourself is whether you have an approach or some new idea that can help you with completing the project. If you decide you want to sit down and see whether you can prove the Riemann Hypothesis, that's fine, but it's not an ideal approach for making consistent progress on a problem. Examples of reasonable approaches might be adapting (that's a polite word for stealing) ideas from another paper that made progress on a related problem; or perhaps you might break the problem into smaller parts that you can ultimately glue together into a solution and work on the project on a piece-by-piece basis; or maybe you just want to start with a special case that you know how to work out and go from there. Whatever the case, it is a good idea to at least have some plan.

OK, so now let's suppose that you have found a project where the first three criteria have been met. Now what? The final step is that you need to establish a timeline for completing the project. For young researchers—who need to worry about

finishing grad school and getting publications out during postdocs—this last step is especially important. It is very easy to misjudge this step and even experienced researchers sometimes make miscalculations with the timeline, but try to be honest about how long you think it will take you to progress through the various stages in your plan, to obtain the solution, and to do all the writing. If you figure it will take ten years, that's OK (in some ways that's better than a project that will take six months), but you should then make sure it's not the central focus of your research program—especially if you are a young researcher.

So to answer the question about having success with USRAs, I generally try to have a list of accessible projects where there is some plan already in place and where the estimated timeline is roughly six months. Then I just see how things unfold over the semester. For such projects, considerable progress can be made in a single semester by a motivated student.

Jason Bell

EDITORS CAN'T SPELL

How is that news?

It has come to light that the Editors of this fine publication cannot spell simple words like "spinach" when ordering pizza, and this issue is severely lacking in actual articles, I have decided to help them to space by engaging in a gallimaufry logorrhoeaic flow of difficult words.

mathNEWS genethliology is on hiatus due to a dearth of daedal demiurge available. Perhaps the prolongation of the paper requires us to print secund; it may be necessary to make a perscrutation to locate a sempster who can weave a raschel seine to capture a facund flamen capable of instilling hwyl into our writers. A panurgic hawkshaw may need to be hired for this nefastous deed.

Good luck with getting that spelling right.

Zethar

A FIRST YEAR'S GUIDE TO THE BATHROOMS ON CAMPUS

The number one priority when moving to a new location is locating and securing the top-quality toilets in the region. As such, I have compiled a collection of reviews on the (mens) toilets I have toured and extensively investigated on campus.

V1 Main: The main building has washrooms both downstairs, and upstairs. The downstairs one is a fairly average bathroom.

Not clean, but clean enough that you'll shit in it. Features posters in the stall so you can get your daily propaganda while taking a dump. The upstairs one by the Great Hall sinks into the floor slightly to ensure that all users walk slowly while trying to hold it in.

V1 Res: Experience may vary* Is cleaned daily so you don't have to worry. Has a bathtub that everyone uses to fill the kettle and two showers. Our floor had an agreement to not wear outdoor shoes inside so we can get piss stains over our slippers instead. Apparently, the girl's floor below us is absolutely disgusting... but we won't talk about that. Bonus that you can go to a different building if you can steal someone's keys, but you didn't hear that from me.

SLC: There's one by the main door, which is as clean as you'd expect. Smells like urine. Gum in the urinal. Piss on the floor. The mirrors are all on the wall adjacent to the sinks, in order to separate those that like looking at themselves (me) from those that actually need to wash their hands.

MC: There's basically a toilet on every floor, every corner. No wifi in the stalls so students don't do their assignments in there (I've tried). In order to use the sink you have to actually use your feet to step on the damned thing. It took me 30 minutes to figure out the first time. I was wandering around the MC with unwashed hands trying to find a bathroom with working sinks. Why they didn't tell us at orientation? Trial by fire.

DC: There's one by the fishbowl with giant signs pointing to it. You actually might find old people (not undergrads) in here. Bonus easter eggs: second and third floor, and in the library. Beware, there's a disgusting cramped one on the second floor. There's also one that's absolutely pristine somewhere. I'll walk all the way from V1 just to use it.

