

math NEWS

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Volume 123, Issue 3

Friday, October 25th, 2013

lookAHEAD

mathNEWS

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University

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ConvolutED Introduction (Part 1)

How did you even get here? This isn't actually part of the article.

Send us your articles,
profQUOTES, grievances, puzzle
solutions, flirtations, and Sez's to
mathnews@gmail.com.

Article of the Issue

Congratulations to tubesjr for winning this fortnight's Article of the Issue with your article *Monty Python in Python*. Claim your prize at the next production night.

The Editors

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The Dynamic Duo: Batman (Murphy Berzish), Robin (Lenny Morayniss), Oracle (Thomas Baxter)

mastHEAD

And so we approach one of the best holidays of the term, Solemnity of All Saints, or as it is modernly known, Cheap Candy Day. It is the day that follows the holiday that is the night that precedes that day and it is the real day of hunting, when the undead (read "dead tired") monstrous creatures (read "students") stalk the halls of whatever remains of local suppliers (read "grocery stores").

Of course, the little monsters (read "little children") got their candy for free, rather than cheap.

So we asked our fellow candy-grubbers: What's your "dream" Hallowe'en costume?

MustardMap ("Mecha Stryke Freedom Hitler") Beyond Meta ("If by dream, you mean nightmare: Barbie") ScruffyED ("A context-free grammar") yourlocalWHETHERgirl ("A stratified layer of clouds") $s, t \in \{2k, k \in \mathbb{Z}\}$, 144 ("The word 'Autological'") you are forever off the island ("doge") TheNotChosenOne ("I'm naked in most of my nightmares but the pink thong stands out the most") theSMURF ("A penguin migrating with his waddle to the North Pole on a block of ice. The block is slowly melting.") xoxo ("An Oxford comma") Big Mak ("Laura Chandler") Ice Nine ("Fraa, complete with bolt, chord, and sphere") Wolverine Panda ("A Game Boy original with working screen") k! ("POKÉMON!!!!") LoudNoises ("#420yoloswag4lyfe") NotAWriter ("Nope.") waldo@<3.LE-GASP.ca ("Take a WILD guess and come find me later!") Soviet Canadian ("A fully-functional Mars-pattern Mark V Dreadnought suit") ObjectED ("Deadpool, only I'm actually Ryan Reynolds under the mask") Zethar ("A voonith akvan div")

ConvolutED ("Evil Lincoln")



Actually, it's /'ɔɪlər/

Exec Sez

Hey Mathies! Hope the term is going well for everyone. Come out to these events to relieve some of the stress of midterms!

Spirit Day: Chili!

Tuesday, November 5, 2013

We're having another Math Spirit day! Come out to the 3rd floor of the MC to get free chili!

Pi Day

Friday, November 8, 2013

Have Pie on the 314th day of the year! Serving begins at 1:59 pm. There will also be a pi-reciting contest, so come out and prove you know more pi digits than anyone else in the faculty!

MATHSOCcer Tournament

Sunday, November 10, 2013 – All Day

Columbia Ice Field

FREE for all Math students to participate. BBQ lunch provided.

Sign up at <http://bit.ly/17rDsIK>

Charity Ball

Thursday, November 21, 2013

Charity Ball tickets are now ON SALE at a discounted rate! \$35 per person, \$65 per couple, \$245 per table of 8. This year's charity is Lights, Camera, Imagine, a national registered charity dedicated to providing unforgettable memories of the performing and visual arts to children who may be faced with life threatening illnesses across Canada.

So call up your friends and come to MC3038 to buy your tickets! It's going to be a great night with awesome dinner, live and silent auction and paparazzi. The auction will also feature items donated by the Dean of Mathematics!

Video Games Tournament

Sunday, November 24, 2013 – All Day

M3 1006

All day video games! Different stations, including Xbox, PS3, Wii will be setup for all attendees to play. There will be free food! Tournament Entry Fee: \$15 for a team of 5 if there are at least 2 Math students, otherwise \$25 *3 people must be present*

WaterlooWorks

CECA is replacing JobMine with WaterlooWorks!

If you've ever thought the 50 application limit was an issue, or wanted to have a freebie to "not-rank" jobs, or simply wanted to make co-op student life easier, please check out the student panel here: <https://uwaterloo.ca/co-operative-education-career-action-systems/>

Calculator Policy

The Faculty's calculator policy has changed; if your calculator was not accepted before, but is non-programmable, non-graphing and does not have an integration button, come by the Mathematics Society Office. We have worked with the Faculty to expand the list and are looking for more calculators to accept.

Let us know if you have any questions by e-mailing:

exec@mathsoc.uwaterloo.ca

MEF Sez

Hello everyone.

This is a friendly reminder that MEF deadlines for projects and council members are two Fridays from now (Nov 8) and you can apply on our website. If you want money to fuel your schemes or want free food, you should apply.

Joshua Tsai

MEF Director Fall 2013

NaNoWriMo

In one week as of printing, NaNoWriMo begins. That's National Novel Writing Month. Technically, the nation is the US, but who cares? The rules are simple: write 50,000 words of prose starting on November 1st, and have an edited final product by the 30th. No "same word/sentence over and over again", no using previously written prose. You can write plot descriptions, flow charts, whatever you need before the month starts, but not actual text.

Some may find this easy. Others call it suicide, or a fool's errand. One of the hardest parts of writing a novel (or novella, as some argue it should be called) is an idea. A prompt. I share with you all a few generated by *mathNEWS*. Use them as first sentences, or work them in anywhere. Any references to characters, or gender, is left up to the author to modify as they see fit. Use one, or all. Have fun writing!

"Oh, god, it's eating my face!"

"Alex Greene awoke one morning to find that he was dead."

"You're never too young to have a Vietnam flashback."

ObjectED

Volunteers Needed November 2

We need 50 volunteers to help welcome high school students and their parents to the Faculty of Mathematics at this year's fall open house event.

Event: Fall Open House – a campus-wide open house

Date: Saturday, November 2

Time: shifts available between 8 am – 4:30 pm

Jobs: set-up crew, tour guides, meeters/greeters, M3-1006 ushers, tour guides, info booth attendants, tour guides

Free: T-shirt and pizza lunch

If you're interested, come to the information meeting (Monday, October 28, 4:30 in MC 5136B) to learn more and to sign up for specific jobs. Or email Gayle Goodfellow at ggoodfellow@uwaterloo.ca.

ConvolutED Introduction

Greetings, readers!

To continue reading this article, go to lower-left page 7.

To skip to the end of this article, go to lower-left page 5.

