*math*NEWS

We know better than to trust annecdotal evidence.

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*look*AHEAD

*math*NEWS	
October 9	Issue 2 pirates monkeys.
October 19	Production Night #3
	Meet at 6:30 in MC 3038
October 23	Issue 3 monkeys pirates right back.

MathSoc	
Wednesdays	Games Nights in Comfy
Thursdays	Movie Nights in Comfy
October 15	Study Skills Seminar

FedS	
October 15	Universities' Night @ Bingemans
October 16	Niagara Falls & Winery Tour

Math Faculty	
Questions about these? Ask an academic advisor!	
October 19	Open Enrollment for Winter begins

CECS	
Ongoing	Interviews

Miscellaneous	
October 12	Thanksgiving
October 19	Constitution Day in Niue
October 21	Apple Day

Food! Fun! Girls!!!

For those of you who don't know us, Women in Math Under-graduate Committee (WiM Ugrad) is a committee that organizes social events for undergrad students with a main focus on connecting female Mathies. However, we understand guys have their feminine side, and thus, are also welcome to come to our events, help us out, and/or run for executive positions.

We hold various fun events throughout the term. Our first event, Spa, Games & Dessert Night which was held last Tuesday, was a huuuuge success! There were desserts ranging from cheese-cakes to cookies to fruits! Our surprise to everyone this term was JAMAICAN PATTIES; that's right, real food. And of course we also had vegetables and dips to compliment all the extreme fla-vours that WiM Ugrad offered that night. If you didn't come, you definitely missed out because IT WAS FREE!!!

Other upcoming events include: "Yoga/Hip Hop/Self Defense Night" , "WiM gives back", Male Stripper Night (just kidding) and the much anticipated EOT Event. If you are interested in helping out email us at wimugrad@gmail.com... we love help! And don't forget to come out to our events... there's always free food, free fun and lots of girls to hang out with!

WiM Ugrad

*mast*HEAD

Howdy concerned readers!

There were slightly over three students in the MathSoc office today, desperately trying to get little pink ties attached to their otherwise useless calculating devices. The only time I've used a calculator in an exam was for Math 239... Introduction to Combinatorics... The exam was on basic graph theory. (I must state that I still was more justified in bringing a calculator than they were. They had first-year computer science.)

For most of my other exams, I bring my trusty old abacus. It may not be pink-tie certified, but it definitely gets the job done. It would be nice though if it had an integration button. Also, most of my math courses involve non-integers, and the exam proctors tend to look at me strangely when I take out a knife and start whittling away at the beads. (One half-bead plus another half-bead gives you... *another* week trying to find *another* abacus since you ruined yours. Congrats.)

*mast*HEAD **Question:** What item would you want in an exam?
Cherry π (A little child trained to do my math for me), skoog (A helicopter. Full-size), The Other Tree (Donald Kuutu), CODE: e <<access denied>> (Chocolate milk is good), The Hee Ho (The King! Hail to the King!), Megaton Panda (A vorpal watermelon), PHPeripheral (Chuck Norris), perki (Questions only I can an-swer), Angelo (My desktop so I can play Left 4 Dead), CorruptED (A Grue), Thor (You, me, and a stick of butter), Lich (A time machine), Sexy Whore (A whip, handcuffs, and some kinky shit), InsidED (The C&D's surplus. Wait a minute…)

ImpulsED

A megaphone. Remember, it's not your actual mark that counts, but your mark relative to the rest of the class

WatSFIC Sez

Greetings and salutations, oh mathies!

WatSFiC, the Waterloo Science Fiction Club, is holding a short story writing contest this term. Are you a good writer? Are you a bad writer? Have you never written a story in your life? We don't care! There will be prizes for the best science fiction or fantasies submitted, and the winning entries will be published on WatSFiC's website. So please, write something awesome and submit it. Remember, you can't win if you don't try. The contest deadline is November 27th, and complete rules can be found online at http://www.watsfic.uwaterloo.ca/Writing Contest Rules.pdf.

WatSFiC

Triple Trouble: CorruptED, ImpulsED, InsidED

VPAS Sez

Hey, everyone!

I hope that you're starting to get into that fun midterm mode of yours!

MathSoc has a fun Halloween event + Charity Ball coming up!

Stay tuned for more information! It'll be released shortly!

Maria Christina Greco
VP Activities & Services
vpas@mathsoc.uwaterloo.ca

FYA Sez

First Year Affairs are my specialty!

Not like that, you disgusting pervert!

Hey, fellow mathies! My name is Joe Collins, and I am your Director of First Year Affairs for the fall term. I want to (belatedly) welcome all of the new students to Math@UW, and invite you to tell me what I can do to make your lives easier.

As your first midterms are quickly approaching, you may be looking for strategies on how to properly prepare. That is why we are holding a **Study Skills Seminar** on Thursday 15 October at 5pm in MC 2065. Come, eat, and get tips from the experts.

I'm also working on other fun projects this term, but if you have any other cool ideas, send me an email or drop by the MathSoc Office (MC 3038).

Joe Collins
Director of First Year Affairs
fya@mathsoc.uwaterloo.ca

ElseWhen

Tales from *math*NEWS Vol. 36, No. 3, Friday, October 5th, 1984

- 20 of the 24 entrants complete the first ever MathSoc Car Rally

- Orientation '84 presents the first annual 'Garth Shut the F___ Up' award to the most talkative frosh

- MathSoc's Fall 1984 budget was $21,662

And perhaps the most interesting article was about maximizing your odds in the Wintario lottery which, unfortunately, no longer exists.

However, in Wintario one can maximize their chances of winning by choosing the appropriate ticket. Since in Wintario some of the winning numbers are position independent (ie. they can appear anywhere on the ticket) one can maximize their chances of winning these prizes by having as many different number sequences on their ticket as possible. For example, to win 5 tickets for the next draw, one needs only to match the 2 digits drawn with any two consecutive numbers on the ticket. The ticket has 5 two consecutive digit combinations (first and second numbers, second and thir, ... , fifth and sixth numbers). If any of these combinations are duplicates, then there are fewer different two consecutive digit combinations and thus less chance that one of these will match the one drawn for the prize.