SCH: The walk to the bathroom makes you feel like you're about to be shanked. Probably would've been better if it smelled like pee.

DWE: I've only been to one of the toilets in here because of everyone's favourite 3 hour class, SPCOMM 100. You'll find it eventually after getting lost in engineering applied math (don't kill me ily). Tiny, but acceptable. The washrooms are too.

Overall: You probably won't get UTI's, but you might get STD's. Going to the loo is surely a struggle. No I did not write this just to make that pun. I'm just naturally talented.

PS: There is no pizza, this was a trap. Send help.

PPS: I lied, they're ordering pizza now.

PPPS: Still send help.

I've never seen a proof before coming here $\in \mathbb{Z}$

WHAT MATH CAN'T DO

I know, we've all heard it a thousand times before. We are taught math is boring so we're told over, and over, and over, and over again all the ways math can be used to help us. Need to cut a cake? MATH. Need to count a bunch of change? MATH. Need to know how long a body takes to decompose? MATH. Y'know silly things like that. I've seen so much and I've had enough. Shall I say, we have had enough?

So in honour of our monumental revolt against math being served as a fix-all, I present to you a myriad of situations where math won't do shit for you fools.

Your girlfriend finds pictures of you licking aftershave you mistook for whipped cream off of your family dentist.

Your dog loves your new roommate more than you and it doesn't matter how many treats you put on your visa.

You accidentally fax a baby photo of yourself to your boss

You are struggling to understand how men on their third wife can hold others to biblical standards.

Your car keys fall in a sewer drain, and as you bend down to look, your phone slips out of your pocket but not before calling your ex who then hears you yelling, "fuck this!" in distant and disturbingly water-logged repetition.

You invest in jorts.*

You find out rats have metacognition and you spend days imaging every rat you see thinking about thinking. You start running into 30% more streetlights.

Every Chipotle in the world runs out of guac.

You marry the girl of your dreams and when you jokingly bring up that the moon landing was fake she turns to you and says, "pshh, you believe in the moon?"

You join an unhealthy number of Garfield and Sharkboy and Lavagirl fan facebook pages and now your friends stop inviting you to go bowling.

There's some math news for ya.

*There's always been an openness to jorts that concerns me

ITSH

Send more profQUOTES.

THE ENTIRE mathNEWS READERSHIP

profQUOTES

MATH 145: STEPHEN NEW

“ Defining arc lengths rigorously can be a little tricky. We have to use integrals. It is assumed that you guys have never seen integrals, and the Ontario high school curriculum does not teach integration. I don't care. I will give you the precise definition of arc lengths.

“ [pointing at a whole board of complex mathematical operations]...this is just for your entertainment.

MATH 147: LAURENT MARCOUX

“ I'm not wearing my glasses, so I can't hear you.

MATH 235: DAN WOLCZUK

“ If you don't have an over 70% average (on the midterm), I'm going to cry.

“ Another key to being a mathematician is laziness.

MATH 237: MUKTO AKASH

“ If this limit is anything other than zero, you don't have squat.

“ The proof of this theorem is very, very simple. It's almost a non-proof.

MATH 237: GIUSEPPE SELLAROLI

“ You might be wondering why I'm teaching some wrong; I'm wondering that too.

“ One Halloween I dressed up as the Spectral Theorem. I promise it's funnier in Italian.

“ Today we are going to try to set a record for most definitions in a single lecture.

“ Have a good weekend, and don't spend all your time watching Stranger Things.

MATH 237: JOE WEST

“ I have some empty space, so I'm going to fill it up. Just like mathNEWS.

STAT 341: RYAN BROWNE

“ We're really much different from dinosaurs.

“ I was scuba diving and the shark bit me, and he was clearly 160 inches. Clearly.

PMATH 940: DAVID MCKINNON

“ Hensel's Lemma is named after the famous German mathematician, Carl Friedrich Lemma.