“Finances” versus “Monies”

This issue tackles the fact that several weeks ago, when the issue of the *mathNEWS* Memorandum of Understanding was ratified at the issue of the MathSoc budget meeting, an issue arose with regards to the headings that graced the document.

The heading in question grouped §§5-7 together which dealt with the allocation, collection, and disbursement of pecuniary resources with regards to MathSoc, Feds, and the mathematics student body as a whole, setting the correct guidelines in the delineation of duties between the aforementioned three parties and *mathNEWS*. The document as presented to the MathSoc council contained, as the heading for these sections, “Monies” and a councillor objected to this heading.

Quoth one: “It seems very silly to be saying ‘monies’. It makes us sound like five-year-olds”. The motion to amend the heading was put forward, and thus the duel began with the Speaker acting as witness. At first, the opposition to the status quo were disorganized; they knew not what to replace “Monies” with, and short debate followed as several suggestions were made, and ultimately “Finances” was settled on.

An editor and several *mathNEWS* proofreaders noted that the correct quasi-legal term for the sections should be “monies” because it deals with sums of money and has a stronger specific meaning and air of formality^[1]. Facing this attack, the opposition elegantly deflected the blow by ignoring it and pretending that it didn’t exist.

Then someone pointed out that while “finances” could refer to the monetary resources of a company or individual, it could also mean a ransom or tax, or the levying and application of revenue in an organization. Having differing definitions is not something people would want in a legal text as it makes the text less binding due to its differing interpretations^[2]. To this new-found attack, the opposition decided to deflect it and proceed to a vote because the person making the observation did not have voting rights on council.

The voting commenced, twice because there was a human error in enumerating the votes at first, and due to the councillors who believed “Finances” should be the right word holding the majority of the voting power, “Finances” ultimately won the duel. The *mathNEWS* editor, defeated by the preceding events, suggested to change it to “Lightsabers” as all dignity had been lost at this point, wherein council decided to finalize the memorandum and approve it in its state of existence.

Reports of a crater on north campus made by a tanuki wizard that night exist, but it is currently unknown if these two incidents are related.

Zethar

Bibliography

[1] “money, n.”. OED Online. September 2013. Oxford University Press. 21 October 2013 <<http://www.oed.com/view/Entry/121171>>.

[2] “finance, n.1”. OED Online. September 2013. Oxford University Press. 21 October 2013 <<http://www.oed.com/view/Entry/70328>>

Small Business Profits During U.S. Government Shutdown

During the weeks of the United States government shutdown, the U.S. economy was severely impacted. Thousands of employees had been furloughed, public services had all shut down, and multiple businesses were severely affected. However, amidst the chaos, business was booming at one small company.

Signster, a company founded during the previous congress shutdown in 1995, focuses on producing a single line of products: signs indicating that a building, museum, park, or other government facility is closed. Their highly optimized assembly lines are capable of producing hundreds of such signs in only a minute. For nearly two decades, Signster has been struggling with selling their signs due to a lack of demand.

“The government shutdown could not have come sooner,” said Signster founder and owner Jim McFarlen, sitting in his one-bedroom apartment that also serves as his office, production facility and warehouse. “We were almost bankrupt, but finally the government came through. Obama was right: he did bring change.”

Signster saw an incredible 2,147,483,647% increase in profit in the first quarter of the US Government 2013-2014 fiscal year.

When asked about the future of his company, McFarlen commented, “Well, we’re really uncertain about future businesses, since things are so volatile right now. We’re definitely going to expand though. I am hopeful about the future, and I think things will start looking up for us.”

He plans to move into a two-bedroom apartment later this year.

theSMURF

To That Guy On That Bus

This is for you. Yes, you. You know who you are.

I saw you on the one sunny afternoon in the sea of rainy days we’ve had this fall. Across the mostly-empty bus, I spotted you standing just in front of the back doors. You had a backpack on and your presence seemed to swell, taking over the narrow aisle and doorway. There were so many available seats on the bus, and yet you stood your ground, an unyielding colossus. As people struggled to get past you, I kept sneaking peeks to see whether you were getting off soon.

Alas, my stop approached far too quickly. Reluctantly, I made my way towards the doors. Then, “Excuse me”—the only sentence I’ve ever said to you. You didn’t hear it. As I pushed past you, the emotions I had suppressed within me for the duration of the bus ride surged forward: anger, irritation, and exasperation.

Stop blocking the back doors, jerk. People are trying to get out.

Call Out for CS Volunteers

Help future students learn about computer science by sharing information about our programs, student life, and more! Assist as a tour guide and show families around our academic buildings.

WHAT: Fall Open House

WHEN: Saturday, November 2, 2013, 10 am – 4 pm

WHERE: Davis Centre

Volunteers will receive a free lunch and t-shirt! Volunteer orientation is Wednesday, October 30 from 4:30 to 5:30 pm in DC1302. Snacks will be provided.

To participate, contact Nick Murphy by email (cs-ur-co@uwaterloo.ca) or on Twitter (@nickmurphyUW #CSFOH 2013).

Fuck Retail

This is a rant about how much I hate the modern retail experience and why I wish people would be sane and all start to shop online. I may be somewhat biased due to working as a cashier, but this is my response to my experience.

The first thing of note is people are impulsive. People say they enjoy shopping, and then they always spend too much. This causes false demand and excessive waste. Fuck that shit. People buy too much shit they don't need.

Second thing: people are indecisive. They put shit in their carts and then say they don't want it when they're at the register. And some of the products are frozen. More waste.

Finally, people are loud and stupid. They don't know how to follow simple directions. They don't pay attention to the person charging them for products. They bring crying children to the store and then take forever reining in their children.

All of these issues are solved largely through online shopping. There are a lot of people trying to create grocery helper apps as software engineering projects and startups. Why? Because shopping fucking sucks.

Of note, most of this applies to non-clothing. For clothing it is explicitly different because there aren't consistent fucking standards in the fashion industry, which is a major problem.

Ice Nine

P. S. The Walton family can suck my left nut.

Convoluted Introduction (Part 7)

Long story short, I'm another person on whom you can blame the quality of this publication. I'll try to keep the humour up, the math right, and the news in the positive z-axis direction.

Also, if you skipped a section to get here, pox upon your house.

Splendiferous circumlocutions abound,
Convoluted

The Office Ninja

Napping at Work

It's that time of year. The nights are colder, the days shorter. All the leaves have fallen. Winter is coming. The bears and cougars and other adorable woodland creatures are preparing to hibernate for the season. And you, my fuzzy little co-op student, will begin to do the same. Winter's chill will overpower you, and you will be filled with the overwhelming desire to sleep. But alas, you must go to work! Fear not, there is a way to answer the call of nature without anyone being the wiser.