VPF Sez

Welcome to the second installment of VPF Sez for the Fall 2009 term. After my little flu-related adventure, I'm glad to be back doing all that exciting financial stuff and other miscellaneous things, like writing this column. I don't have much to say, except that last week, MathSoc council deliberated over and approved the Fall 2009 budget. If you have any questions about that, please visit me during my office hours (10:00-11:20am Tuesdays and Thursdays, 10:30-11:20 Wednesdays) or e-mail me at vpf@mathsoc.uwaterloo.ca. On a business-related note, new hooded sweatshirts for fall arrived last week. They are now available in the office in sizes S-XXL for $30.

Sarah Pidcock
Mathematics Society VP Finances F09

Are you graduating?

The Math Grad Committee has news for you!

If you are graduating in the next couple of terms and are excited to get out into the real world then the MGC has news for you!

Graduating info session! You'll need to have your grad photo taken and talk to Career Services. But what's the bulk of the information that you'll need? We'll be having an info session for graduating students and there will be some refreshments provided so be sure to get out there and find out!

Do you like pictures? How about yearbooks? As it stands right now, we need an editor, photographer as well as other volunteers to help out with the yearbook and make it nice and pretty!

Just so you know, your grad chair will be resigning at the end of the Fall term due to the whole graduating thing, so we're going to need someone to step up and help out! If you are interested in becoming the new Math Grad Chair, then be sure to e-mail us for more information!

We have a lot of volunteer opportunities! Make your mark on your graduating year! Make sure that you leave the school with a great grad ball, an amazing yearbook and all the memories from your years in UW Math!

Michaelangelo Finistauri
Math Grad Chair, 2009
mathgrad.2010@gmail.com

Midnight Capture the Flag

There won't be an unofficial event happening at 23:59 on Sunday October 18 for which you would meet at the MC 3rd floor Comfy Lounge.

Why would you come to play such a game anyway? Sure, it would help you learn to navigate the maze-like upper floors and you would actually get some physical activity all while having loads of fun, but, you wouldn't like it.

Not The Management

Fire!

That's the answer!

πρmaniac

*math*NEWS*mail*BAG

Dear *math*NEWS,

Recently I acquired a few extra dollars which I decided to pass on to you, in an effort to enable you to continue to maintain your high level of publication standards. You see, Price Chopper recently had toilet paper on sale, which left me little need for Imprint. I therefore felt no obligation to continue purchasing pulp products from them, and requested my Imprint fee back. I urge all other *math*NEWS readers to do the same. *[Unfortunately, the deadline for doing so has passed between receiving this letter and press time. — InsidED]*

Enjoy the included $3.30

Anonymous

PS Has anyone noticed that Quest lists us paying $4.10 for Imprint and they only provide us with a $3.30 refund? This seems fishy to me… can you please explain this, Imprint? *[My fee statement only lists $3.30, so I don't know what you're talking about. — InsidED]*

The Sky is Falling!

Especially if you're a Leafs fan

The season is 2 games old, and already I hear the doom and gloom of Toronto Maple Leafs fans everywhere. The season is over! We're doomed to finish last! Boston will draft Taylor Hall! Come now, the season is only 2 games old! That's barely 2.5% of the way, so give me a break!

Also, while everyone is having a lot of fun whipping the crap out of Toskala, bear in mind that we have yet to see what Gustavsson can do. Not that I'm writing Toskala, since he could in theory resurrect his career with Allaire. (Not bloody likely) On the IR sits one mister Kessel as well, whose presence in the coming months should finally demonstrate his worth. Don't drown yourselves in sorrow over the lost picks just yet.

Look at it this way, Detroit started the season 0-2 as well, also with a huge amount of goaltending misfortunes. Does this mean we write them off? No. Let the season play to the end of November before passing judgment. Might I remind everyone that the Jays were leading the AL East at the end of the first month of play just this past season? How'd that go for them? Let the ass-kicking that they did this past Tuesday on the Sens prove my point. (Ignore if this didn't happen, use a time machine to alter the past instead.)

Paranoid Panda

Curse you InsidED!

I was prepared to give you all more information about the fiends running *math*NEWS but somehow one of them managed through some cunning plan to infect me with a virus. You will pay for this InsidED! You'll be the first against the wall when the revolution comes. Allies, I will make my voice heard again once my throat has been returned to me. Until then, adieu!

The *math*NEWS Renegade

[Thanks for the help, CorruptED! — InsidED]

Renegade, you just lost the game.

Thor's CS Problem of the Fortnight

How to Win at CS Interviews

Last Fortnight's Question: Suppose a town employs you as their snowplow driver. One day, a huge blizzard strikes the town, and all of the streets need to be plowed posthaste. You are faced with a map of the town, and tasked with planning your route. You need to plow every street, and you want to get it done quickly, so you look for a route through the town that will minimize the number of streets you need to drive down. How do you find this route? Note that it is acceptable to drive down streets more than once.

Its Answer: For those of you who thought "Travelling Salesman", you jumped to NP Complete a little too quickly - we're trying to minimize roads travelled down, not total distance. This is a classic application of the Chinese postman problem (so named because Chinese mathematician Mei-Ku Kuan first studied it). You are presented with an undirected, unweighted graph (let's assume no one-way roads, to make our life easier). You want to identify a tour that will visit each edge of the graph at least once. The solution is straightforward, but it depends on whether or not the street graph is a Eulerian graph - a graph containing a Eulerian cycle. If the graph is Eulerian, happy days! You can find a path that visits each edge only one time. This would require every vertex in the road graph to have even degree - so you'd better hope your town minimizes three-way stops! If the graph isn't Eulerian, you're going to have to work a bit to coerce it into the shape you want. We need to add additional trips to our planned route - trips between the vertices with an odd degree. The problem of making our trip plan Eulerian reduces to finding the best trips to make between those three-way stops, since we'll need to visit them more than once to turn them into even-degree vertices.

This Fortnight's Question: Imagine that you are the leader of a party of glorious fantasy adventurers. As a part of your job, you routinely need to make the tough decisions about how to split up the various magical items that your stalwart comrades find. Suppose you've found three magical items: a Fireburst Sword +1, a Wand of Striking, and a Shield of Hope. How many ways are there to split these items up into distinct groups? In general, how can you find out how many ways there are to split up items? Remember: no cutting items in half!

Thor

Attention First Years!

This is a warning

Are you writing a midterm? Doing an assignment? If not, you're probably failing something important.

Cherry π

Like the new UW logo?

Think you can do better?

Upload your logo or vote for your favourites at `http://www.uwlogo.ca`.

[Please note that this is a third-party website and not endorsed by the University of Waterloo. — Ed.]

