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MOUTH NEWS

Volume 125, Issue 2

Friday, May 30th, 2014

lookAHEAD**mathNEWS**

May 30	Issue 2 cracks eggs and spills sugar
June 9	Issue 3 is placed in the oven
June 13	Issue 3 is thrown on cooling racks

CECA

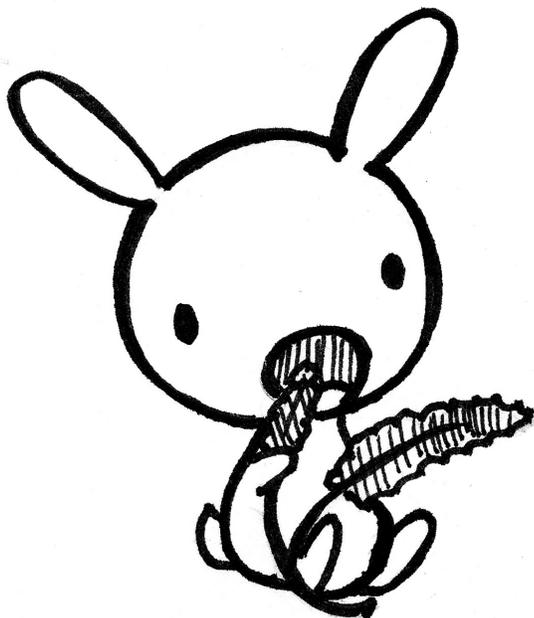
June 2–20	Employer interviews, main group
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University

June 9	Online course exam schedules available on Quest
June 10–14	Spring 2014 convocation

Miscellaneous

June 3	Repeat Day
June 3	Repeat Day
June 8	Best Friends Day
June 9	Donald Duck Day

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mathNEWS 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. *mathNEWS* is editorially independent of MathSoc. Content is the responsibility of the *mathNEWS* editors; however, any opinions expressed herein are those of the authors and not necessarily those of MathSoc or *mathNEWS*. Current and back issues of *mathNEWS* are available electronically via the World Wide Web at <http://www.mathNEWS.uwaterloo.ca/>. Thomas Baxter thinks this ISSN is boring. What do you think? Send your comments, articles, and correspondence to: *mathNEWS*, MC3030, University of Waterloo, 200 University Ave. W., Waterloo, Ontario, Canada, N2L 3G1 or mathNEWS@gmail.com on the Internet.

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Murphy Berzish (Fruit Cream), Katherine Tu (Tea Biscuit), Rachel Wiens (Oreo), Jose-Miguel Velasco (Double Chocolate Chip)

mastHEAD

We've heard talk in the last few days about certain groups that are having a very bad problem and will not go to the bank today. We have the opposite problem: we have found ourselves wondering just what to do in order to make use of some excess capital. We went down the list and managed to cross off a few ideas in the process.

- Gold-plating every issue of *mathNEWS* for the rest of the term proved unfeasible when SketchED threw his back out carrying twenty copies down to the Davis Centre. We also blew up the forklift while getting them out of the print shop.
- We wanted to make a giant castle out of lemon meringue, but could not find an architect willing to help us with the plans. (“Collapsing under its own weight,” *shmo*-llapsing under its own weight—I still insist that it would have been perfectly safe.)
- Those giant gummy worms mentioned several volumes ago were sold out.
- Providing math research funds to encourage writers to produce “higher-quality math-inspired content” was met with volleys of tomatoes and other assorted fruits.
- Paying people to read *mathNEWS*.
- Out plan to provide all incoming undergraduate math students with their first-year textbooks for free fell short when engagement surveys revealed that no one actually uses textbooks, even when they don't have to pay for them.
- We had neither the interest nor the time to buy out BlackBerry.

Failing that, we did just what we usually do when we run out of ideas: we asked the writers to decide for us. Okay, writers, what would you like for free instead of pizza during Production Night?

MuffinED(“Kittens”); waldo@<3.LE-GASP.ca(“shelter and transportation”); bunnyED(“Bunnies. Fluffy bunnies. Soft bunnies. Baby bunnies. Tiny bunnies. Giant bunnies. Lop-eared bunnies. High-eared bunnies. No-eared bunnies. Bunnies.”); $s, t \in \{2k, k \in \mathbb{Z}\}, 144$ (“An easily manipulated genie”); ChooChoo(“Cake that's not a lie”); \&(“Local, free-range, grass-fed goslings, now with more omega-3!”); ShayBlair(“Sexual favours”); MeaninglessQuips(“My own production night! With blackjack and hookers!”); Ice Nine(“Pancakes”); Stubbs(“A goat to sacrifice Cthulu.”); SketchED(“The life of my writers to be willingly snuffed out for the cause.”); theSMURF(“Happiness”); Guptashark(“mathNEWS engraved fountain pens.”); unit(“wine”); Zethar(“Goodwill with the important powers that be is always an excellent free gift...”); Beyond Meta(“Skype calls so I can still attend meetings no matter where I am on co-op”); Scythe Marshall (“Home-made coconut ice cream.”);

ScruffyED(“Solutions to instances of NP-Complete Problems.”)

Sweet and Sour

So it's spring, you've been here a while, and you're worried that you won't graduate. How can you ensure that you do?

Well, it depends on how bad things are. In most cases, the following are sufficient:

1. Reduce your course load. In most plans, you do not need to be enrolled in 5 courses a term.
2. Attend class. If you are going to classes, you have a much better probability of academic success.
3. Do your homework, eat right, exercise...
4. Make sure you get out and have fun. There is a world outside of MC, M3, and DC. I've been there; just don't try any math jokes—they don't get them!
5. Go to office hours.

However, in extreme cases, when things are really not going well, you may want to consider the following:

6. Use the Riley Backup Plan or RBP:
 - Start and finish a general degree. This means that *even if* you are in CS or another plan that does not require certain courses like MATH 225/235, do them to ensure you complete the Honours fall-back provision (i.e. MATH 136/106, MATH 137/127, MATH 138/128, MATH 235/225, MATH 237/207/229/239, CS 115/135, CS 116/136, STAT 230/220 and STAT 231/221).
 - Next, complete Math Studies. Essentially this means working on 10 third and fourth year math courses (which include any courses in the Faculty except COMM and MTHEL).
 - Finally, simultaneously work towards a minor in another field outside of the Faculty, like economics.

Why is this a good plan? Well, if you fail out before finishing the general degree, you have already started working on a minor in another faculty. As a result, it may be easier to switch to that faculty. If you fail out while working on Math Studies and have therefore finished the general degree, we can probably get you that general degree. If you fail out of a plan while working on Math Studies, we may be able to get you into Math Studies. The goal is to have something in reserve in case things do not go as planned.

If you have trouble, please see an advisor. As always, we want you to SOAR!