Now, you must understand that the type of nap that you can have at work is much different than the naps that you'll have while you're in classes. At school, nobody gives a fuck if you saw logs in a public place for an hour or two. At work, you must be stealthy and always vigilant. You will perfect the art of wolf-napping. Wolves do not sleep the same way human beings do. They will curl up, sleep for five or ten minutes, wake up and see what's going on, then fall back asleep again. This allows them to be sufficiently alert to their surroundings. If you master this type of sleeping, the chances that you will be caught by surprise are minimal.

Wolf naps do not promise a very restful sleep, however. Only deep REM sleep can truly refresh you. If you do not snore, and you are not overly worried about somebody bothering you at your desk, you can use a technique that I perfected in high school. Place your right hand on your mouse, and support your head with your left hand, with your left elbow on your desk. Try to keep your face pointed at the screen of your computer. Have a very long, wordy article or document open to a random place. Sleep away. This will make it seem as though you are reading something obscenely long. This technique also works well with scrolling console output. Write a quick script that outputs a lot of text. Now it looks like you are compiling or analyzing output.

If you absolutely must curl up and have half an hour of peace, you will need to leave your desk. I can recommend two locations where you can curl up and no-one will question your absence. The first option is the server room. People are known to disappear into the server room for long periods of time without explanation. Take a blankie, it might be cold. If you want to take multiple naps a day, make sure to look sufficiently angry when you exit.

Your other, more secure but more questionable, fortress of solitude may not appeal to you, or may not exist where you work. Some companies have a handicapped bathroom that is completely separate from both the men's and ladies' rooms. It is a single room with lots of floor space and a sturdy lock on the door. I know it's gross, but hardly anyone uses it. This is also great if you snore, since the majority of these washrooms have a loud-ass fan that will drown out just about anything. And if anyone ever questions you about your whereabouts, you can just say "tummy trouble", and that will be the end of it. Seriously, nobody wants to know about your bowels.

Sleep well my lovelies,
GingerbrED

Your Laptop is a Tank!

One of the most magical fantastic days in a person's life is when you get your first laptop. Finally, no sharing the "family" computer/laptop that your brother/sister, or in my personal case, my Dad, take absolute control over—to the point that it might as well just be theirs, since the only time you can get access to the lovely machine that connects you to the Internet is for homework (with much complaining/debating/whining/going to Mom...). Your first laptop, much like a first love, you never seem to forget, whether you never forget how horrible it was, or how much you loved it. Truly, that first laptop is a magical moment in everyone's life. It is a passage to independence, a passage of adulthood (unless it is some spoilt kid in elementary school that really doesn't need the thing), and a passage of addiction (Facebook, Tumblr, Reddit, Youtube, etc.).

Hopefully, you are as fortunate as me to have/had an awesome first laptop. But how do you know if your laptop is a fucking tank? Has your laptop gone through these few situations?

1. Your laptop has had liquid spilt on it and going into it (through the keyboard or into the vent), at least 3 times, without ANYTHING, absolutely anything, going wrong with it. It still must be in perfect condition (i.e., everything is working fine). My laptop has had milk, coca cola, and, twice, water spilt on it through both the keyboard and vent.

2. You've managed to practically dump your whole dinner onto your keyboard and again NOTHING goes wrong. My dinner had sauce and its own liquid (from veggies and the juice that meat has when it is cooked, but still moist) and the keys on my keyboard are elevated. My mouse-pad smelt like stir-fry for 1.5 weeks.

3. Your laptop survived the fatal fall, completely unscathed and working perfectly! The fall from your desk, or bed, onto the floor. Now, this is enough to pretty much hurt it. With my laptop, in my sleep, I kicked it off my bed. My laptop was on, open and on top of a wooden plank-table thing. In air, it closed itself (kinda awesome), but it landed screen-side down. It was plugged in, with no battery, until the law of gravity and my foot ripped the cord out (cord was not damaged in this process). As for the wooden plank, it landed about 5cm away from my laptop, pretty much to me, a person who is freaking out, barely missing it. But my laptop was fine! The screen wasn't cracked, it turned on fine, threw a hissy-fit over being cut off from power (I had to click start as normal that is the hissy-fit), but all-in-all it was fabulous! My friend has the exact same laptop, build, hardware, everything, and when his dropped from his desk, the screen cracked.

If your laptop has gone through almost all of these situations, let's say 2 out of 3, your laptop is a TANK!

I know. "Wow! How could you let all this happen?," "You are horrible with your laptop," "You treat it like shit," "You are so lucky." I know. Being perfectly honest, I don't think I treat my laptop poorly; the spilt liquid situation was other people, except one time with water that was me. Else, I dust it, clean the screen, have a cozy case to keep it warm in the winter. I have even named it Lappy, why, because I suck at naming and am slightly hyper active. Lappy is my first laptop, going onto 4 years July 2014. My laptop is a tank.

Never give up on what you love to do.
Wolverine Panda

Sweet and Sour

In the past month, mental illness has been on my mind. Thanks to the Canadian Mental Health Association (www.cmha.ca), I can give you some basics:

1 in 5 people suffer from a mental illness during their lifetime.
8 in 100 adults will suffer major depression.
1 in 100 adults Canadians will suffer from schizophrenia.

In my family alone, I have seen Obsessive Compulsive Disorder, Depression, and Schizophrenia.

It's important that if you feel overly depressed, or anxious, or just not right...that you seek the right help. On campus, this help comes in the form of Counselling Services. Counselling Services (<https://uwaterloo.ca/counselling-services/>) in NH 2080 offers free and private help for those that need it. The earlier you get the help, the quicker you can get back on your feet. There is hope, and you are not alone.

As always, if you have questions, the advising team is here to help you SOAR!

Riley Metzger (mathadvisors@uwaterloo.ca)

Work Term Blues

I was assigned my first real project five weeks ago. I had to implement something in one product from another product. From new to old. From 500 lines of code to a mere 10,000 line monster. Two weeks of reading code got me nowhere. "Just do it," my cubemate said. Coincidentally, he was the implementer of the original and there were only two typos. So I did it. A copy-paste job, so simple. Now to test it. How do I test this thing?