Interesting things to do around campus

So you're bored. *Really* bored. You need some sort of entertainment before you go crazy. Perhaps you've already gone crazy, in which case some of the following suggestions might seem like perfectly reasonable activities. Either way, alcohol is not required, but may be suspected by anyone watching.

- Sit in the clump of tall grass on the north side of the AHS buildings and rustle a bit whenever people walk by. Bonus points for bringing a textbook and claiming to be doing homework if anyone asks what you're doing.

- Play the railings in the DC building. Better yet, stand around trying to start a band with anyone walking by.

- Play the floor tiles in DWE. There is a set of tiles that sound different that the surrounding ones near DWE 1536, 9 tiles east and 12 tiles north of the corner of the door.

- Explore the locker contents of unlocked lockers in the Math and Engineering buildings. I've come across such things as a full bottle of Pennzoil, a single shoe, and a toaster. No, you can't have them. They're mine now. Also, remember to bring rubber gloves or a biology student, as old food and mold colonies are quite prevalent.

- Add strange things to lockers to amuse people actually going along with these suggestions.

- Make whale noises in stairways and tunnels that echo. Good places include the tunnel between SCH and the ML building, and the fire escape stairwell at the north end of E3

- Smeagol/Gandalf impressions. Suggestions include walking into an exam with a staff, slamming it on the ground, and yelling "You shall not pass!" or loping along the tunnels between the arts buildings wearing a loincloth and muttering "We hates them, we hates them we does! Yes precious...nasty Artsies..."

- Two words. Nerf Wars. Suggested targets include geese, or Imprint editors, both of whom need a reason to migrate.

- Stand next to walls, face the wall and stare directly upwards. Good walls include the portion of PHYS covered with ivy, or the one near the PAS, right next to the mental health research area. Bonus points for claiming you've just escaped

- Write stuff in the mud at the bottom of the pool outside E2, or read what other people have written. It's fascinating if you can decipher it through the leaves in there. More bonus points for bringing a rake and cleaning it out for me.

- Write for *math*NEWS and come up with lists such as this one.

The Other Tree

Softies don't deserve special love
Re: All we need is love (Volume 111, Issue 1)

All you need is to pull your head out of your ass. Mathies don't hate Softies because you actually do applied stuff. I'm a statistician. That's pretty applied. A lot of my friends are in Applied Math. They do applied work too. Again: mathies don't hate softies because they are actually applied compared to us. Mathies don't like you, Anonymous, because you think you're better than us.

I'm glad to see that the only worth you place on yourself as a softie is helping people with their CS or physics assignments. You aren't a good friend, you aren't loyal or even fun to hang out with. You're just good at helping us with homework. We may not be as "applied" as you, but we are able to handle a big, scary subject like "computer science".

Furthermore, October 7th was not "Hug a Softie Day". It was treat a softie like any other person day. I'm glad to know that you're fragile, but it's inconsiderate to think that other people aren't too. You aren't getting special treatment, stop thinking that you deserve it.
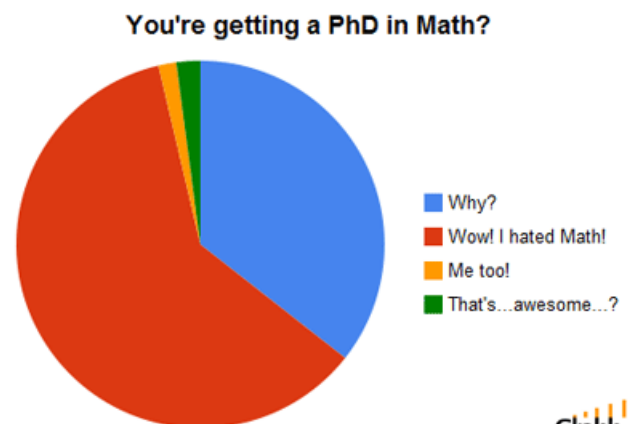
Angelo

The Advertising Debacle

That's it, I can't stand it anymore. *Imprint* can no longer be seen as a credible, unbiased, all-inclusive, free-thinking paper. Their choice of advertisements really give us a glimpse of the true nature of this so-called "student paper." What I am referring to of course, is the uproar caused by *Imprint*'s recent advertisement given by a local community group: The City of Waterloo.

The advertisement in question is the city's 3/4-page notice directed at off-campus students informing them about the city's free recycling and garbage disposal program. I find it demeaning and discriminatory that I am being told how to get rid of my waste, and how I should appropriately store my junk for it to be properly removed. I feel that my right to choose which box I want to put my garbage in has been completely stripped away from me, instead being replaced by an order from a group of complete strangers which I only have to put up with because they reside nearby.

I demand complete freedom of choice in choosing what I do with my waste, and I won't stop until *Imprint* prints out a full apology and retracts their advertisement.

skoog

You're getting a PhD in Math?

- Why?
- Wow! I hated Math!
- Me too!
- That's...awesome...?

GraphJam
Cherry π

Interesting Math

Birthday Paradox

I'm sure that most of you readers have either heard of, or will hear of the birthday paradox. Here's one way of posing it: A statistics professor tells his class of 30 that he will bet that at least two people in the class share the same birthday. The students thought they had a good chance of winning, seeing as how there are 365 days in the year, and took the bet — the professor won. In fact, assuming a uniform distribution of birthdays, he was more than 70% likely to be correct. How many students are required for the professor to be correct with probability 50%? 90%?

Let us examine some possible solutions or approximations. This first problem is most easily approached by considering the probability that no two people share the same birthday. We thus pick any random person and fix the birthday. The chance that the next person has a different birthday is $1 - 1/365$ (we typically assume the year has 365 days for simplicity — sorry Feb 29ers), since he or she can have any birthday except for the one we fixed initially. Likewise, the probability the third person has a different birthday from either of the first two people is $1 - 2/365$, as we have two taboo birthdays. We continue in this trend, then multiply all the probabilities (we assume independence) to arrive at: the probability that n people have distinct birthdays is $365!/(365^n(365-n)!)$, so the probability that at least two people share the same birthday is simply $1 - 365!/(365^n(365-n)!)$. I don't know about you, but my calculator can't compute $365!$, so this formula isn't terribly useful. Well ok, my Maple calculator can, and it turns out to be something around $2.51e778$, and completing the calculation tells us that 23 people will give a 50.7% of at least two people sharing a birthday, and 41 people will give a 90.3% chance.