Riley Metzger, Katie Kent, and Nancy Orvis-Korn
mathadvisors@uwaterloo.ca

Office Gossip #1

Call for office workers

Hello there, math students! My name is Darcy Alemany, and I am the new Office Services Manager at the Mathematics Society. Did you know that MathSoc runs an office on the third floor of MC with a bunch of awesome services? We have photocopying and printing services, both in black and white and colour (for cheaper than anywhere else on campus)! There are computers you can use to browse the Internet, to print, or to access office software. We have plenty of staplers, as well as a pencil sharpener and a binding machine. The Office sells calculators, stationery, and MathSoc novelties, all at cost. There is also an information desk to get answers to all of your questions about MathSoc or life as a math student—not to mention that we have free candy, usually a different variety each day!

The MathSoc Office is also a great opportunity to get valuable volunteer experience. Each term, we look for hard-working and dedicated office workers to staff the desk and keep the office open and available all day. Full training is provided, and you will have all the support you need to be successful. This is great opportunity to meet new friends in the Faculty, learn more about MathSoc and UW Math, as well as get a great experience to add to your résumé. If you are interested in becoming an office volunteer, please email me at office@mathsoc.uwaterloo.ca.

You will find a new Office Gossip every *mathNEWS*, where I will share with you all the new things happening in the MathSoc Office each and every week. I hope you join us!

Darcy Alemany
MathSoc Office Services Manager

A Challenge To Readers

The following information is a given: a baby born at 34 weeks has 99% chance of survival, 95% at 30 weeks, 90% at 27 weeks, and 85% at 26 weeks.

On average, the probability of having twins is 3.3%, the probability of having triplets is 0.013%, and the probability of having quadruplets is 0.000142%. Suppose these numbers are slightly higher for this problem, at 4%, 0.1%, and 0.001%.

Given only one woman, how much time would have to pass before there's a 95% chance you have had at least 1000 babies?

If any of you are bored enough to attempt this challenge, feel free to send us your finished or unfinished solutions in the **BLACK BOX!**

Yours in statistical-ness,
Shay Blair.

VOTE!

What?

By now, all Canadian citizens who reside in Ontario—and really, *anyone* who resides in Ontario—should know the date June 12th. That is the date of the next provincial election. Ontario Premier Kathleen Wynne’s called an election on threat of defeat of her 2014 budget, so here we are.

Who?

What is important is that on June 12th, everyone who is a resident of Ontario, over 18 years of age, and a Canadian citizen goes out and votes.

Why?

The 2011 Ontario general election had a record low turnout of 49.2%. When you don’t vote, it threatens the legitimacy of our government. It also puts more power in the hands of special interest groups. Students traditionally have very low turnout rates. This means politicians spend little time on our demographic and we are likely to be sidelined from the political process. If we go out and vote, politicians will be forced to consider our needs. Students need to come out and vote.

If you need more motivation, consider that there is currently a 30% rebate on university tuition. Some parties, in their platform, pledge to remove this. This is an issue which directly affects students.

How?

Elections Canada has made every possible affordance to allow all Canadians to vote. If you’re a student, you can either vote in your home riding (provided it is in Ontario of course) as long as you have some form of ID showing your address.

Getting proper ID is easy! You can bring your driver’s license if it has your voting address on it. You can also bring your student card or OHIP card, plus some document showing your local address. This includes a utility bill, credit card or bank statement, lease, or even get a letter issued from your university residence. As a last resort, you can have another registered voter with proper ID vouch for your residency. Elections Canada has a complete list of valid IDs on their website.

Where?

The Federation of Students has additional information about voting on campus at www.feds.ca/elections/. There will also be an advance poll station in the SLC on June 4th and 5th. If you can’t vote on the 12th, you can vote in the advance poll. In addition to voting, you should also inform yourself about the candidates. The major parties all have platforms available online, but there are also local debates.

If you have a time machine you can go watch the candidate debate on May 28th in the SLC. Otherwise, fear not, there is a debate on June 2nd from 4 to 6PM at the Waterloo Rec Complex (across Waterloo Park). Also, if you’re living elsewhere in the region, there are debates for the Kitchener-Center riding on May 28th from 4 to 6PM in the Kitchener City Hall Rotunda and for Kitchener-Conestoga on June 4th from 4 to 6PM.

No?

If none of the candidates pique your fancy, you still should go vote. You can decline your ballot. Upon receiving your ballot return it to the Elections Canada official at the polling station stating you decline to vote. This ballot is counted separately from spoiled ballots. This is a legal right defined under section 53 of the Elections Act.

dbro

Vote in the Provincial Elections!

```
int canIVote (Person you) {
    if ( you.age() >= 18 &&
        you.citizenship() == "Canadian" &&
        you.province() == "Ontario" ) {
        std::cout << "You Can Vote!!!" << std::endl;
        return 1;
    }
    return 0;
}
```

So, are you eligible to vote? You can vote in either your permanent residence’s riding (within Ontario) or in Waterloo. If you want to vote in Waterloo, you can do it next Wednesday, June 4th or Thursday, June 5th in the multi-purpose room in the SLC. This is an advance poll on campus ahead of the official election date, which is June 12th.

“But I’m not registered to vote!” Don’t need to be ahead of time. You can turn up at the advance poll or on election day and vote. All you need is identification and proof of address—ID and some document like mail or a lease with your name and address on it.

There you go. If you want to vote in Waterloo: ID, lease, and show up.

If you want to go home and vote, or mail a ballot home you can do that too.

If you don’t want to vote: suck it up, educate yourselves and vote. Our future actually does depend on it because our 30% tuition refund could find itself on the chopping block.

Stubbs

P.S. dbro’s article is more informative

Bad Math

The Banach-Tarski “Paradox” is frequently used as an example of the fact that math is nonsensical. This is because the Banach-Tarski Theorem contains several conditions which are not mentioned when the layperson states the paradox. When these conditions are included, it becomes simultaneously much more confusing, and much less weird that it is true.

Condition 1: We are dealing with the usual 3-dimensional Euclidean space. On the surface, this seems fine. However, the space differs in several important ways from reality, on which our intuition is largely based. Most importantly, the usual 3D Euclidean space is infinitely sub-dividable. This means that we can consider an uncountable collection of points, each with zero volume, but all of them together have a non-zero volume. This is important since it means the theorem is dealing with a space which does not agree with intuition. Thus, we should mistrust what we believe intuitively about it.

Condition 2: The Axiom of Choice is true. This axiom is used to divide the ball in 3D space into a finite number of pieces, each of which does not have a properly defined volume. Again, this differs from reality due to the fact that you cannot create something without a coherently defined volume. The intermediate pieces in the Banach-Tarski Theorem do not have a well-defined volume, and are created by applying the Axiom of Choice. Unsurprisingly, the pieces are not explicitly constructed in the proof, so we don't really know what they would “look like”.

With this two conditions, it makes a lot more sense why something like the Banach-Tarski Theorem can be true. It is dealing with circumstances that do not behave as intuition would suggest, so a seeming paradox can be created.