PMATH 930: ROSS WILLARD

“ Just think of "class" meaning "set"...Oh no! Just think of "class" meaning "collection".

“ Let's just bury it at the bottom. Classes of classes!

“ [Falls over several chairs] I meant to do that!

“ Do you wanna do some more of these? [No response] Yeahhh, let's do it! Thank you for your enthusiasm!

“ Having fun with the current assignment? [No response] Math is supposed to be fun, you know?

“ Does anyone have any questions before I start the lecture? [Pause] Thank you, for being so understanding, and not pestering me with questions, such as when I finish grading the assignments!

“ No assignments. See, I had a great weekend! Party all weekend long!

“ I'm a bad boy.

“ I can't express to you how *terrible* I feel about how I partied all weekend.

“ I'd like to promise I'll have the assignments by Wednesday. I'd like to. No parties planned... ohh, there is a party tonight.

SCI 206: STEFAN IDZIAK

“ What's that quote? If it dies, it's biology. If it blows up, it's chemistry. If it doesn't work, it's physics.

“ I don't have a hammer, but I have bananas.

“ It's Friday night and you're learning physics... It's Friday night and I'm teaching physics.

MNS 101: JAN KYCIA

“ You learn a lot by cramming.

“ What you need to know from Chapter 1 is all of Chapter 1.

CO 255: JIM GEELEN

“ Recall, and if you didn't know this before, learn that...

“ Not only will it terminate, it'll give you the right answer.

CO 342: MARTIN PEI

- “ I'm going to blow up a balloon for no reason whatsoever.
- “ Do I have chalk on my lips now?
- “ We're going to try to make this an injury-free class.

CO 351: MARTIN PEI

- “ I still know not much about network flow, but I can still teach it for some reason.
- “ There's no white chalk. That's kind of racist.
- “ Oh, this is such a hack... This is such a bad proof.
- “ Soon I'll be changed to an elephant.
- “ Yellow is probably the closest to white. Probably. Again, not racist.
- “ Touching is good though, isn't it?
- “ My phone buzzed when I said something controversial. Does somebody have my number?
- “ Now we can prove things about the Bellman-Ford algorithm, plus I'm really hungry.
- “ I guess that's life in general: your potential always goes down.
- “ This is not a complex proof. There's no imaginary numbers in there.
- “ Everything's innocent in this class. Except for me, I guess. Oh dear.

CO 456: GABRIEL GAUTHIER-SHALOM

- “ We live on a flat earth right?
- “ Topology is a cool subject but I won't be teaching you that today.
- “ You can take this simplex and deform it into a pizza.
- “ Maybe your programs will develop street cred.
- “ Empty graphs are like my life.
- “ I've been reading my prof quotes and I sound really mean.
- “ Let's do a stupid thing and fix it, and it will actually work.

- “ Sorry, I'm not disappointed in you, I'm disappointed in myself.
- “ I saw my **profQUOTES** today, and they sound pretty mean.

CS 459: YAO-LIANG YU

- “ Machine learning is a Canadian thing.
- “ This is what allowed deep learning to be possible. This and Nvidia. [from guest lecturer Agastya Kalra]
- “ You will memorize this even if you don't want to.
- “ I forgot my charger, and I went to go get it, and then I got lost in MC.
- “ Hopefully by the end of this class I will be able to blow your mind.
- “ If you don't know this, don't worry, I don't know this either.

ARTS 280: OWEN GALLUPE

- “ You know you're a nerd when you're proud of how well you can draw a normal distribution.

PMATH 331: ROBERT ANDRE

- “ MTV has nothing to do with what we're studying. What's MTV? Music Television.

SHORT SHORTS

Hello, this article is gonna be a couple of short stories from my life.

I was lost in thought instead of paying attention in my functional analysis class as usual when out of no where Prof Matt Kennedy asked "so, who here has taken matroid theory?". The question was so jarring that I actually felt compelled to listen to what my prof had to say for once. I thought to myself, wow what a mathematically well rounded guy our prof is; amazing.