Working with numbers in the $1e778$ range is somewhat annoying, so perhaps we can find a better way of finding a solution, or at least an approximate solution. Notice that for the nth additional person we required to have a differing birthday, we were simply multiplying our current probability by $1 - (n-1)/365$, so we could just use recursion to arrive at our answer. But that's fairly tedious as well, so we make a sacrifice in precision for the sake of our sanity. Recall the linear approximation of $\exp(x)$ is given by $1 + x$ (we simply truncated the Taylor series expansion). Now this is nice for us, since at each stage we were multiplying by $1 - x$ for some x, which by the linear approximation is nearly $\exp(-x)$. Hence the probability that no two people share the same birthday out of n people is

$$1\left(\exp\left(-\frac{1}{365}\right)\right)\left(\exp\left(-\frac{2}{365}\right)\right)\cdots\left(\exp\left(-\frac{(n-1)}{365}\right)\right)$$
$$= \left(\exp\left(-\frac{(1+2+\ldots+(n-1))}{365}\right)\right)$$
$$= \left(\exp\left(-\frac{n(n-1)}{2\cdot 365}\right)\right)$$

We subtract this from 1 to get the probability we want. This is so very much easier to compute, and we quickly get that 23 people will give a 50.0% of at least two people sharing a birthday, and 42 people will give a 90.5% chance — which is fairly close to what we had before. You may notice that the disagreement between the actual probability and the approximation gets worse as n increases; this is simply because as n increases, so does x, and the linear approximation we used works best near 0 while getting worse farther out. There are a few other ways to get an approximation; I leave it as an exercise to the reader to find some.

As pure mathematicians always do, I like to generalize results. What is the probability that at least 3, or 4, or k people have the same birthday? After some brute force calculation, one can arrive at the fact that to ensure a 50% probability of having at least $1, 2, 3, 4, 5, 6, \ldots$ coincident birthdays, the minimum number of people required is: $1, 23, 88, 187, 313, 460, \ldots$ respectively. That's fairly restrictive, so I would like to consider another kind of generalization: what if we simply wanted "nearly" coincident birthdays? This certainly makes the problem more difficult, and requires the inclusion-exclusion principle. I leave it as an exercise to prove it, but if you're interested: to ensure a 50% probability of having at least 2 people with birthdays at most $1, 2, 3, 4, 5, 6, \ldots$ days apart, the minimum number of people required is: $23, 14, 11, 9, 8, 8, \ldots$ respectively. So if you want an interesting twist on an old classic, bet groups of at least 9 people that there will be at least two birthdays within a week ($l = 3.5$), and you will have more than a 50% success rate. The results may surprise people!

We can exhibit an explicit formula for situations similar to this. Let $Q_i(n,d)$ denote the probability that *exactly i* people out of n people share a birthday, out of d possible birthdays (uniformly distributed). Let $P_k(n,d)$ be the probability that *at least k* people out of n people share a birthday, out of d possible birthdays (uniformly distributed). Then we get the relation

$$P_k(n, d) = 1 - \sum_{i=1}^{k-1} Q_i(n, d)$$

We can calculate $Q_k(n,d)$ via the recurrence relation

$$Q_k(n, d) = \sum_{i=1}^{\lfloor n/k \rfloor} \left[\frac{n!d!}{d^{ik}i!(k!)^i(n-ik)!(d-i)!} \sum_{j=1}^{k-1} Q_j(n-ik, d-i)\frac{(d-i)^{n-ik}}{d^{n-ik}} \right],$$

Clearly, this is not a fun thing to calculate, and the time it takes to calculate grows exponentially with k. A reasonable approximation can be used however; Diaconis and Mosteller (1989) produce a relationship that approximates the number of people n such that $p = P_k(n,d)$:

$$n^k\exp\left(-\frac{n}{d}\right) = d^{k-1}k!\left(1 - \frac{n}{d(k+1)}\right)\ln\left(\frac{1}{1-p}\right).$$

For example, suppose we wanted to determine the probability that out of 30 people, 4 people had a birthday within a 2 week span. Using the assumption that birthdays are uniformly distributed, this is nearly equivalent to the problem of asking for the probability of 4 people having the same "birthday" if there were only $d = 26$ possible birthdays (52 weeks/2 weeks = 26). By the formula above, the probability p is about 54.5%. Thus, if you're planning to have a combined birthday party for people out of a group of 30 for birthdays within 2 weeks of a specific date, you're more than likely to have at least 4 "birthday people". Try this out with your friends and see if this is close!

Hardhat Schmardhat

This begins during a frosh week much like any other in the 52 years the school has been around, but there was something amiss in the seas of new students. There was someone that didn't belong there, not that anyone in the hordes of students in various group shirts could tell. That person was me, a math student mixed in with one of the Engineering groups. What was I doing there? I had hatched a plan 3 days earlier to *steal one of the icons of the Engineering faculty*: the Engineering hardhat given to students to protect and respect.

How did I infiltrate the Engineers? It was almost too easy, as it seemed that one group had left their group shirts out to dry out in the open a couple of days before orientation week. It was at this time I thought of the whole scheme: steal a shirt, blend in, and walk right out of the orientation week with a prize abducted from its home.

Following a tip from a close friend, I knew which day I had to get my trophy; Tuesday. I donned my shirt and made my way to campus from my residence sometime around noon. I made sure to leave early to ensure that I arrived in time to get a helmet. I quickly found my way to my colour's HQ thanks to the convenient signs and arrows all over the place. It would seem most engineers have a poor sense of a direction seeing as they have to be led around by the nose so badly. From the HQ, I quickly found some other members on their way back to the group, I made up some story about how I had just gotten into town that morning and didn't know anything about anything. They quickly agreed to get me to the group and just like that I was on course for a helmet.

After wandering around with my group between some silly event or another we finally were seated in front of all of the people in Edcom, none of whom ever noticed I was missing my orientation week bracelet. After some speech about the awesomeness (haha) of the helmet, we needed to repeat a vow, swearing us to protect and honour our helmets. I kept my mouth shut during this, seeing as how I have prior engagements to the Math faculty.

I was handed my helmet, walked back to my HQ with my group to collect a frosh kit, and I was told there was one more event to go to. It was around here where I splintered away from the group, took off my helmet, put it in my frosh bag and headed home after a job well done.

Anonymous Engineering Frosh Second Year Math Student

*dissed*CONNECTIONS

To the Softie in my psych class. You make my material hard. Left me show you my floppy disks.