MeaninglessQuips

Misadventures in Sexual Economics

The past two articles (“More sexual economics” on Page 7 and “Sexual economics 101” in last issue) have been quite a bit of fun for me to write. I like applying the economic framework to sex and seeing what explanatory power you get from it. This is a classic case of “economics imperialism”, which itself has a Wikipedia page that's quite fun to read.

As I mentioned in the first article, all of the content was taken from Marina Ashdade's book *Dollars and Sex*. Unfortunately, shortly after the publication of the first article, the library recalled it from me, thus depriving me of the chance to renew it forever and ever as I do with other books. I can only assume someone out there has it, perhaps someone who reads *mathNEWS*.

On the one hand, this is flattering. On the other, it's too bad; I wanted to re-read the section on education and marriage, which covers among other things why Western societies do not have polygamy anymore, even though they have large wealth

Trains

As it so happens, UW offers a course on trains. The course is a wonderful place to learn about all the upsides to trains by attempting to drive them. You'd think driving a train is easy, or at least simple, and yes it is! It's as easy as connecting an ARM board to a train, and turning it all on!

Before starting the course, there are a few things you should know about trains. First, trains generally run on rails, and when they don't, something is usually very wrong, but that shouldn't ever be a problem for you, because you're never going to have to worry about derail-ing them. (As a side note, multi-track drifting is very impressive and should be attempted.) Second, trains can't stop or start quickly, which is especially concerning when they look like they're going to collide. Don't worry, because it's only the trains trying to troll you. They're pre-programmed to not collide with each other, but to get really close to it to scare you, and make you think that you're not driving them correctly.

Once you're taking the course, try to spend as little time in the lab as possible. There are a lot of people who try to take the course and they're highly likely to try to use the trains when you want to. Ergo, spending very little time in the lab means you'll get the trains when you need them. Keep in mind that this room is in MC, so you probably want to show off your significant other by bringing them into the lab. Then you can impress them with your train driving skills, and it's a great date location when you need to knock out those last few lines of train code.

All in all, the trains course is a wonderful place to meet people, and to learn even more about trains. I highly advise taking the course, 5/5 would take again.

ChooChoo

disparities and rich men probably have enough influence that they could get it to happen. It also talks about shifting marriage prospects for those with multiple degrees, which is relevant for me as I will be in school forever.

So I have a proposition for you, dear whoever took out that book: read it, and write up what it says about sex and education for *mathNEWS*. I would enjoy it, as would our readers (who, the editors tell me, actually do exist).

Dear everyone else who did not steal my book: Unfortunately, I won't be able to make another instalment of this series as I had hoped. But I'd still be curious as to how you think I did! Writing about sexual economics is a very touchy (pun, tended) subject. Was I insensitive about it? What could I have done better? Do you agree with the findings of this analysis? Or, to open the floodgates, how can this language of sexual economics describe your own experiences?

tesseract

Non-Transitive Dice

Just when you thought that probability could not get weirder, a mathematician with too much free time on his hands invents non-transitive dice. What are non-transitive dice? Suppose for a moment that you have three six-sided dice, named A, B and C; you roll A and B, comparing the value of their rolls, then, on average, B wins (i.e. gets higher rolls). If you roll B and C then, on average, C wins. If you roll A and C, on average A wins.

Here is an example of a particular set that satisfies this:

A: 1 4 4 4 4 4
B: 2 2 2 5 5 5
C: 3 3 3 3 3 6

The set above has a rather interesting property. Suppose for a moment that you decide to roll two dice instead of one. Then the cycle reverse itself, i.e. AA > BB > CC > AA.

Then there the grime dice. This is a set of five non-transitive like the following:

Red: 4 4 4 4 4 9
Yellow: 3 3 3 3 8 8
Blue: 2 2 2 7 7 7
Magenta: 1 1 6 6 6 6
Olive: 0 5 5 5 5 5

There are two cycles in these dice: Red>Blue>Olive>Yellow>Magenta>Red, which is ordered according to word length, and Blue>Magenta>Olive>Red>Yellow>Blue, which is in alphabetical order. If you doubled up these dice, then the word length cycle reverses but the alphabetical cycle stays the same, with the exception of the Olive and Red dice, where they have almost equal probability of beating each other.

With this set up, as long as you can pick whether you roll one or two die, you can always pick a die such that when playing with two different players simultaneously you will on average have a better chance of beating both opponents.

Now if you will excuse me, I need to find the nearest 3D Printer. I have something I need to print.

Beyond Meta

Problems Google Can Solve

- How to find web pages.
- How to spell words.
- How to stalk people across the internet.
- How to send drunk emails to your ex.
- How to watch cat videos.
- How to get satellite pictures of your crush's house.
- How to drive cars.
- How to see stock photos of pregnant women eating salad.
- How to join a social networking site used almost exclusively by Google employees.
- How to solve the burning questions that pop into your head in the middle of the night.

BlueberryMuffin

The Princess Bride

Life Lessons

Despite being released over twenty years ago, there are many life lessons in *The Princess Bride* that are still applicable today (apart from getting involved in land wars in Asia—who does *that* these days?). Here are some that may serve you well:

- If you need henchmen, make sure they can swim. The doggy paddle doesn't count as a proper stroke.
- If you did something right, don't let it go to your head.
- Get used to disappointment—in life, in love, in co-op placements.
- There's not a lot of money in revenge; consider your future co-op term offers wisely.
- Life is pain. Anyone who says differently is selling something.
- It may be unwise to build a summer home in the Fire Swamp, but the trees in there are actually quite lovely.
- If you haven't got your health, then you haven't got anything—don't forget that there is more to food than free pizza and energy drinks.
- If a person is all dead, there's only one thing you can do—go through his clothes and look for loose change. Oh, and call the police.
- True love is the greatest thing in the world—except for a nice mutton, lettuce and tomato sandwich, where the mutton is nice and lean and the tomato is ripe. When mutton is scarce, bacon makes an excellent substitute.
- If you've been mostly-dead all day, your arms may not move right away. It's best to have some friends around who can carry you.
- Mawwiage is a bwessed awwangment, a dweam wifin a dweam, ...and true wuv will fowwow you fowever, so tweasure your wuv.
- Death cannot stop true love; all it can do is delay it for a while.
- If you don't know what to do with the rest of your life, consider piracy.
- (something about Robin Wright, Princess Buttercup → Clare Underwood?)

\&

Problems Google Can't Solve

- What a headbutt with your face is called.
- When you're trying to think of a word but you can't remember anything about it
- What the name of a song is when you don't know the lyrics
- Where your phone is lost in your room.
- Time travel.
- Where you've seen that person you just met who looks really familiar before.
- What the name of the person you met 10 seconds ago is.
- How to make American politicians not be idiots.
- Why I can't believe it's not butter.

BlueberryMuffin

More Sexual Economics

The article on sexual economics that I wrote for the last issue was intended to be first in a series. One sentence there referred to promiscuity on university campuses, and specifically what sexual economics has to say about it.