One week later I finally get some help from someone. Unfortunately, she is too busy to help much. So I continued forth, asking ever again, slowly destroying my theoretical credibility as a useful employee. Today I had had enough of facedeskings and being jealous of the work I could be doing, so I went into full assault: I asked random people. Luckily, I was successful on my first hit. The complicated problems went away one by one as I gained a grander understanding of the underlying framework (I still have no clue how it works; it violates all the advice about it, ever). The test still doesn't work thanks to some convoluted synchronization problem that I cannot assess, but there is hope!

Never give up hope at work!
Element118

Last Minute Halloween Costumes

All you need is a plain white shirt and a sense of humour.

- Write “404: Costume Not Found” on your shirt.
- Draw the Wikipedia home page on your shirt. Bonus: get hotties to type topics into your search bar. If you know what I mean.
- Write “Nudist On Strike” on your shirt, or make a sign and wear whatever you want.
- Go Ceiling! (You’re a ceiling fan: get it?!)
- Attach or draw a yellow circle on your shirt. What a good egg. To be a deviled egg, write "666" on your forehead.
- Smear some ketchup or other stinky red liquid on your shirt. Grab a box of cereal and a knife.
- Write “To: World, From: God” on your shirt.
- Attach some socks and dryer sheets to your shirt to go as the embodiment of static cling.
- Draw a screen and a scroll wheel and go as an iPod.
- Draw some red, blue, green and yellow circles and go as Twister.

GingerbrED

Science and Drugs: Strange Course Offerings

While scrolling through course offerings within the Earth Science Department, a certain course title popped out with something I never expected to be taught at UW, or at least outside of the Chemistry Department. Interestingly enough, this course is unavailable to students in the Math Faculty; perhaps they believe we are already competent in the numerical synthesis of methamphetamine in regards to hydrogeology.

Upon further investigation, it appears that due to character count, they left out the “ODS” in the course title, which I believe to be their Online Dating Service. Come to think of it, the fact that it does not include a dating program could be a negative feature for several math students. Goodness knows the Math Faculty needs more dating services. Nevertheless, this may explain why some science students have good, yet questionable, chemistry.

I henceforth hope that Prof. Unger uses the recently concluded TV programme “Breaking Bad” to his full advantage. Hopefully, this will have no effect on the football team’s upcoming performance.

yourlocalWHETHERgirl and wannabeEARTHIE

ConvolutED Introduction (Part 2)

I thank you for continuing to read this article in the proper order. I feel greatly privileged that you would take a moment to flip the pages, and read this article the way it was meant to be read.

To continue reading this article, go to lower-left page 9.
To skip to the end of this article, go to lower-left page 5.

At Waterloo: The Star Crossed Lovers’ Tale

Two students, both alike in schooling choice,
In Waterloo U, where we see our pair,
From starting meet becoming only voice,
Where co-op stream makes lovers sadly tear.

From forth the co-op choice of two programs.
A pair of star-cross’d lovers streams oppose
His job locations never match madame’s.
So with their love a long distance arose.

The lengthy passage of their sep’rate flame,
And the continuance of their co-op snare.
So, ’til their schooling’s end, they must proclaim
“My partner is on co-op now elsewhere.”

So those of you in co-op programs here,
Beware that co-op makes love disappear.

As yours in thine iambic tragedy,
Shay Blair.

KITTHIEZZ!!!!1

The Kitchener Waterloo Humane Society is overflowing with cats! There are ~500 cats available from what I’ve heard as of late. If you feel like you would like to help them out, can’t keep one because of co-op, or don’t feel like you can commit to an animal for the duration of their (or your) life, you might want to consider being a foster for an animal. Supplies (like food, bowls, kitty litter and litter box, and pet carriers) are all provided by the Humane Society; they’re just happy if you can give an animal a place to stay for 2-4 months.

I’ve been a foster of a mom-cat and her two kittens for the past almost month and I’m helping them become more socialized and used to humans until they’re weaned. Other options for fostering are adult cats that need socializing, injured or ill cats, orphaned kittens, or any of the above options for dogs.

I’d supply a link to their foster application, but I’m going to assume people know how to use Google.

yourlocalWHETHERgirl

Pom Gets Wi-Fi

In this short and humorous game you play as Pom, a super-stereotyped Tumblr grrl, who is actually a dog. While visiting all her usual sites, she blacks out, then wakes up with her friend Shibe in a strange place, with *dun dun dun* no Wi-Fi. So begins the 20 minute quest to find some wireless internets, make some new friends, and write some kawaii yaoi fanfics. A game best played if you are familiar with anime nerd girl tropes.

Soviet Canadian

Maximizing Your Midterm Marks

I wish that I had been told the following as an Undergrad. Some of these tricks I learned through trial and error during my 5 years here; in other cases they are techniques that I learned as a marker.

Prior to the test:

1. **Study.**
2. **Go to class.**
3. **Do your assignments.** This means hand them in, pick them up, and learn from your mistakes.
4. **Go to the tutorial center** MC4066/4065.
5. **Get help** from TAs, instructors, etc.
6. **Get a good sleep the night before**, eat a healthy meal, and get out of MC for a bit.

At the start of the test:

1. **Name it.** Write your name at the top of the test page. This sounds obvious but one term I had 14 students in my class who forgot to put their names on the test.
2. **Time and marks.** Look at how long the test is, and how many marks there are per question. Don't waste time on a one-mark question.
3. **Marks and lines.** You can roughly assume that in many cases each mark represents at least one line of work (i.e. one concept). If you have a 4 mark problem and a one line answer, you need more.
4. **Non-linearity.** A successful test taker doesn't usually work linearly through a test. You cannot assume the first question is the easiest. If you are stumped, leave it and come back later. Don't get stuck on one question.
5. **Two sided?** Consciously check whether or not the test is two sided or one. There is nothing worse than a student who leaves early but doesn't realize that the test paper was two sided.

Near the end, when you are left with questions you can't answer:

Write.

As a marker I'm always happy to see a blank page. Don't make it easy for me. Write:

a) Definitions/Theorems/Lemmas/Formulas
If the question asks you to prove that a function is continuous at a point, and you do not remember how to do that, give the definition.

b) Sketches of the answer.

You may not remember how to diagonalize a matrix...but if you can explain how to do it, maybe that will mean some marks.

Simplify.

Sometimes the problem we have given you is too hard to wrap your mind around. By making a simplifying assumption you might be able to show your understanding of the material. My favourite example comes from physics where they almost always assume a frictionless surface.

Replace.

Often in math a problem is only difficult because we have decided to give you a variable instead of a number.