Boot me up

To the blonde at the WiM event this week. How you doin'? How'd you like to lick my lollipop?

Hunk of Beef

To the boy at the WiM event. That was less than 50 yards. Do I need to show you the restraining order again?

The blonde at the WiM event

Dear redhead in calc class. We were learning about infintessimals. Guess what part of me was boundless.

Tangent to your Curves

How to make a Time Machine

and go back to visit awesome WiM events

So, if you're like me, you missed the amazingly fun WiM event last Tuesday. But not to worry, with a few simple items, you can build a time machine and go back in time to enjoy the fun times that happened in the MC Comfy.

In order to build a successful time machine, you must begin by gathering the proper items, including (but not limited to) a flux capacitor, 258.3ml of Cheez Whiz, aluminum foil, a colander, an iPod (first generation), and a hamster.

Once you have have gathered all of the items, use whatever you did to get the iPod. If you can get a first generation iPod, you can go back in time to enjoy the WiM event with the same amount of effort. Have fun!

Big Mak

PS: If you don't know what to do with the other stuff, try making a sandwich.

And speaking of sandwiches…

Poetry

A beautiful thing
A Harvey's burger that is
The way you want it

Something Wonderful

There ain't no such thing as too much Harvey's, Mama
Choice is a beautiful thing.

For they have mustard, onions, hot peppers, sweet relish, lettuce, seven slices of tomatoes, four slices of pickles, mayonnaise, and ketchup
Fixed just the way I want.

All served on a meaty patty grilled right before my eyes,
Enclosed in a pair of warm toasted buns.

Everything a growing boy needs.
Now excuse me, I have to go back to Harvey's right quick.

Vince's problem of the issue

Continued from Page 6

Suppose there is a contest: contestants will enter a room one by one. The winner is the first person to have the same birthday as someone already inside the room. The catch: you, being special, have the option of entering whenever you wish. Now, there are 367 contestants (including yourself), so there is a guaranteed winner by pigeonhole. It is clear that the first person to enter will have a 0% chance of winning, so you definitely don't want to go first. On the other hand, going last will almost certainly be a bad idea, since the only way you win is if every possible birthday occurs before you. Here's the question: *What position should you place yourself in in order to maximize the chance of winning?*

Vince Chan
`v2chan@math.uwaterloo.ca`

*prof*QUOTES

Now let's talk about engineering failiures. [Vista chimes in the background]

Morton, SE 101

Nobody's come to my office hour yet; I've had to sit there all by myself.

Forsyth, AMATH 341

The face of someone who is very bored or very confused can be very similar.

Poulin, AMATH 351

[On predator-prey systems] I have no problem with eating rabbits. I did try being a vegetarian once, but that didn't work out well.

Poulin, AMATH 351

... Assignment 2, well I better get it out there today, so hold your breath, please.

Zorzitto, AMATH 331

He's a grad student. What do they know?

Zorzitto, AMATH 331

[student]How did you come up with that formula?
[prof]The gods who made the question gave it to me.

Koeller, MATH 135

This is kinda like an I-dunno-what-to-do-here-so-I'll-just-blow-up thing.

Clarke, CS 137

This is my last GCD [algorithm], I promise. If I do it again, you can… I dunno, get angry.

Clarke, CS 137

Who said root 1? Slap them!

Eden, MATH 137

If you satisfied every box only because it was a box, you will find yourself in a situation that involves sexual intercourse.

Ward, SE 390

This thing [points at brain] was designed to protect you from lions and tigers and bears in the Savannah. It wasn't designed to help you pass SE 390.

Ward, SE 390

Did you know that Cialis is a substring of specialist?

Godfrey, CS 445

I designed this slide in the shower this morning.

Godfrey, CS 445

Universal Classroom Archetypes
Or why you can't escape those bastards

So, we all go to lectures (Hopefully, anyway.) Which means we all share the common experience of annoying people in lectures. In my long studies of the other people in my class (or the ceiling, the floor, interesting flies, anything that isn't the material I'm supposed to be learning…) I've discovered that many of them are actually the exact same types of person, transplanted there to annoy you in every class. Since I felt that this information could be useful in knowing who to seal away in a jar when eventually given unlimited magical power (or have the robots devour, whatever the heck your specific world domination scheme entails), I have decided to catalogue these archetypes. So, without further ado, the various types of annoying student you'll encounter in your studies:

- **The Stupid Question Guy:** This guy (or girl, but with the ratio of my classes tends to be a guy so I'm calling it that…) lives to ask the prof questions. Any question, really, no matter how inane and pointless. Sometimes it might even make you wonder how he got to this point in the class because we covered that three weeks ago and everything since had relied on it. Also, he has a higher mark than you. How? We'll never know.
- **The "Hilarious" Joker:** Equally as effective at stalling class and making sure you get behind on the material, this one is here to become a comedian, and you his unfortunate public. Sometimes overlapping with stupid question guy, but this one does it *on purpose.* He's unlikely to last long, as sooner or later even the profs will get sick of their "humour".
- **That guy beside you with the laptop:** Seriously, that thing is distracting.
- **Ninjas:** You may be asking "What ninjas? I don't have ninjas in my classes…" and that's where they get you. They're there, you just don't notice. Isn't that annoying?
- **The Prof:** If these ones didn't show up, class would be full of a lot less monotonous rambling.
- **Zombies:** I'm pretty sure these just show up to annoy the MathSoc President, Will Sellier (Sorry, Will!). Plus they eat brains.
- **Grues:** Grues. When it is Dark, you are likely to be eaten by one.
- **The voices in your head:** With a low tendency to shut up and a high likelihood of reminding you to burn things. Much like leprechauns the voices are really annoying.

So, as you can see, annoying people abound. Now excuse me… I have… to do something… Damn leprechauns…

CorruptEd

*ultra*CLASSIFIEDS

*prof*QUOTES

Is anyone willing to bet his life that he's not going to die?

Berry, CS 445

How does it feel to be drunk? I don't know, I've never been a liquid.

Berry, CS 445

Let's learn about the four F's of the Sympathetic Nervous System: Fear, Fight, Flight, and Sex.

Ennis, PSYCH 101

[student 1] What is the plus sign under the q?
[prof] It's super q.
[student 2] What's super q?
[prof] Super q is super q because super q is not zero.

Teske, MATH 135

What is 5 big cookies minus 2 big cookies? 3 big cookies. Unless we have the Cookie Monster that makes one disappear.