So, as per usual in economics, this is all about supply and demand. Now we just have to figure out what the supply and demand are in this case. Sadly, as with most surveys and statistics, we assume the gender binary (i.e. that people are either female xor male) and heteronormativity (i.e. that everyone is heterosexual).

But how much demand is there? Well, young adults enjoy having sex ^[citation needed]. Young men and young women, in fact, both enjoy having sex, roughly an equal amount. Yes, you read that right. An equal amount. It is naturally hard to measure these things, but that appears to be the case. Women (on average) enjoy and want sex just as much as men do, and are as happy or even happier when they have it. (Again, these are broad averages. Remember that people should be treated as individuals, remember that some people are asexual, and *please* just don't assume any particular person is interested in sex.)

So, if demand is roughly equal, what's the big deal? Shouldn't everyone pair up happily, with everybody's amount of sex determined by the gender ratio of their university?

It turns out that demand is pretty equal among men and women, but supply is not. That is, men are much more willing to have sex with a random woman than women are to have sex with a random man. This is not surprising, but the experimental evidence to confirm it is both hilarious and brilliantly straightforward: volunteers of each gender (normalised for attractiveness) were asked to go around campus, and asked people scripted questions, including "Will you have sex with me tonight?" Over 50% of men approached in this way agreed; no women did. In another study, respondents were asked, "What is the minimum length of time you would want to know somebody before you had sex with them?" Men's average response was on the order of days or hours; women's was on the order of months.

To overgeneralize some more from these studies, the results are that men want sex quickly and with just about anybody, whereas women want to wait and make sure it's with the right person. When we consider the "cost" of sex as the amount of time invested in a relationship before having sex (a terribly crude measure that is used only for this simplistic explanation, meant to have nothing to do with money and only used because of the existing language of economics), then, men are willing to supply sex at a low "cost", whereas women only want to supply sex at high "cost".

Now that we have the basic determinants of supply and demand in this equation, how do they interact?

First, consider a situation with few men and lots of women. (This is typical of most university campuses.) As noted, both men and women want to have sex. Ideally, women want to have some length of time in a committed relationship before having sex. But since men are scarce, and want to have sex quickly, a woman who sets too long a time-frame may "lose" to another woman who is willing to wait slightly less. Since the market is flooded with women, the "cost" in terms of time and commitment men are willing to pay has decreased. This leads to a situation where, to have any sex at all, women are forced to engage in riskier behaviour than they would want. This makes promiscuity and one-night stands more common on campuses with a high ratio of women to men.

On the other hand, consider a situation where men outnumber women. (This is the case at Waterloo; 57% were men in 2013, according to Maclean's.) Men and women want to have sex. But women want to have a long, serious relationship before they will consider having sex. But by waiting longer or asking more commitment, a woman has a higher chance of avoiding jerks or otherwise undesirable men, and she will still (if she wants) be able to have sex. Limited supply has increased the "cost" in our market analogy. This means that when people do have sex, there's less likely to be risky behaviour involved.

This analysis leads to the neat, counter-intuitive conclusion that for prudish parents concerned about their children's promiscuity, the best choice is to send their kids to a school with more men than women, regardless of their gender. It also explains why universities in general have a reputation for parties and lots of sex, but that Waterloo seems to be an exception to that rule. On that note, I'm gonna go do math now.

tesseract

DISCLAIMER: As I've said many times, this is an average over populations, and nothing here is representative of any individual. People are wonderfun and distinct and different and are not statistical averages. Please, never, ever think in terms of these averages for anyone you're thinking of having sex with. And don't assume they're interested. Talk of time investment as "cost" of sex may have some merit as a tool for economic analysis, but it is not a cost in a traditional sense, and "paying" it should not be interpreted as being owed sex. Consent means anyone can refuse sex at any time. You are not entitled to have sex with anybody, ever. Not even statistically.

The above disclaimer *really* should not be necessary.

Submit your *prof*QUOTES, grid and challenge solutions, hatemail, love letters, and spam to the BLACK BOX on the third floor MC!

How To Interview Like A Boss

It is once again interview season, and I'm back with a slew of awesome interview tips that are 100% guaranteed¹ to give you an edge over the competition. Follow these tips and you will have more offers from all the big companies than a stripper has daddy issues.

1. Be a BOSS

The first rule of interviewing like a boss is, unsurprisingly, to be a boss. There are several ways to be a boss, but all of them boils down to one simple end goal: be in command, be in control, and assert your dominance over your interviewer. It doesn't matter if you're a boss or not, you just have to come off as one.

To be the boss, you must own the room. On the day before the interview, go into the room of the interview and urinate in it. Do it on the chairs, the table, the whiteboard, and anything else that is significant. This marks the room as your territory and while your interviewer may not realize it consciously, it will give you a subconscious advantage.

In addition, act like a boss during the interview. Compliment your interviewer on how great a job they are doing, and hint at a possible promotion and salary raise for them in the future. Make small talk and ask about how their children are. Talk about how great the company party was last summer and how this year's will not live up to it. You get the idea.

2. Be Prepared

Without doubt, you'll want some knowledge about the company before the interview. The best way to do this is to hire a private investigator and have them look into the company. However, being poor university students, you probably can't afford one, so you'll have to do it yourself. The specifics on how to be a sleuth is beyond the scope of this guide, but make sure your noir filter is on, you have a fedora on, and make sure you invest in a pipe.

N Things I Love About Jacuzzis

Gotta love them penthouse suites.

- It goes great with bubble bath!
- The warmth is very welcoming as opposed to the coldness that you're usually greeted with at swimming pools
- NO CHLORINE
- They're more or less private
- They're the perfect thing to help you relax after a hard day on your feet (it's basically an all-body massage but with water)
- Depending on the size, they're practically hot tubs and are perfect for sharing in the relaxation!

When looking into the company, you'll want to dig up as much as possible: what they do and what kind of technology and tools they use; who founded the company, and whether their offspring is single; what it is like to work at the company, and whether it is acceptable to poop in their urinal. The usual stuff.

3. Follow Up

After the interview, make sure you follow up with the interviewer to show that you care. This is usually done by email, but that's not enough to set yourself apart from the crowd. No, you need to make it much more personal than that.

If you followed #2 correctly, you should have the personal information and schedules of every employee for the company, including your interviewer. Make an effort to surprise your interviewer at events where they least expects it, such as their kids' soccer games, and remind them how much you appreciate the opportunity. Also, remember to give them another copy of your résumé, just to be sure they have it.

If they are from somewhere far away such as the U.S., you'll have to resort to adding them on Facebook, following them on Twitter, and of course, connect with them on LinkedIn. Use social media to remind the interviewer how much they mean to you and how they are a very important part of your life.

Good luck.

theSMURF

¹Not actually 100%, more like 99.5%. Or 10%. I don't really know how to do calculus.

The Fundamental Theorem of Extrapolating Wildly

Theorem. If P is a proposition function on elements in D , then if $P(d)$ is true for at least 3 distinct d in D , then $P(d)$ is true for all d in D .