Later that week I was relaying this story to my friend and he asked "Oh cool what did he talk about?" and that's when I realized I hadn't paid any attention what so ever to what my prof had said. Oh well.

During my last co-op term I was often stuck with my coworker for long amounts of time. He was a really nice guy, his first name started with e, and we got along just fine. However, I was pretty bored most of the time, so to make work a more palatable experience for myself I started calling my coworker a bunch of different names that all started with the letter e. He always responded very casually, even though he wasn't really sure why I had developed this habit. I had fun.

Sandy McSandface

gridWORD

ACROSS

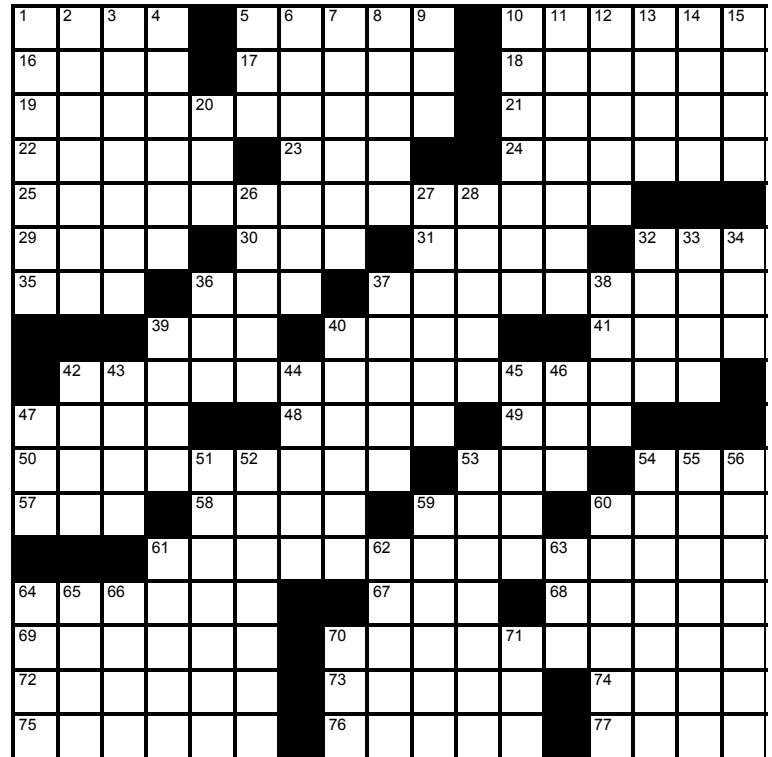
1. Црп
5. Temporarily linger
10. Annoyance
16. Epitaph opener
17. Middle east capital
18. Folded fare
19. Disposed to think well of
21. Coventry's bare rider
22. Sound
23. American letter
24. Free
25. $f : X \rightarrow X$
29. Square
30. Helpful connections
31. Green fuzz
32. Freight weight
35. Spain (abbr)
36. Internet phone book
37. Grounds
39. Milk supplier
40. Key
41. "Paradise Lost," e.g.
42. Having variable dispersion
47. Latin ninth hour?
48. Gel
49. Born
50. This head-wear isn't actually from its namesake country
53. Draw
54. Down
57. An abbreviation for tools such as clickers in class
58. Warning
59. British mother
60. Fair
61. Protective spirits
64. Claws
67. Professional Melee hardware
68. They might catch some rays
69. Cancels
70. Yellow-green

72. Elastic cord
73. Conic section fixed point
74. Rouse
75. Used by 51D
76. What you get when after a long exam
77. Red, Black, and Yellow