Teske, MATH 135

...and Canada is the great grandchild of Computers 'R' Us.

Chan, CS 240

I think Waterloo sort of defines CS in Canada, but then again, I'm a bit prejudiced.

Morton, SE 101

c_n where c_n is how many times you've watched the nth episode of Lost. My sequence would be $c_n = \{400, 400, ...\}$. Very simple.

Dupont, MATH 117

By the end of class, you'll hate me... please don't take it out on me physically. Emotionally is fine.

Dupont, MATH 117

[talking about Heaviside functions] When you turn one on, you subtract the other, just like relationships.

Dupont, MATH 117

Panda's Pokémon Pilgrimage

Taking on Pokémon Stadium 2

Pokémon is way too complicated nowadays. There are a billion or more pokemon roaming the world. Ok, that might not be exact, but it's close. Dating back to the old days, my favourite series was from the Gold/Silver/Crystal generation. On a whim, I'm going to run through the game and build a team that is capable of beating the N64 version of Pokémon Stadium 2's challenge tower thing. That's right, I'm building a team to take it on without cheats, or excessive time wasting on breeding.

Goal

I'm going to use this term to beat the game and refine the team and hopefully be ready to take on the actual Stadium over the Holidays. Let's see how far this team goes!

Design

I figure I should at least figure out what kind of team I'm going for. Ye olde standard metagame involved a lot of heavy hitters that I won't be able to get (Zapdos, Raikou, for example) easily. I also love Snorlax and Golem, so I think I'm going to integrate at least a Laxen in there, and a massive rock if I can. Otherwise, I guess I'll wing it.

Part 1: Outset

I guess I should start with a boy. After the lots of talking that old men do, I ended up with the choice of Chikorita, Totadile and Cyndaquil. Ideally, I am not going to use any of them for my team, but Meganium might make a decent wallpasser later, so I went with the ever adorable Chiko (Whom I promptly renamed Krudd). With Krudd in belt, I sped through the next area and ran the opening errand for Elm, taking out Rattatas, Hoppips, Pidgeys and Caterpies along the way. Krudd was a healthy Lv 9 when it destroyed the red-haired rival, whatever his name happened to be. Upon returning to Elm, I was promptly asked to name him.

"Douche? Is that his name?"

The investigator didn't seem to believe me, but I insisted, so he relented. Ha ha! Anyway, I was given some balls and headed out for my grand adventure. First task? Find another pokemon to take along. I do love some of the early beasts, but I went with my personal top 6 pokémon of Pidgey. It's just so pathetically average! (Though, there was this awesome battle I had a long time ago when I swept a Baton Passing team with a Pidgeot using Mirror Move.) Since Pidgeots need attack, I had to find a male version first. (In GSC, the Attack gene (DV) is 8-15 for males and 1-7 for females. Gender is determined by attack, essentially.) I filtered through multiple versions before capturing my first two male versions, which I nicknamed "Mongoose" and "Mooooooooooo." Mongoose turned out to have better stats, so I went with him and released Mooooooooo.

The trek through Violet City was easy as pie, with Bellsprout Tower being an easy prey for Pidgey. By the time I walked up to Falkner, Pidgey was a cool Lv 15, and a few gusts later, I walked out of town with a shiny badge and a Miracleseed for my Chikorita. I paused my game for then to write this article, and it's the Union Tunnel coming up on my way to Azelea! Here's the short recap of my current lineup.

- Chikorita (Krudd) Lv 12
- @ Miracleseed
- HP: 37
- Atk: 20
- Def: 22
- Sp. Atk: 20
- Sp. Def: 24
- Speed: 17
- Tackle
- Growl
- Razor Leaf
- Reflect

- Pidgeotto (Mongoose) Lv 18
- @ -
- HP: 58
- Atk: 34
- Def: 30
- Sp. Atk: 26
- Sp. Def: 26
- Speed: 35
- Gust
- Sand Attack
- Quick Attack
- Tackle

And that's it for this week! Poll for next week! What should I look to raise in my upcoming travels? Geodude, Sandshrew or Onix from the cave? Zubat? Let me know!

Pokétrainer Panda

Watchable Video Games

Because not every video game is a movie

After playing and watching years of video games, it has become apparent that not everyone enjoys watching you play video games. Surprise? I think not. There are many parties involved who might care about what video game you play. For example, the people behind you in the back of the class, your significant other who may not enjoy playing videos games as much as you, or the party that you've chosen to socially ignore by playing video games. The latter being the most likely of the three for the dedicated mathies. For the sake of these people, I present a list of some order of the least to most watchable video games. To make things reasonable, I'm not talking about Major League Gaming level of gameplay. Everyone wants to watch crazy Koreans multitask the shit out of zerglings.

- World of Warcraft. A classic in class, and bane of girlfriends. If running for ten minutes to get to the place you need to be isn't bad enough, taking potshots at random baddies, and running is possibly the lamest thing to watch ever. Sure, its intense for the gamer, as the attack you make could change the outcome of the battle, but for god's sake, show some balls, and fight. Oh, but if you show balls and fight, you get destroyed, and then? You get to run for another ten minutes to get back to your body. Directorial Equivalent: Oscar Wilde, because it may be witty to the person who researches into it, but otherwise, it's over our heads. Internet Memes are completely different.

- Turn Based Role Playing Games. NO. The fun part in RPG is the development of characters. But the development of characters doesn't happen in any period less than an hour. Directorial Equivalent: Quentin Tarantino. Not because I think he is bad, but I really think he could speed up his scenes, and if you only see a minute of a scene, you really miss everything good about that minute.

- First person shooters. As amazing as a good first person shooter is, the adrenaline rush does not happen when you watch it as a spectator. Instead, a viewer sees a flashing screen that doesn't look like something a normal person would see. Crysis, an amazing game in its own right, looks like someone having a seizure with lots of aliens and explosions. Quake looks like the view of a seizuring greyhound. Directorial Equivalent: Martin Campbell (director of Goldeneye and Casino Royale). The action is there; it just really isn't well done.

- Real Time Strategy Games. Looking at blizzard games, these are somewhat interesting. It's the equivalent of watching chess games, so the spectator can think about what they would do. This certainly doesn't work if they don't understand real time strategy, but it's easy enough to describe. Best possibly example is a real time strategy with physics engines: everyone loves the sight of a building come crashing to its knees, see Age of Empires 3. Problem with it is the sound factor. Repeated noises are the bane of anyone not paying attention, most especially: the horn from Age of Empires. Directorial Equivalent: Peter Jackson. If you can make it

through enough of the movie to see the epicness, you will enjoy it.