Proof. $P(d_1)$ is true.
 $P(d_2)$ is true.
 $P(d_3)$ is true.
 Aaaaah, you get the point. ■

e.g. If P is a proposition on primes, $P(2)$ and $P(3)$ and $P(5)$ together imply $P(p)$ for all primes p .

e.g. $[-1,-1,0],[2,1,-1],[1,1,1] \times [[2,1,1],[-3,-1,-1],[1,0,1]] = I_3$.
 Well, $(-1 * 2) + (-1 * -3) + 0(2) = 1$, and
 $(-1 * 1) + (-1 * -1) + (0 * 0) = 0$, and
 $(-1 * 1) + (-1 * -1) + (0 * 1) = 0$.

So by the FTEW, since three entries match up, the rest do too.

A Reminder That You Should Do Fun Things In Life

Recently, I volunteered for something called MusicFest Canada, held in Vancouver. If you haven't heard of it, it is "North America's largest annual event dedicated to developing young musical talent," amongst other things (visit www.musicfest.ca for more details). I was an "Audio and Recording Technician," which meant that I pressed buttons and made sure that all of the performances and adjudicators were recorded properly, but I did my share of running around and helping out with other things, too. I learned a lot of neat stuff, and gained experience in a field in which I haven't had the chance to work, so in this regard, it was a great thing to do.

One very interesting part of the volunteer experience is that I was able to meet and get to know all of the other volunteers (in part because we barely had enough volunteers to make the week go smoothly); it may be because of who I am, but I feel like I am better off having met these thirty-plus wonderful people, not to mention all of the fabulous adjudicators and other people with whom I crossed paths. This is something that I won't regret doing, because of how much fun I had, and because of the friends I've made.

Which leads me to the point of this article: amidst the trials and tribulations of the university student life, between the ten midterms and six finals and two essays and a stupid number of assignments all due on the same day, embroiled in new or botched relationships and the struggle to find both love and co-op jobs, one should never forget to take some time out of the daily grind to do something novel and fun. Whether it's going on an excursion with friends, volunteering at something new and exciting, going to a convention for the first (or the n^{th}) time, or something spontaneous like a concert or a professional sports game, it's probably worth doing, solely for the experience of doing it. Well, *mostly*, anyway. (Disclaimer: does not include doing illegal or stupid things! Use your common sense.)

It's really easy to get stuck in the routine at university; it's highly rewarding to break the routine, and get out and do other things. Admittedly, I still struggle with this at times, but I think I'm getting to the point where I don't feel like that much of a hypocrite anymore when I say things like the following: life is not just about being on the path to success with respect to academics or sports or what-have-you, it's about enjoying yourself not only while you're moving along the path, but also while you take a couple detours here and there.

So go ahead and take those detours. You never know what you'll find.

Scythe Marshall

Good2Talk (1-866-925-5454)
is a free, confidential, and
anonymous helpline for post-
secondary students in Ontario!

Read This One Article, Never Study Again!

You don't really believe that do you? They pop up on random websites and they beckon you to an easier future. I was in grade nine when I fell for one of these. It was the first and last time. The ad screamed of overbearing companies who kept the new technology a secret. Buying this clever contraption wouldn't just free you from paying your electricity bill, but it would earn you money as well! What a fabulous idea! After a ten minute video (which for some reason had no play, pause, volume, or skip button) I was presented with a page filled with reviews from previous disbelievers to now-convinced-buyers. If that wasn't enough to convince me, the site even had a certificate of authenticity. I couldn't hit the "buy now" button fast enough.

But I needed to convince my father. He probably wouldn't believe in this. He was too closed-minded. I gave it a try. He listened patiently for about five minutes, wearing a benign smile as I crowed of all the benefits. He couldn't take any more of it after about seven. He tried to make it a gentle letdown, but it crushed me. All of it... All of it was a scam. I wasn't someone who gets scammed! I'm not a stupid person! Only stupid people get scammed, goddammit.

It was funny. It was disappointing, I'll tell you that. But I can't help but wonder, after so long, why do all these scams still exist? I suppose there must be a lot of ninth graders who are as stupid as I was. These days, I still can't believe that these ads still plaster the ad walls of my often visited web pages. There have been multiple times where I've sworn to corrupt the ads when I gain the ability to hack... But for now, I'll binge visit my favourite automaker sites, in the hopes that Google AdSense will get some sense and give me an ad for a beautiful Porsche, rather than garbage and scam. Because, hell, if I'm going to have to look at ads anyways, I might as well see some nice ones.

Guptashark~

N Reasons You Should Commission an Artist

Waldo had fun at Artists' Alley at Anime North!

- You get the opportunity to have exactly the kind of image you want to own, and in the art style you want to see.
- You get to own art that NO ONE else will ever have.
- You get to do whatever you want with that art you have purchased (frame it, copy it, colour it, etc.) based on your agreement with the artist you have commissioned.
- You support an artist directly for the work they have done.
- You pay the exact amount of money you feel an artwork is worth as opposed to potentially overspending on a print.
- You have ALL THE SQUEE when you see the art that you purchased and it looks even better than you imagined!

waldo@<3.LE-GASP.ca

Beer and Counter-Beer

I am personally not a fan of drinking games. I understand their appeal, but for me I feel that the drinking should not be the focus of the game. Also, I feel that too many drinking games have "take a drink" as a punishment for doing poorly or being defeated at something. Taking a drink should instead be a reward.

For example, Beer and Counter-Beer (BCB) Risk. In newer Risk games, the cards you pick up at the end of your turn if you took a territory have stars on them. A player can then turn in the cards at the beginning of their turn for more troops. In BCB Risk, a player can drink as much beer as they like as the game is in progress, but if someone takes your territory, you must drink. They can use empty beer bottles as "stars" to add to their star count and receive even more troops. This is a "Beer." However, other players can use their empty bottles to decrease your star count. This is a "Counter-Beer." So if you have five stars in cards and three empty beer bottles, you could get eight stars worth of troops. But if another player Counter-Beers you two empty beer bottles, you only get six stars worth of troops.

From this, we see that having empty beer bottles is a goal and coupled with the territory drink, then bottles should accumulate faster for a winning player. But drinking more gets you drunk! So you'll play worse and maybe start losing!

How about BCB Monopoly? A "Beer" can be given to the bank to reduce a rent payment by \$100. A "Counter-Beer" given to the bank could increase the rent by \$100. Again, players can drink as much as they like, but would have to drink every time they receive a rent payment.

BCB Poker: Take a drink every time you win a hand. Can bet empty beer bottles as if they were money (Beer). Can use multiple empties to cause a re-deal mid-hand (Counter-Beer).

BCB Darts: Take a drink every time it's your turn to throw. Use a beer bottle for a re-throw (Beer). Can throw you empty beer bottles at other players when it's their turn to throw (Counter-Beer).