Try the following:

- a) Replace the variable with a small number. Is the problem easier? Do you understand what they are asking?
- b) If the answer to (a) is yes, then solve the question in the general case.
- c) If the answer to (a) is no, repeat with another number. Hopefully you are beginning to see a pattern. If not you may need to repeat (a) a few more times.

My favourite example in this case is limits. Often the problem asks what happens as n gets larger. Although that technique can lead to mistakes, I have found that if I choose $n=1, 10, 100$, etc. I begin to get a handle on what is happening.

Warning! You may not get any marks for using these tricks, but sometimes they can lead to part marks. These tricks are specific to short answer, i.e. math tests. Perhaps in a future article I'll write about how to handle multiple-choice tests.

At the end of the test:

1. **Double check your work**, both your math and your notation. Make sure that your t 's are crossed and i 's dotted.
2. **Double check that your answers make sense!** If your answer is a negative probability I suspect you will probably get a negative mark.
3. **Make sure that you have left nothing blank;** that you have written something, anything, for every question.

Finally, take cheating at UW seriously, because we do. The minimum penalty, for a first offence, is a zero on the assignment/test/final exam and a -5% to the course.

And with that, I wish you well on your midterms this season.

SOAR!

Riley Metzger (mathadvisors@uwaterloo.ca)

$$a \text{ ghost} + b \text{ ghost} = 1$$

LINEAR DIOPHANTOM
EQUATION

Drop your Minecraft username in the BLACK BOX or email it to us at mathNEWS@gmail.com to be whitelisted on our Minecraft server (129.97.134.134).

Russian Reviews – BF2: Project Reality

“Hey, is that the enemy?” -common last words

If you have a copy of the old Battlefield 2, and want to experience “realistic” screaming and dying, consider getting the popular mod Project Reality! In seriousness, though, it is a good mod which improves upon the original game in many ways, all while aiming to keep things realistic (exceptions being the speed with which soldiers are healed, vehicles repaired, etc. for reasons of fun). Whether fighting between two modern armies with tanks, choppers, and jets, or fighting insurgents in narrow streets, you and a team of up to 50 will need to act professionally. If you wish to defeat your enemy, you need to organize yourselves into squads, make plans on how to tackle objectives, effectively spread limited resources (special equipment/weapons, vehicles), and communicate.

The gameplay is overall slow, with constructing forward bases, patrolling, and running supplies to the frontlines taking time but greatly benefiting your team and adding to the feeling of a war going on, not just some random firefight. While fighting in general is quick, with firefights likely to last 5-30 seconds, firefights can quickly happen one after the other and you can be stuck fighting for over 20 straight minutes (possibly against enemies you cannot find).

If you get the game, spend time learning the mechanics, and read the manual. Otherwise you will be left clueless in the midst of a battle when you need to know how to bandage your wounds and use equipment (your compass and radio are two simple tools you will use a lot). Try to train under an experienced player or 10 in the co-op servers, focusing on how to play as an infantryman in a squad since you will spend most the game as one (learn how to identify and communicate threats especially). Also spend an hour training with different types of vehicles to properly understand how they function (if you don't know how to properly use the thermal vision and periscope on a Mainline Battle Tank, you probably shouldn't be in one when on a ‘proper’ server).

If you are willing to put in the hour(s) of training, you can ship out to the frontlines at realitymod.com. With a community thousands strong and hundreds playing at any given time, this mod has been around for a long time (in development for over 8 years, full version only released this summer), and will stay for a lot longer.

Soviet Canadian

**Follow us:
on Facebook (MathNEWS),
on Twitter (@UWmathNEWS),
or in person (MC 3030)!**

ConvolutED Introduction (Part C)

Wait, I meant go to the upper-right. There's not enough space h

ConvolutED Introduction (Part 2)

Sorry about that. I'm not too good with the layout yet.

The current editors think that I'm going to be lessening their workload. Those fools.

To finish reading this article, go to lower-left page 5.

Star Citizen Update

A year after it was first announced, the crowd-funded game Star Citizen has raised an additional \$4 million USD in the last 3 weeks, bringing its funding close to \$25 million mark. New features included in the game thanks to these new funds include: more in-depth mechanics for salvaging, along with more options and abilities, making it possible to have salvaging as a full-blown career option for characters interested in it; advanced facial recognition software that will allow players with webcams to have their in-game character move their head and show the same expressions as the player; and new alien ships available. For more information, check out robertsspaceindustries.com.

Soviet Canadian

Cupcakes!

Now that I have your attention, Women in Math is hosting Cans for Cupcakes on Monday, October 28, 2013, from 6 to 8 pm in MC's CnD. Honeybake Shop will be there to teach you how to decorate your cupcakes. For your delicious treat, we ask that you bring a non-perishable food item that we can donate to the UW Food Bank, to help other students. Can you do that? Good. Then the cupcakes will see you on Monday.

WiM

ZOMG FREE CANDY!!!

With Halloween and Cheap Candy Day coming up (on Nov. 1st for all those who are curious), candy is on my brain!

In case you weren't already aware, there is free candy available for the taking in the MathSoc Office (MC 3038). It may not be the same candy every day, but I am glad knowing that I can go to a place and always find some kind of candy to satiate my sugar-cravings. ZOMG FREE CANDY AHHHH I AM THE EXCITES AAAAHHHHH SUGAR RUSH AHHHHHHHHHHHHAHAH-HAHHAHHAHHAHHAHHAHHAHHAHHAHHAHHAHHAHHA <3

A Sugar-High Patron

Do You Hate Fun?

If so, it is of the utmost important that you heed my advice. Whatever you do, do not sign up for Humans versus Zombies. Do not even think about heading towards the sign-up the booth of the third floor of MC today. Do not sign the release form. Do not spend time gathering your sock and nerf gun arsenal. Because that would be fun and we want none of that.

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

A Review of Pokemon X/Y

Like many others, I acquired Pokémon Y this last weekend. Like not-as-many others, I made it my goal over the next few days to beat the game as quickly as possible. To that end, I must put the caveat before my review that I have probably missed a large portion of the game outside of the main storyline.

Game Mechanics:

Not much has changed since Gen 5. Although the game is ostensibly in 3D [*Clarification: Stereoscopic 3D — ObjectED*], the lack of camera control made it feel a lot like the old 2D [*And 2.5D — ObjectED*] games. The Pokémon riding that was in the trailers was only a minor portion of the game, and featured mainly as novelty [*What about using Surf? — ObjectED*]. The ability to go off the grid system annoyed me, but I suspect it will get better with age. Battles still proceed in turns, with the only new battle type being the 1v5 in the wild Horde battles. Overall, the main mechanics were pretty good, with the exception of the camera in Lumiose City, which caused me many minutes of frustration.