- Flashing Lights and loud noises. These are good in one situation, and horrible in the other. In small groups, where concentration is fully on the game, this sort of game is entertaining for a short period of time. Everyone's excited when the lights on Guitar Hero go up, and star power is turned on. People love watching the ball bounce around the screen and make the screen look like a Christmas tree in Peggle. But for god's sake, nobody except for the game player wants to see a Gradius style game in the front of the class, where the flashing lights distract even the keenest of pupils. Directorial Equivalent: Michael Bay. You certainly can entertain the simple minded for a short period of time, but attempt to keep them entertained for an hour, and you are asking a lot.

- Third person shooters. Made to look more like a conventional movie, these games do not fail to impress. Gears of War, Assasins Creed, Mass Effect, all have beautifully done camera angles, graphics, physics, and plenty of blood to entertain anyone who passes by to watch. Directorial Equivalent: Zack Snyder (300, Sin City). Sweet camera angles, and piles of kickassery.

- The Beautiful Hack and Slash. Diablo II, Star Wars: Force Unleased, Brutal Legend (I expect), Gauntlet, etc. Varied gameplay, combined with explosions, blood, and fine cinematics. Add a good soundtrack on top, and do I need to explain any more? Repetetive slash noises do not work for people not watching, but otherwise, the storyline and continuous kicking of ass allows the watcher to enjoy every slaying of goat/demon/jawa/more demons/etc. Directorial Equivalent: George Lucas.

So that's it for this week. Until next time, refrain from playing non-entertaining games in class, or I might entertain the rest of the class with some hack and slash of my own.

Tbor

ENVIRONMENTALISM

Random Integer of the Week

72

That is your Random Integer of the Week.

Alternate Proofs

Methods I wish were real...

Suppose P and Q are logical statements, use the following method to prove P—>Q

- **Proof by Consensus**: *(also known as the scientific method)* 4 out of 5 mathematicians say is Q true... therefore it is.

- **Proof by Extortion**: Suppose P is true and Q is not, then I punch you. Is Q true?

- **Proof by Example**: *(the famed "engineer's proof")* It worked once, therefore Q is true.

- **Proof by Heresay**: *(alternative engineer's proof)* A mathematician told me it worked, therefore it does.

- **Proof by Black Magic**: Messy algebra. Messier Algebra. A random integral. Picture of a goat. Therefore Q is true

- **Proof by Caroling**: Three random sets. Two open balls. And a Q statement that's clearly true

πρmaniac

$25 HMV Gift Certificate

You know you want one...

I have to say that I was largely impressed with the number of people who came out to Production Night on Monday. Not only were they here for pizza and general funny things, they all came for the chance to win a $25 Gift Certificate to HMV. In fact, so many good articles came in that I had difficulty choosing a winner.

I want to give the prize to the person who wrote that anonymous letter that I found in the BLACK BOX. This letter is now hanging proudly on the *math*NEWS Wall of Fame, and the $3.30 (yes, there really was $3.30 with that letter) is going in the bank. However, as it was given to us anonymously, I can't give out a prize to this person. Oh well.

I liked CorruptED's article about the various kinds of people in a given class. I have, unfortunately, seen far too many of these people, and I'm glad to see that I am not alone. However, the sole fact that he is an editor disqualifies him from winning anything more than seeing my smiling face in the office we share.

Alright, now to pick a winner. It was a tough one this week, but I am going to go with "The Other Tree", who clearly has more free time than I do. I'm not going to ask how he learned about the DWE tile thing. Tree, you can get your prize in the *math*NEWS mailbox in the MathSoc office. Now you'll have something sane to do in your spare time, like listening to music.

Do you want to win? Write for *math*NEWS! Our next production night is in the *look*AHEAD, or you can place your articles in the BLACK BOX, or you can email them to mathnews@student.math.uwaterloo.ca (no attachments, subject: article).

Now, in my desperate attempt to fill up the remainder of this space, I will sing for you. ImpulsED, please put those tomatoes down. Fine, I won't sing.

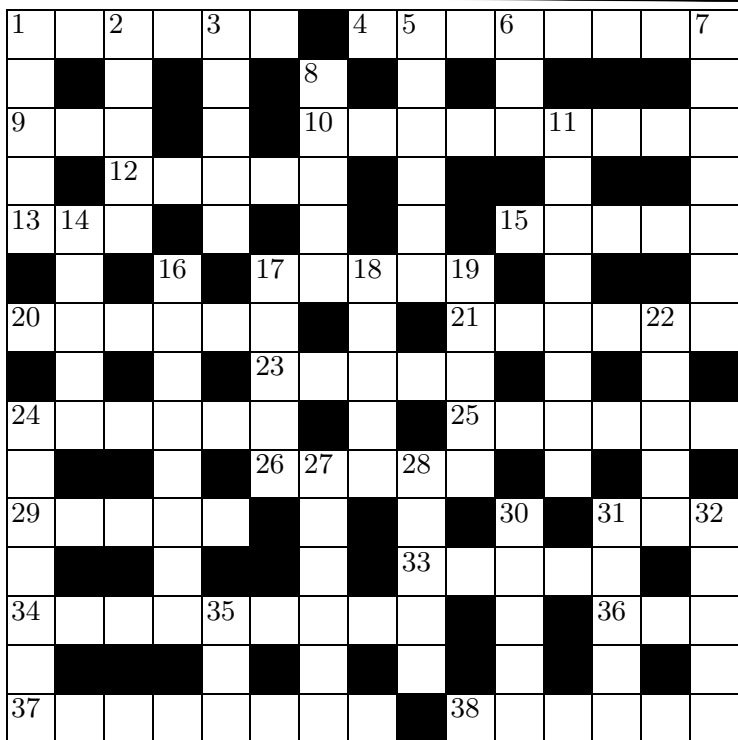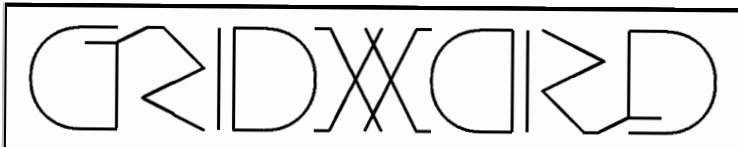InsidED

After the end

The UW apocalypse breakdown

Let's admit it, the apocalypse is coming, be it the (inevitable) global warming, nuclear apocalypse, or the uprising of the shrubberies (the new robot organization (they're *cra~zy*)). And one day sitting in class (between Half-Life 2 and sleeping) I tried to imagine the SLC decayed and falling to pieces, or the DC's fading colors mixing with a dark gray sky. Maybe a mutated fish or two flying around. Or a person clinging to an unhealthy urge to willingly get out of bed to show up to class early. Chaos, taking over each faculty after the apocalypse.