DOWN

1. Symbol of Scotland and Lorraine
2. Latin ladies
3. Early light source
4. To make warmer
5. Criticize harshly
6. Greek female equestrians
7. Browns
8. Fourier prize
9. Unsaturated hydrocarbon
10. Greedy
11. Lovingly, in music
12. An American saloon?
13. Opening
14. Jesus' great-great grandfather
15. Terminal info
20. Urge sources
26. Of higher grade
27. Talisman
28. Packed
32. Plains structure
33. Ear-like
34. UN address
36. E1
37. An example of a 53A
38. Network
39. This volcano is also natively known as "beautiful mountain".
40. Montreal, for one
42. Ancient
43. A long, long time
44. Earthly colour
45. Soul
46. Catholic district

47. e.g. Hamiltonian path, Knapsack problem
51. Police division
52. Rolls up
53. Fit
54. Preform
55. Defective tissue
56. Pitchers
59. Rattle
60. Leave
61. Ravine
62. Divine humour
63. Part of Scand.
64. Panes
65. Touch
66. Sole
70. CFL precursor
71. Recipe amt.



gridCOMMENT

NOW WITH 28% MORE GRID!

Given that I had a few extra hours this issue I decided to give all my readers a belated treat for Hallowe'en; since I have heard through the grape vines at how people like doing my crosswords, I put in some extra effort this issue to give something more: more grid, to be precise. Now you too can spend some extra time and effort to reach the satisfaction of having a completed grid, and if you decided that you should do this before a midterm, perhaps the miscalculation of the amount of time needed to solve the grid will result in you missing your exam*.

Hopefully, such a fate shall befall you not, as we can consult the solvers of the previous issue as to tips and tricks on combating midterms, as we peruse the answers to last issue's **gridQUESTION**, which was "What is the most effective midterm lifehack?"

- Axel's solution has two incorrect letters and their answer was "Do this **gridWORD** 6 hours before a midterm to warm up the brain. Kids, don't try this one at home"

- Andrew's solution has one incorrect letter and their answer was "put the midterm in a cup so you can read it better"
- The PMC dream team's solution has one incorrect letter and their answer was "Use the trick from Inception and plant the questions in your prof's mind so they will carry out your ideas when they make up the exam"
- Pentapus' solution is correct and their answer was a meme which I shall get the editors to post somewhere.
- J. Liu's solution is correct and their answer was "HIRE EASYFACE"
- Richard & Danny's solution is correct and their answer was "Not doing this crossword when I should be studying"
- Murphy + Rosie's solution is correct and their answer was "Sculpt ice into things you want to remember, then bring the ice to the exam in a glass jar. Counts as having 'water in a clear container'."
- athamizh and bvenkite's solution is correct and their answer was "Arrange someone to pull the fire alarm or maybe sleep with the TA?"

[NB: I hope I don't have to mention that you should do these things at your own risk and it may not be the most wise]

While I like the PMC dream team's response, since their grid wasn't correct I unfortunately cannot award the prize to them. My favorite was a close contest between Murphy + Rosie's for their ingenuity and Pentapus' for the sagely truth it embodies, and I think the former ekes out ahead by a bit. Congratulations, please drop by the **mathNEWS** office and badger the editors for a prize.

Since I am expecting to be busy for much of November due to other commitments, I have decided to try and outsource some of my work for the next issue. To facilitate such a task, I present this issue's **gridQUESTION**, "What is a word you would like to see in the next **gridWORD**, and what should its clue be?" I make no promises that I will actually use your submission in next issue's grid, but it might inspire me in some way or something. Either way, I feel that I should occasionally reward people who read through the giant walls of text of mostly boilerplate and ramblings of a grizzled writer that is the **gridCOMMENT**.

Speaking of the boilerplate... If one submits to **mathNEWS**, either physically or electronically, a submission to this issue's grid before 1800 hrs on November 13th, 2017, their submission is eligible for a prize. On that date, I shall select the most correct submission to be the winner; in the event of a tie for most correct, I shall select the entry which has my favourite answer to the **gridQUESTION** of the issue. Electronic submissions should be directed to mathnews@gmail.com while physical submissions can be submitted under the door to our office, MC 3030.