Battle Mechanics:

The addition of the Fairy type didn't have too much bearing on the single player game. There will be many people who write many better words on any sort of competitive metagame than I will, so I will refrain from making any comment on any changes to the metagame. The increased animation of the battles is a visual treat, though they increase battle time. The addition of experience gain, even when capturing the Pokémon, as well as the reverting of the XP Share to function much as in Gen 1 work together to create a simple way to level up all Pokémon equally, even when you are capturing each new Pokémon you meet.

Storyline:

Without spoiling, all I can say is that the storyline does not differ much from Gens 1–4, with a bit of a difference from Gen 5. Evil team wants to destroy stuff, foiled by main character. Somehow everyone else in game is incompetent at stopping bad guys.

New Stuff:

Super Training — Finally, EV training is easy! Like, really easy. Maybe I haven't run into the hard stuff yet, but all the super training that I have done so far was extremely easy. Convenient for EV training the good Pokémon you just got, with relatively light time investment. Huge quality of life improvement.

Poké-amie — Lolwut? I don't understand the point of this game. Perhaps I'm completely missing it?

Player Search System — Wonder Trade is the most fun I've had with online Pokémon in a long time. O-Powers (replacing Pass Powers from Gen 5), seem like a cool concept, but the ability to use them on yourself greatly diminishes the social aspect of them. The ability to check for Nintendo events/other announcements without leaving the game is nice. Suffers from a poor explanation of features, requiring research for some aspects. Overall, a huge improvement from the online features of previous generations.

Wardrobe Changes/Player Customization — Never used it. I hear it's pretty cool though.

3D — The method used to create 3D on the 3DS requires that it be held at a specific angle and distance. Given that I frequently play Pokémon while walking, I had to turn this feature off entirely starting about the fifth minute I played the game. This may be a nice feature for some, but not for me.

Overall Impression:

Solid addition to the Pokémon series – an iteration of the series, but nothing particularly innovative in my opinion. Many many quality of life improvements, reducing common frustrations. Some changes that I did not understand — such as an itemfinder with opaque UI and a great decrease in the usability of the Pokédex. My sole outright complaint is a seeming lack of good leveling areas post-game. Overall, I'd give it 8.5/10.

InsideVoice

To Beard, or not to Beard

(In preparation for the glorious month of Movember)

To beard, or not to beard, that is the question:
 Whether 'tis nobler in the mind to suffer
 The itch and tickle of distracting chin-hair,
 Or to take arms against a sea of bristles
 And by opposing cut them. To trim—to shave,
 No more; and by a shave to say we end
 The sideburns and the thousand natural locks
 That fuzz is heir to: 'tis a consummation
 Devoutly to be wish'd. To trim, to shave;
 To shave, perchance to nick—ay, there's the rub:
 For in that shave of death what cuts may come,
 When we have razored off these mortal coils,
 Must give us pause—there's the respect
 That makes calamity of so long whiskers.
 For who would bear the chafes and prickles of hair,
 Th'oppressor's walrus, the proud man's handlebar,
 The pangs of dispriz'd love, the law's dali,
 The mutton chops of office, and the goatees
 That patient merit of th'unworthy takes,
 When he himself might his facial baldness make
 With a bare bodkin? Who would follicles bear,
 To grunt and sweat under a weary life,
 But that the dread of something after 'stache,
 The undiscover'd chin, from whose bourn
 No stubble returns, puzzles the will,
 And makes us rather bear those styles we have
 Than fly to others that we know not of?
 Thus conscience does make cowards of us all,
 And thus the native hue of resolution
 Is sicklied o'er with the pale cast of thought,
 And enterprises of great pitch and moment
 With this regard their currents turn awry
 And lose the name of action.

profQUOTES

Crazy when no one is listening, but worse when students are

- "If you forget to turn off debugging output...and [your markers] have only had three beers before they start marking your assignment, they're going to be mad."
Brecht, CS 350
- "You guys were born in a life where a 3TB drive is 150 bucks. I bet none of you have filled a disk, have you? [*many raised hands*] Pirates!"
Brecht, CS 350
- "You can't take something complex and make it simple unless you're a politician."
Buhr, CS 343
- "The beer fridge is your friend!"
Buhr, CS 343
- "Why do we call it a Kleenex? I don't know..."
Buhr, CS 343
- "So the hardware people say 'Hmm... what can we do today to confuse the software people?'"
Buhr, CS 343
- "The Monte Carlo Method: 'I close my eyes, throw a dart. Oops, I missed. Throw again.' That's the Monte Carlo method. We avoid that in this class."
Chang, AMATH 456
- "I'm trying to avoid mathematics."
Chang, AMATH 456
- "It's 100% rigorous. 1% is missing, but nobody noticed it; that's OK."
Chang, AMATH 456
- "There is a girl, or boy, depending on your preference; you want to get close to this person. You observe — you look on Facebook, you know on Thursday nights she goes here, this is her schedule. If you stop there, you are a physicist."
Chang, AMATH 456
- "But you want some input; you want to get closer. And you want to do this in an optimal way, because you're a cheap guy."
Chang, AMATH 456
- "Proof will be postponed until November. I don't want to lose your interest."
Chang, AMATH 456
- "There are no questions because I teach so well."
Chang, AMATH 456
- "Anyway, I'm sure half of you have no idea what I was talking about there."
Chang, AMATH 456
- "No one hates money."
Chang, AMATH 456
- "H is bigger than you can imagine, unless you have a good imagination like me."
McKinnon, PMATH 745
- "Like a brontosaurus, H is very large and stupid. Except brontosauruses don't exist. [discussion about how brontosauruses were misclassified apatosauruses] Like an apatosaurus, H is very large and stupid."
McKinnon, PMATH 745
- [On converse proof] "The reverse, by the way, is just all the words read in the opposite order."
McKinnon, PMATH 745
- "So I'm going to state a theorem and then I'll prove it and then we'll go, 'Woohoo!' and then we'll move on. You can suppress the 'Woohoo!' or say it internally if you want."
McKinnon, PMATH 745

In Appreciation of an Amazing Man

There are those people that you bump into in life that end up having a surprising impact on your future. Sometimes you know going in that they will, but don't quite grasp the magnitude to which they will shape you. Other times it's a completely unexpected nudge into taking a different path in life. This man is one of the latter.