- **Arts:** Let's face it, the arts students, incredibly torn apart by the loss of their inspiration, fall into despair. Lost in their own darkness, they create the most inspiring creations in decades. However, there is not a single person left who will ever appreciate them. These works lost underground will be excavated by the sophisticated squirrel people centuries later; unfortunately these squirrels will bury the works again and forget where they hid them.

- **Environment:** Environment? What environment?

- **Engineering:** Engineers would likely be the most useful to rebuild society as it once was... but who are we kidding? Fate has a twisted sense of humor and the only engineers that survived were the software engineers living underground in their holes. And we all know software engineers are next to useless without a computer.

- **Math:** Safe in the underground holes, or "dens", it will take the well-stocked mathies (thanks mom) one full year to realize that it's the apocalypse. Rising to the surface (already used to the low levels of oxygen and lack of light), the mathies, untainted by the horrors of survival game that took place in the wastelands, rise to conquer and create the new world order under MathSoc (*math*NEWS becomes the most prominent propaganda in the world).

- **Science:** (note from *math*NEWS: due to a reoccurring theme in recent *math*NEWS, this next paragraph will be censored so that the theme will not reappear again.) Experimenting to create a better world after the apocalypse, the science students ironically create the most deadly _____ known to man. This new _____ _____s the host and raises the desire to _____ cranial fluids of other members of the same species.

- **AHS:** Hell, the AHS students *might* survive thanks to their durability and *knowledge* of healing. If nothing else, they'll be the much required laborers for the mathies.

PHPeripheral

The editors would like to thank PHPeripheral for making this piece of filler necessary.

Keep up the good work!

GRIDXXARD

Across

1. Type of document
4. Legato opposite
9. Lion home
10. Spock's criticism
12. Daneyko or Stevens
15. Smug expression
17. Flat-bottomed boats
20. Corrections to a book
21. Idea
23. Flexible
24. Creole
25. Off course
26. Subsequently
29. Book of maps
31. Not old
33. Travelocity mascot
34. Maze with a single path
36. Toupée
37. Hymn from biblical text
38. Red Bordeaux wine

Down

1. Low frequency wave
2. Great, red or Megaton
3. Mayor for a village
5. Historical candle material
6. Medieval ship
7. Waterproofed canvas
8. Pale violet
11. Juvenile
13. Canadian cheese
14. Eastern religious concept
16. Dark-coloured wood
17. Spicy sauce
18. Eight instrument ensemble
19. Express contempt
22. Mass unit
24. Penis-shaped
27. Herb with yellow flowers
28. VIII
30. Hick
31. Not as old
32. Undead barrow-dweller
35. King (Fr.)

Sexy Whore is Back

And she's angry!

Maybe it's just me, but I'm starting to get irritated with the people who break the rules or speak before they think. Yes, I'm talking about the people who smoke right in front of the doors when **clearly** there's a sign saying you have to be 10 m away from the door.

And you! Think before you speak! I have feelings too you know! Let's see if you like it if I do the things that you did to me.

Well, Sexy Whore still needs to strut her stuff now. Ciao!

<div align="right">Sexy Whore</div>

*grid*COMMENTS

Well, nobody submitted a solution to the *grid*WORD in issue 1. As a result, no prize is awarded. Even an incomplete solution would have won, so submit, submit, submit a solution for the new *grid*WORD I have created for your amusement *[I'm going to carry over last issue's prize to this issue, so you now have double the chances! — InsidED]*.

Remember, to be eligible for a prize, place your submission in the BLACK BOX located on the wall of the 3rd floor of MC just outside the door of the Comfy lounge. Also remember to submit an answer to this week's *grid*QUESTION: Why didn't you submit an answer to the grid in issue 1?
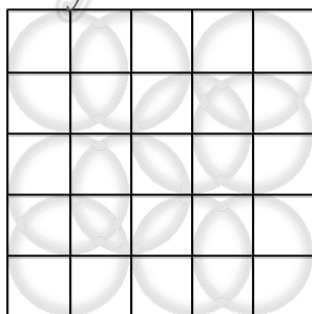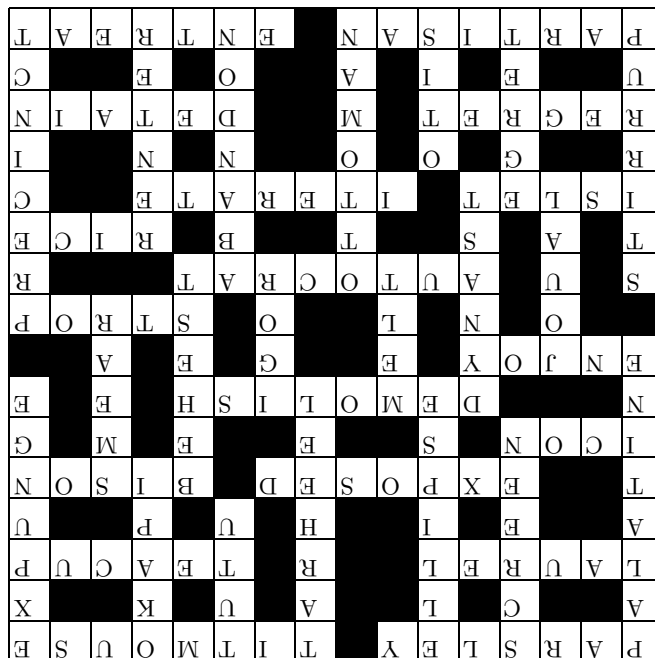
<div align="right">perki</div>

Umbrellas courtesy euri.ca

More puzzles coming next issue

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

```
1 7   4 2   6 2   1 6
6 1   2 2   1 2   1 1

4 4   4 6   3 1   1 7
7 2   4 2   4 6   1 0

0 9   7 5
4 2   0 4
```


Solutions to Previous *grid*WORD