The possibilities are endless!*

Stubbs

*Stubbs and *mathNEWS* are not liable for any injury or death allegedly caused by readers attempting any of the activities mentioned or not mentioned in the article above. I mean, what are you thinking? Throwing darts and glass bottles around and expecting nobody to get hurt?

On The MathSoc Candy Jars

A hungry contribution

Coke bottles once a month
My favorites—always gone
Candy gods, why so cruel?

Haiku4Food

Russian Reviews: War Thunder

Tokyo Drift: Tread to Rights

The rank of T-34s thunder across the field. Artillery, rockets, bombs, and shells land amongst them. Guns blazing, they disperse into the hills and valleys to begin hunting. Panzer IVs lurk amongst the trees, darting from cover to cover, looking to pick off an unfortunate opponent. Heavy tanks and tank destroyers proudly display their nigh-impenetrable armour and fire massive guns into the enemy ranks. Overhead, aircraft dog-fight while bombers and attack craft engage ground targets, as naval vessels bombard the shoreline and each other.

War Thunder is an interesting idea of a match-based 'WWII arena fighter'. Whether in the air, on the ground, or upon (or under) the ocean, you use your collection of war machines to destroy the enemy team and capture points. The tech-tree progresses from pre-war biplanes and early tanks to late and post-war jet craft and main battle tanks. What makes this game different from the similar World of Tanks and World of Planes is that the action includes all aspects of land, air, and sea, with multiple vehicles being brought into a battle that you can 'respawn' into (although there is a "simulator battle" mode that only allows you one vehicle, with more realistic view restrictions, movement/physics, damage to systems, etc).

Sadly, the game is still in open beta after a year and a half, tanks only having been recently added and naval vessels likely another year away. The tanks included aren't even fully balanced, and are only for two nations. The other three nations are without a tank to use, and apparently tanks are so buggy that they cannot be played alongside aircraft. Still, progress is being made, and given some more time the bugs will be fixed, ships will be added, and some very large and interesting battles will take place. In the meantime, enjoy hilarious Soviet light tanks performing continuous miracle drifts all the way around enemies until one of them dies.

If you are interested in epic air or ground combat that is slowly being improved upon, head to warthunder.com or Steam to grab the game for free.

Soviet Canadian

N Ways Quitting League of Legends Improved My Life

- I no longer stay up to 1AM trying to win my promotion series.
- I actually finish assignments instead of "after this game."
- The hair I pulled out in frustration has grown back.
- There's fewer people telling me they're having sex with my mother.
- My left arm now has the same strength of my right arm.
- The only time I see the word "legendary" is when I'm playing Pokemon.
- I am no longer 14.
- The last time I heard "meta" was in a CS course.
- No one AFKs when I drive in the middle lane.

EI

The Walls Are Lavender

Lavender is a flower, and when you crumble it in your fingers your hands smell nice. You can also put lavender on food. Take a pinch of lavender and sprinkle it onto a fresh (or thawed) dead baby before popping it into the oven. It really brings out the flavour. And hey, you've got 1000 babies now, so the only left to do is acquire some lavender. Other seasonings that work very nicely with the lavender garnish are chamomile, clove, and lemon.

If you raise your own babies, make sure they're fresh when you go to cook. If you don't have time, you can also acquire them at your local supermarket, usually frozen. Ensure they are thawed before preparation.

For best results, put them in the oven for an hour and a half at 325°F. This will create a succulent taste, keep in the juices, and give a nice pink tinge to the meat. You can also barbecue them the same as you would a steak.

For the true outdoors feel many crave, the suggested method is to roast them over an open campfire. Singing songs to Satan is optional but recommended for an authentic experience.

Yours in cooking advice,

Shay Blair.

Not Trains

Trains. Trains are my life. They've taken up all of my time since the beginning of term. But now, I'm doing *mathNEWS*, a bunch of *mathNEWS*. I keep writing and sitting here, hoping my Trains partner doesn't come and tell me that something is broken. Every moment I don't spend in the lab makes me more and more paranoid. I fear each breath I draw outside the lab will be my last.

Life has become a caffeine-filled nightmare of trains. Caffeine is my sleep substitute, because sleep isn't Trains, and I don't have time for anything that's not Trains. Trains have been the only thing that I can think about, they're so hard to not think about. If a train leaves Waterloo travelling at 40km/h and another train leaves Toronto travelling towards Waterloo at 80km/h on the same track, will the trains crash, or will they avoid collision? I'm never sure, because trains seem to behave like Schrödinger's cat, not crashing and crashing at the same time. But maybe that's just the Trains track, and not real trains?

The trains don't move, or they do, but only after praying and crying and staring at them longingly, but then they don't stop moving once they are. And the trains troll you, they never move the way you want them to, because they speed up and slow down however they feel like. I swear that the prof picked trains because they never work the way you expect them.

Help me.

StuckInTheTrainsLab

Bunker Down

One of the many joys of childhood we are expected to abandon as we mature is the blanket fort. For some reason, people think that cannibalizing the blankets, sheets, mattresses, couches, cushions, and curtains of one's home in order to construct an impromptu fortification is childish. The fact of the matter is, making blanket forts is not too immature for adults. Rather, it is too sophisticated a field to be dominated by children.

Any hack can drape a blanket over two or three couches and call it a fort, but true artistry requires more skill, ingenuity, and duct tape than is typically feasible for a child. If we judged the world of visual art by the fingerpaintings and crayon doodles of toddlers, it too would be deemed too childish to be respected. Because the field is dominated by youngsters, those with a true talent and potential are laughed away from this noble profession. Imagine what masterful works of blanket fortitude could have been realized if Frank Gehry or even Leonardo da Vinci had devoted themselves to this field.

So, dear reader, I challenge you to fight the system, stand up to status quo, and throw so called "maturity" to the wind. Dismantle your bed, disassemble your couches, and turn them into something more. A duvet Helm's Deep. A flanel Fortress of Solitude. A couch cushion Camelot. Something wonderful. Something majestic. Something to be truly proud of.

$s, t \in \{2k, k \in \mathbb{Z}\}, 144$

N Adventures at Anime North

Jacuzzi fun times!

So Anime North was last weekend, and as always, it was a blast. Interesting panels were visited, great shows and costumes were viewed, and cool things were purchased. Some things that happened include:

- Got upgraded to a penthouse suite for free! (Woot, jacuzzis!)
- No lines for badges!
- No lines for all but the largest, most anticipated events. (*Awww yeahhhh.*)
- Insane levels of cosplay (including that *one* guy...)
- Anime Hell and Totally Lame Anime! (Where various terrible shows and ads are made fun of.)
- Awesome panel about Canada in anime!
- The 404s late night show (where improv and pants do not meet).
- Amazing art in Artists' Alley (now Artists' Corner?)
- Some great deals on amazing things in the Dealers' Room.
- Meeting old friends, who are now scattered across the country.
- Ending the days by showing roommates what we purchased and saw.
- Enjoying the extreme levels of adorableness and KAWAIIIII~

This and so much more took place this year, and hopefully will happen again next year.

Soviet Canadian

profQUOTES

“What do you call the big things? Carousels? I want to say carousels, but it’s not; I know I’m afraid of those big things but I’m not afraid of carousels.”

Abukhdeir, NE 318

Prof: “There’s only one constraint that I can think of. What does *c* have to be?”

Student: “It has to be real?”

Prof: “Okay, there’s infinitely many constraints that I can think of.”

Abukhdeir, NE 318

“I didn’t want to say I don’t care. I care, just not that much.”

Abukhdeir, NE 318

“I’m not wrong, I’m just overcomplicating.”

Abukhdeir, NE 318

“This course will make you like Einstein.”

Abukhdeir, NE 318

“If every programmer follows abstract data types, we can reach world peace.”

Lanctot, CS 234

“We will do a stock program, but I won’t reward you money if you do well on it.”

Lanctot, CS 234

“We have Research In Motion, whose current price is \$23... That must be old stock data.”

Lanctot, CS 234

“Ground is just a state of mind.”

Wilson, NE 344

“The midterm will be really easy because I want a good [course evaluation] from you guys. The final, on the other hand...”

Tripunitara, ECE 358

“So because I made these two mistakes, all of you will get 100 on the final exam. ...I thought I would put you in a delusionally good mood at the start of the lecture.”

Tripunitara, ECE 358

[*Talking about safety-critical systems.*] “Let me show you a little demo on my laptop. I’m not going to kill anyone, or *maybe*...”

Fischmeister, ECE 455

“So, let’s do a little analysis and find out how long it takes to kill our kitten...”

Fischmeister, ECE 455

“I included this figure to show you why you shouldn’t include 3D figures in papers.”

Fischmeister, ECE 455

Study: Absentee *mathNEWS* Writers More Productive

In a groundbreaking new study, researchers have found that *mathNEWS* writers who create content while not actually at Production Night are in general more productive than those who attend, in terms of number of articles written.

For years, writers observed that while they were encouraged to write articles at Production Night, they were constantly distracted by other writers either commenting about their own articles, or about meaningless and unrelated points of (dis)interest. Now, however, there is statistical evidence that this isn’t just a perceived issue; it’s real. And it’s serious.

Writer notbob and the current author have not been to a Production Night in many months, and they have been rock solid contributors, having averaged more than one high-quality article per issue. Writer Beyond Meta recently contributed two articles as opposed to the usual one, while being unable to attend the fortnightly gathering.

While the sample size may be small, note that second-year stats tends to be pretty useless, so we’ll just say that the number of writers is also small and make good use of our handily available tin foil hats. Who’s to say that this isn’t actually true, hm?

As well, there is evidence that the bribery of writers with pizza, cookies, soft drinks, and milk actually decreases the productivity of writers. Many writers only complete one article before the end of the writing period, and only in order to “earn” their free food afterwards. Some writers don’t even finish their articles, and have to get back to writing after the pizza break. This is clearly related to the supply of free food, not to mention the distraction that is the writing period of Production Night. Editors have acknowledged fear that if it is indeed proven to be a causal relationship, that is, free pizza causes fewer articles, it may be the case that the Production Night system may have to be revamped, which would place an undue amount of stress on the backs of the editors, not to mention that it would be too much effort.

The researchers intend on performing a follow-up study, to fully confirm these results, and to investigate the possibility of an issue of *mathNEWS* being printed whilst containing more articles from writers who are not currently on campus (or even attending the university).

Scythe Marshall



mathNEWS' 1000 Blank White Cards

The Early Days

In the beginning, there were blank cards. This made a tanuki and a dragon very displeased and was widely regarded to be in great need of fixing. And on the infinitely partitioned canvas the tanuki made the green rupee¹, wherein the dragon then made a way to discard it away². And the tanuki said, let there be more written cards; and so there were. And the dragon then said, let there be chaos: and there was Chaos³. And the tanuki saw the chaos, and said that it was good, and divided it from the blank cards to form the basis of the first deck. And the pair said, let there be rules in midst of the chaos, and let it govern the method of play; and so draw one and play one was law. And the tanuki and dragon made more cards, widening the gap between the order of blankness and the chaos of the game, and saw to it that it was good. And the tanuki declared that to win one needed 100 points, and it was so.

From the Elysian garden of thought and theory the deck was cast away to the masses of *mathNEWS*, where the deck gained an author to play. Issues were had as the imperfect design foresight was brought to light, some of which are codified as cards in the deck themselves. Power to the Masses⁴ caused a shortage of cards as it required someone to draw 25 cards when there were only 24 cards in the deck and discard, which caused The 25th Card⁵ to be created to solve this impasse. Games would not terminate as nobody could get enough points because chaos and destruction were the norm as opposed to constructive gain.

But flourish the deck did in these burgeoning days of youth. Points were a part of the genesis of the deck, but other integral features which shape the deck today popped up in this time period as well, such as symbols (with the Inflation⁶ card, courtesy of a certain dragon) and considerations and/or designations (although it wouldn't gain that name for quite some time, first referenced in Randomness (A)⁷, also courtesy of a certain dragon). The stack became a necessity as cards could be played outside of the player's turn, and this was the first of a plethora of keywords, starting with Anytime, and the long-held tradition regarding the confusion that dealing with the stack persists even to present day (as a Counterexample⁸ to the hypothesis that every monkey wrench into the rules was made by a certain dragon, a certain tanuki came up with this one). Counters that were used to track things became a thing as the general complexity of the average card went up and in the same card started another longstanding tradition of having blocks of cards with the same theme (Ice Sign [Icicle Fall - Easy]⁹). Players suddenly could control cards and cards could remain in play (Anthropomorphic Safe), and there were other ways to win the game (Time Paradox Police¹⁰). Of course, who can forget golden classics like This card is intentionally left blank.

There were problems as well—some cards were seen as too powerful or didn't work in the game's framework as intended and had to have errata, but all in all, the game at this state wasn't too complicated quiet yet, at least compared to what it has become today. One can claim that the early days come to a close when the player base of the game decided that 100 points is too many points to win the game and decided that the default

win condition, unless people disagree at the beginning of the game and suggest another agreed-upon alternative, is to have 50 more points than the next player with the points. By that point, the game's cards have developed a reasonable economy themed block and a burgeoning mythical creatures block¹¹ as the game moves on to its next phase in development.

To be continued,
Zethar

WELCOME TO THE FOOTNOTE LABYRINTH:

¹At least, this is what we believe is the first card. It gives whoever plays it 1 point.
²This card, certainly my first card, was a card that discarded any cards with the letter "a" in it, designed so that it didn't have an "e" in it because someone threatened to make a card which did the same for "e". It wasn't the second card in the game for sure, but it might as well have been. The card was later amended to discarding all cards in play with an "a" in it, and very briefly in the short-lived mutable cards period had the word anytime on it. More about that in a future article if I remember.

³A card; my second, in fact. A hefty card weighing in at 113 words long, it did lots of things and generally confused people a lot. This was a foreboding warning as to what was to come soon after.

⁴This card caused people to draw a number of cards equal to the point difference they had against the leading player. The problem was patched after it happened.

⁵This card has no effect, never had, and probably never will have.

⁶This card increased values written with a numeral by the number of counters on this card, and counters are added to this card when cards with an arrow symbol come into play. This also set up the most common pitfall new players fall into after getting into the game and trying to make new cards to do what they want to do.

⁷This card referred to dragons.

⁸($\exists a: \neg P(a) \rightarrow \neg(\forall a P(a))$)

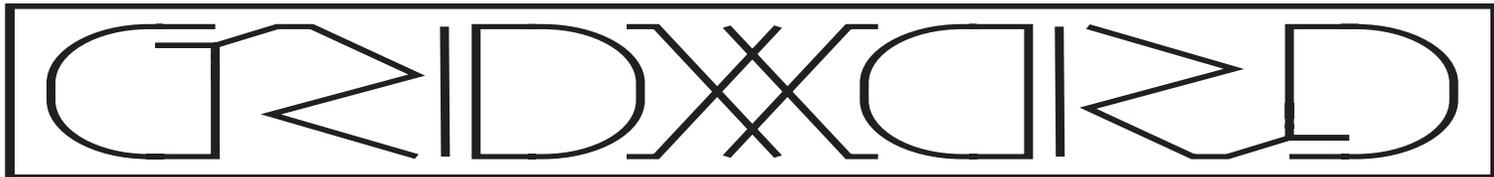
⁹This card involved counters and ☉. If you don't know what theme this is, you are more similar to this reference than you would like to be.

¹⁰The most common way a winner is declared in a game of 1kbwc. Hurrah!

¹¹The two biggest blocks in the game at present day. In fact, the mythical creatures block is so big it got split into no fewer than three blocks, all courtesy to a certain dragon. However, that tanuki was also pretty responsible for them as well.

Last Week's Solutions:

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



gridCOMMENTS

Midnight Oil

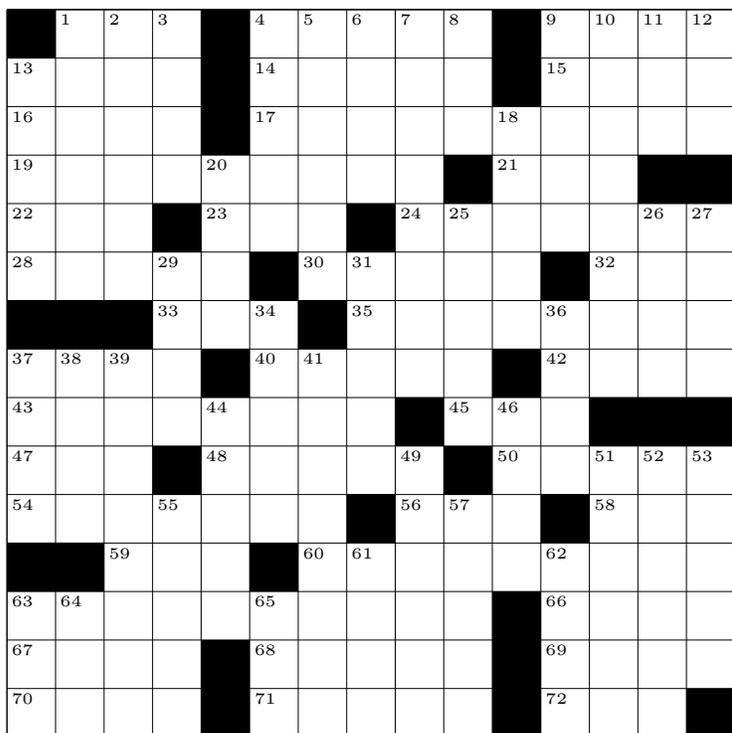
Athematic, but less than a sixth black! Sorry about 66A; I mistook it for a commoner word. Special thanks go to Jinny for her company and some clues.

Out of eight submissions, only one was perfect. The prevailing error was “I” instead of “E” in square number 64, which resulted in STASIS for STASES (“45. States of motionlessness” clues a plural word, after all) and the archaic INISLING for ENISLING (“to enisle” is, quite literally, to put on an island). Despite some funny answers to last issue’s **gridQUESTION** (“Why are there ants in my laptop?”), like Rob’s “Nothing is certain in science” or Jasmine’s “The hardware is buggy”, there is no tie to break. So sorry, you two, and sorry, Abraham, Daniel, Michael, Reila, and Travis—because the winner is Ramesh! Congratulations, Ramesh! You may pick up your prize at MathSoc.

Submit your grids to the **BLACK BOX** (by the Comfy Lounge on floor 3 of MC) by 18:30 on Monday June 9th. Include your name and your answer to this issue’s **gridQUESTION**—the spookiest answer decides the winner (of a \$5 C&D gift card) in the event of a tie: “Why does the lamplight flicker?”

Cheers,
unit

This Week's Grid:



gridWORD Clues

Across:

1. $315\text{nm} \geq \lambda \geq 280\text{nm}$
4. Mel Kaye’s employer
9. Spin a spoon
13. Largest joint
14. Clavi (calluses)
15. Cultivated plant
16. .4 hectares
17. Finding faults
19. Procrastinator
21. ___ and downs
22. My favourite’s lemon meringue
23. Optic orb
24. Last Supper guest
28. Sacrificial stone
30. Freddy Jones Jr.’s neck accessory
32. To be ill
33. Rid of dirty dishes
35. Pillar men
37. Glimpse
40. Bee barf
42. Singer Dobson
43. Man-price
45. 96 more lines than NTSC
47. Sounds like 56A
48. Archaic abyss
50. Moo moo mammary
54. Mass for the dead
56. Sounds like 47A
58. Mr. Needles
59. Cinerary pottery
60. They take part
63. Pawn, e.g.
66. Nipa palm leaf thatched roof
67. Popular apple
68. Sphere of women
69. Authorizes
70. German Lizzie
71. Pastoral poems
72. Mesozoic, e.g.

Down:

1. Make like a waking snake
2. Short and sacred
3. Borscht basis
4. The real ___
5. Front of the eye
6. White and moldy
7. Intermezzo
8. Electro spray ionization
9. Porgies
10. Greater Cincinnati, e.g.
11. An or cat go-with
12. Rocket-propelled grenade
13. κ
18. Limit
20. Lima’s land
25. Coral unit
26. Readily
27. Ultimatum ender
29. Endure
31. Hourglass guts
34. **wow such clue**
36. Easternmost province (abbr.)
37. Fancy flagon
38. The ___ and yellow leaf
39. Back-stories
41. The first modern one began in 1896
44. What cardio kills
46. Personified breeze
49. Mime Marceau
51. Calorie counter
52. Corrigenda
53. Coarse files
55. She-bears
57. Stuff
61. Hawk house (var.)
62. Kind of wild cabbage
63. Computer-generated imagery
64. Kirby’s creators
65. φ