Veteran solvers of the **gridWORD** may recall in the bygone eras, **mathNEWS** used to be in possession of the **BLACK BOX**, the devourer of **gridWORD** submissions, which was formerly housed next to the comfy lounge, from which the noble **BLACK BOX** was extirpated and whose desiccated corpse lies battered and beaten on the floor of our office. Recently, plant operations has installed the son of the **BLACK BOX**, now found next to the C&D; I have been informed that soon, perhaps even for this issue, the new **BLACK BOX** will be ready to consume submissions and hat mail and we can return to the glorious **mathNEWS** days of yore: only the passage of time can tell.

Happy hunting, and I hope you enjoy this extra-effort edition of the **gridWORD**.

Zethar

*PS: Proctors will generally allow you to enter an exam up to 30 minutes late provided that nobody has left the exam room. **mathNEWS** is not liable for solvers missing exams if they choose to do the **gridWORD** right before an exam and lose track of time.

LAST WEEK'S gridSOLUTION:

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

$$\begin{array}{c}
 H^2(L|K) \xrightarrow{\text{incl}} H^2(M|K) \xrightarrow{\text{res}_L} H^2(N|L) \\
 \downarrow \bar{v}_K \qquad \qquad \qquad \downarrow \bar{v}_L \\
 H^2(G_{L|K}, \mathbb{Z}) \xrightarrow{\text{inf}} H^2(G_{M|K}, \mathbb{Z}) \xrightarrow{\text{e-res}} H^2(G_{N|L}, \mathbb{Z}) \\
 \downarrow \delta^{-1} \qquad \qquad \qquad \downarrow \delta^{-1} \\
 H^1(G_{L|K}, \mathbb{Q}/\mathbb{Z}) \xrightarrow{\text{inf}} H^1(G_{M|K}, \mathbb{Q}/\mathbb{Z}) \xrightarrow{\text{e-res}} H^1(G_{N|L}, \mathbb{Q}/\mathbb{Z}) \\
 \downarrow \varphi \qquad \qquad \qquad \downarrow \varphi \\
 \frac{1}{[L:K]} \mathbb{Z}/\mathbb{Z} \xrightarrow{\text{incl}} \frac{1}{[M:K]} \mathbb{Z}/\mathbb{Z} \xrightarrow{[\cdot L:K]} \frac{1}{[N:L]} \mathbb{Z}/\mathbb{Z}
 \end{array}$$

Drop off your **gridWORD** attempts in the **BLACKBOX**.

lookAHEAD

SUN NOV 5

MON NOV 6

TUE NOV 7

WED NOV 8

THU NOV 9

FRI NOV 10

SAT NOV 11

Arbor Day in the Republic of Congo

October Revolution Day (100th anniversary)

Games with profs [Prof invitations at MathSoc Office]

Remembrance Day
Independence Day in Angola and Poland

SUN NOV 12

MON NOV 13

TUE NOV 14

WED NOV 15

THU NOV 16

FRI NOV 17

SAT NOV 18

mathNEWS Production Night!

Independence Day in Morocco

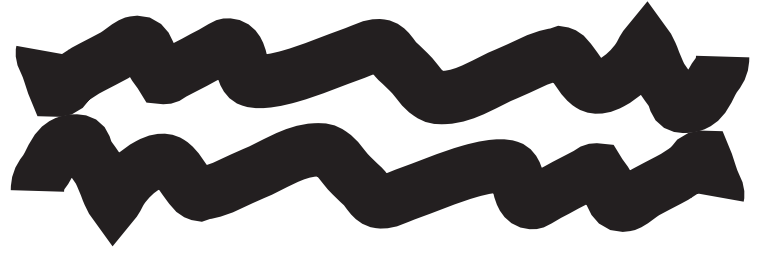
v13515 of mathNEWS comes out.

Making the cheat sheet after the exam

Making the cheat sheet during the exam

Making the cheat sheet the morning of the exam

Making the cheat sheet the night before the exam



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