He was my ISA for CS 246 and he poured his heart into helping the incompetent rabble of a class we were understand how to object-orient. He did an amazing job of running the tutorials, always having brilliant examples that he'd created to show complex ideas. He also offered an immense amount of office hours. We would be in the CS tutorial centre from 5 in the afternoon to the early hours of the morning working on assignments and he'd be right there with us. Often he'd end up sleeping in the Comfy only to get up and continue to help those that were still having troubles.

The impact he had was more than just helping me pass the class; he convinced me that I could program and that I could apply for programming co-op placements. I then landed an amazing job and plan on switching programs so that CS is a more integral part. Now, lots of people will change your life, but the change on mine due to him is measurable.

I am truly thankful to this amazing man.

I owe him a lot of beer.

horrorSCOPES

ActSci: Frustrated at your lack of success in finding a sexual partner, you check the charts to find the age group with the most singles. You start dating widowers.

Your unlucky number is: 72 years of experience in the sack.

AHS: You head to a yoga class, and your eyes nearly pop out of their sockets when you see all the attractive people there. Your legs pop out of their sockets when you do the “Cat Flow” pose.

Your unlucky number is: 1.5 litres of pooling blood.

AMATH: A heavy storm strikes the area, and your house is hit by a falling tree. You call up the landlord for help, but he says that the hired hands won’t be in until next week. You try to model and build a helicopter to lift the tree instead.

Your unlucky number is: 1500 N of lift hurling it onto your car.

ARCH: There is a field trip to Toronto, and you see the CN Tower for the first time. You realize that you can easily build something taller than that in a weekend. You head to main campus and offer yourself as a date to all of the lonely mathies and engineers.

Your unlucky number is: 829.85 metres high.

ARTS: Infuriated that there are still geese on campus, you decide to make the most of the situation. Coupling this with the impending psych project due, you decide to recreate a famous 1931 experiment. Behold: the goose box!

Your unlucky number is: 32 classically-conditioned avians.

C&O: You’re picking out courses for next term, but there are too many to choose from. You try to determine the optimal course schedule before you graduate such that you don’t have to take all the hard courses in one term.

Your unlucky number is: 1 extra year to make it perfect.

CS: You hang out with the Software Engineers one night and see that they aren’t that different from you. The next day you head to the SE office and see if you can transfer programs and get an extra degree for free. Amazingly, they allow it.

Your unlucky number is: 2 extra courses per term until you graduate, and no more electives. Have fun!

Double Degree: You’re getting a workout running between the two campuses since you only have 10 minutes to travel several kilometres with a bookbag. You figure that since you’re getting so fit anyway, you might as well join the track team. You easily lead the team and your class exchange time shrinks.

Your unlucky number is: 7 minutes from MC to Peters building.

ENG: You hear about the upper years talking about something called “boat racing”. You sign up for the next event, and spend the week waking up at 5 am and heading to Stratford to practice rowing. Turns out B.O.A.T didn’t mean what you thought it did.

Your unlucky number is: 12 remaining bottles of beer on a table.

ENV: You decide to go au naturel for a day, to show off your impressive body to your classmates. It starts hailing, and you don’t have nearly enough hair on your body to protect all of you.

Your unlucky number is: 36 bruises.

Grad: Coming back from a two-week tour of conferences, you show off all the swag that you’ve picked up from companies. Some of the items are sketchy, such as the purple Yahoo nail polish, the black Amazon ninja mask, and the Apple whip of obedience.

Your unlucky number is: 1 new career as a learned dominatrix.

KI: You realize that you’re not actually part of the math faculty, despite having the word “integration” in your program name. Feeling bad about eating the free pi on 314 day, you bake one and offer it to the real mathies as a consolation present.

Your unlucky number is: 8 slices of apple pie gone in 30 seconds.

Math Bus: You discover that greed is good and with this new philosophy you rise high into the corporate world. Not all is perfect however, and your insatiable lust for power leads to your downfall. You should have learned from Gordon Gekko.

Your unlucky number is: 30 years for money laundering.

Math Phys: You do math. You do physics. You do mathematical physics. You do physical math. Actually, that sounds pretty hot. What are you up to later?

Your unlucky number is: 69 different superpositions.

PMATH: Upon learning topology you learn that you cannot tell the difference between a coffee cup and a doughnut. You laugh it off, because obviously you can. The next day you notice that your coffee is sweeter than usual, but the doughnut tastes the same.

Your unlucky number is: 25 minutes of indigestion.

SCI: You mix up a lethal combination of sodium diradium and potassium tryttrium in hopes that the resulting explosion can power your army of robots. You pour one vial into another...

Your unlucky number is: 2 burned off eyebrows.

Soft Eng: You hang out with the CSers one night and see that they aren’t that different from you. The next day you head to the CS office and see if you can transfer programs and get extra electives. Amazingly, they allow it.

Your lucky number is: 7 more choices and a 10% higher average!

STATS: Your final STAT 231 midterm is next week. Don’t mess it up. With any luck, you’ll never have to take it again and you can move on to the more fun courses next term.

Your unlucky number is: 231*2! You fail the midterm.

Teaching Option: You get placed to teach in a private school next term. You are assigned a uniform that you must wear every day at work. You talk to CECA about a possible job change.

Your unlucky number is: 4 months teaching at Ouran Academy.

Undeclared: You can’t make up your mind whether you should declare or not for next term. The deadline passes and you’re still in limbo until next term.

Your unlucky number is: 0 real programs that you are in.

gridCOMMENTS

A flower-gathering

I was going to buy flowers for my girlfriend but it was raining so I put them in the crossword instead. Sorry about the pair of two-letter words and the two acronyms—I had no choice.

Half the 8 submissions were perfect; every incorrect grid featured SEAIR/SAN instead of DEAIR/DAN as the answers to "35A: Remove clay bubbles" and "35D: Japanese rank". Those were Bill's only mistakes, whereas Katherine, Erin, and Cynthia had others, like TOOM (?), ILNI (??), and SOSLES (???). Moving on to the perfect four, their answers to last issue's *gridQUESTION*, "What should you not do with fruit?", were "Use it to appease invading aliens (unless it's star fruit, of course)" (Daniel), "ATTACK SOMEONE" (Fellowship of the Bus and Passenger), something about fipples (Henry), and "Berry it" (Alycia), which made me laugh for a good ten minutes. So Alycia wins! And since Henry submitted his grid in origami-apple form, he wins a consolation prize. Congratulations, Alycia and Henry! You may pick up your prizes at MathSoc.

Submit complete (or incomplete!) grids to the **BLACK BOX** (by the Comfy Lounge on floor 3 of MC) by 6pm on Monday November 4th. Include your name and your answer to this issue's *gridQUESTION*—the funniest answer decides the winner (of a \$5 C&D gift card) in the event of a tie: 'Give a humorous twist on "(s)he loves me, (s)he loves me not".' (OK, technically not a question. Example: "(s)he loves me, (s)he loves me lots".)

Cheers,
unit

P.S. Bill: Thanks for your feedback! I'm glad you laughed at STROBBERY, and that you spent thrice as much time solving my crossword over Imprint's. Keep on (un)crossing!

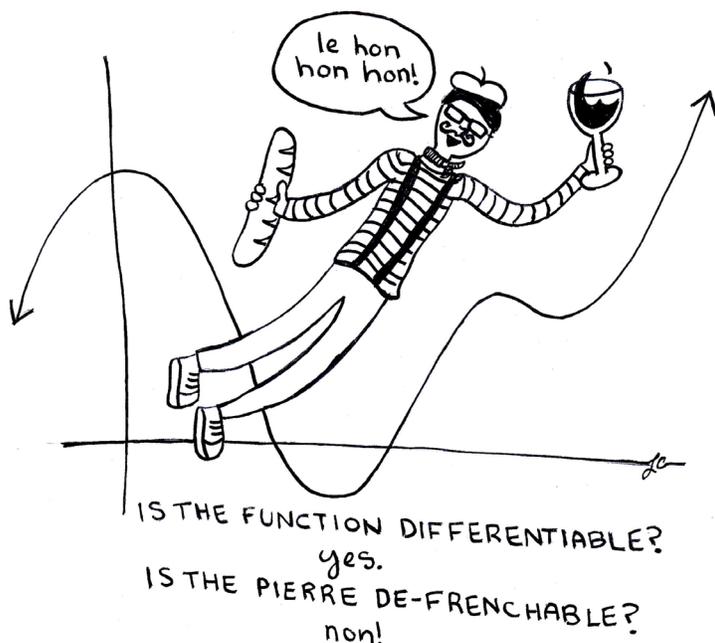


fig.2a Dressing up as an MRA, a fearsome and mythical creature.

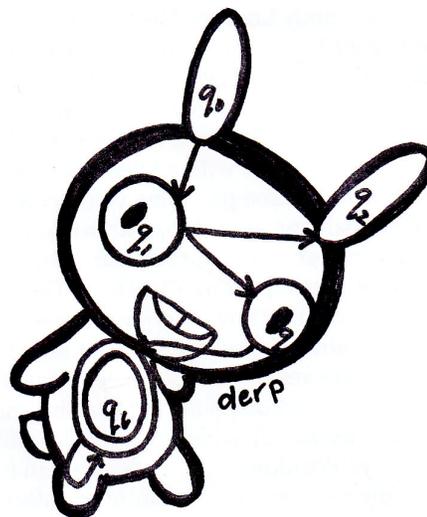


fig.2b. Trying to dress as a mathematical object.

I'm Not Bitter At All

I swear...

I always see people ranting about how Twilight sets a bad example for romance. I think that singling out Twilight is misleading as it implies there is some example of romance in popular culture that would be good to emulate. Love stories in fiction are unrealistic; that's the point of fiction.

In fiction, you have: I love you, you're my dream girl, and I will do whatever it takes to be with you.

In real life: I love you, you're my dream girl, however our relationship is too logistically infeasible, so for pragmatic reasons we should break up.

The only work of fiction I would recommend taking advice from is to listen to what Navi has to say.

Beyond Meta



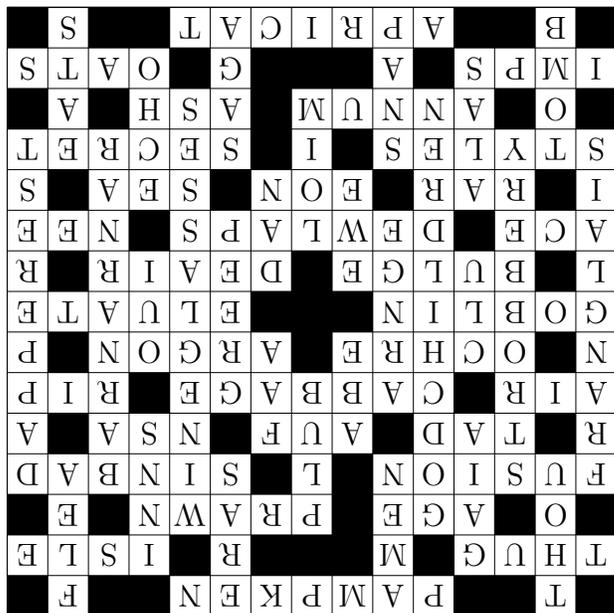
Across

1. An ornamental festoon of flowers, fruit, and greenery
4. Photographic brown
9. Imprisoned hat-wearer?
12. Cheque record
13. Tea Grey
15. Sign up
16. Popular EA game
18. Bewondered
19. "We'll eat until we can ___ more" (I'm so sorry)
20. Sex or hop go-with
21. Blunders
23. Two-master (with a mizzen well aft)
25. Peaches, plums, and apricots: the genus
27. Of relativity, e.g.
30. Dubtronica or lowercase, e.g.
33. Like a mosquito bite
34. Mouse's ear?
38. Not good
39. Paddled
40. A long time
42. Auguries
45. 1/f
47. Of an elf (not of elves)
49. Sonnenblume
50. Slim and slender
53. The hyenas, to Scar
56. (Rhymes with) not fire
57. Clam chowder, minestrone, cream of mushroom, borscht
60. Got off
61. What this grid is not

Down

1. Miraculous nut butter
2. God's is a churchyard
3. Yellow flower (and a Johto city)
4. Raises a lip
5. Sicilian spewers
6. ___ Plus shampoo
7. Not coincidence
8. On the wave
9. White berries prompt 11D?
10. Miscellaneous paraphernalia
11. Something nice
14. Cognizant
17. Friend of frankincense
22. Griever
24. Spiny shrub
25. Tiger's Tour
26. Like a two-headed penny
28. The lusca and the kraken
29. Pearson code
31. Lacking life
32. Black cat or chattering pie
35. _____ me!
36. Ontario's flower
37. Sideways
41. Parrotish
42. Fighting round
43. Sleigh
44. 48D, e.g.
46. Tiny island
48. Fat Hufflepuff
51. Led and tor go-with
52. Sea eagle
54. Oliver's nick
55. Spasm
58. ___ vey!
59. From noon to midnight

Last Week's Solutions:



This Week's Grid:

