

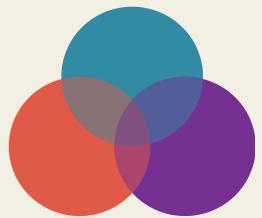
# THE SUMTIMES



*The Old Capitol Building Museum*



Spring Buds  
[Jessa Rhea]



## IN THIS ISSUE

RECOGNIZING OUR GRADUATES

QUAL PREP WORDS OF WISDOM

MATH BIO JOURNAL CLUB

FUN FACTS

AND MORE!



# CELEBRATING OUR GRADUATES!

We reached out to the students who have defended/are defending their dissertations this spring or this summer and asked them to reflect on their time at Iowa; we received some phenomenal responses. Congratulations to *all* of the graduates! We wish you the best!

## Rajinda Wickrama

*Title of Rajinda's dissertation:*

"Interest rate models and random fields: Applications to pricing interest-rate derivatives"

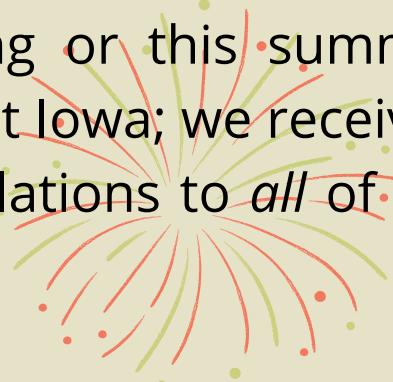
*Plans after graduation:* Hopefully to land a job in quantitative finance.

*What was most helpful to Rajinda when getting a job:*

I don't have a job offer yet but having some good coding projects on your resume definitely helps

*Advice Rajinda would give to his first/second-year self:* Learn coding and read more

*Favorite math department memory:* First day of grad school



## Shrey Sanadhyा

*Title of Shrey's dissertation:*

"Cohomological properties of Borel automorphisms and substitutions on infinite alphabet"

*Plans after graduation:* I have accepted a postdoc position at Ben-Gurion University, Be'er Sheva, Israel.

*What was most helpful to Shrey when getting a job:*

Letters from my mentors and giving talks at conferences/seminars.

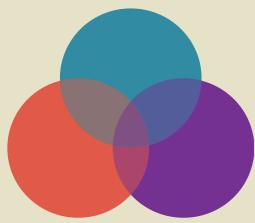
*Advice Shrey would give to his first/second-year self:*

I don't think there is one size fits all advice. I believe everyone has their own personal process. All I can say is figure out where you want to see yourself once you graduate and chart out a path to achieve it. Do not change your process based on what someone else is doing as everyone is unique.

*Favorite math department memory:*

The first talk of my career was at our operator theory seminar. I was very nervous and went so fast that I wrapped up the 50 min talk in 30 mins. I am hoping that I have improved since then.





# CELEBRATING OUR GRADUATES!

## Sara Reed

*Title of Sara's dissertation:*

"Value of Autonomous Vehicles in Last-Mile Delivery"

*Plans after graduation:* Assistant Professor of Business Analytics in the University of Kansas School of Business

*What was most helpful to Sara when getting a job:*

My job search focused on academic jobs. As a faculty candidate, my commitment to interdisciplinary research as well as a commitment to teaching was the focus of my application materials and interviews. Specific to teaching, we often discussed my Graduate Certificate in College Teaching during the interview process.

*Advice Sara would give to her first/second year self:*

Start on research as early as possible. I needed the first year of my PhD to focus on qualifying exams, but I would recommend exposing yourself to research areas as soon as possible. For example, I could have started attending seminars in other departments my first year while still focusing on qualifying exams.

*Favorite math department memory:*

I value the culmination of all the small memories that make this community what it is. These memories include staying at the office way too late to finish analysis homework, hanging out with fellow graduate students at Joe's, learning from one another in seminars, etc. Thank you for all the memories!



## Pake Melland

*Title of Pake's dissertation:*

"Dynamic features of auditory bistable perception extracted from human electrocorticography recordings."

*Plans after graduation:* I will be working as a Postdoc in a new RTG group in the math department at Southern Methodist University.

*What was most helpful to Pake when getting a job:*

Using boldface font as headings to begin paragraphs in my cover letters. The headings were geared towards what was sought in job advertisements (student mentorship/service/research, for example). I can't say whether employers actually like this, but once I began formatting my cover letters this way is when I started to receive interview requests.

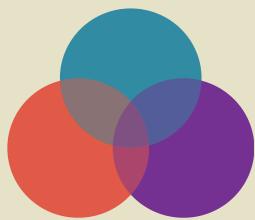
*Advice Pake would give to his first/second-year self:*

Keep an almost daily research journal of what you did that day. If you did calculations, save them and write it down in a way so that you can look back 6 months later and know exactly what you did. If you write code, document EVERYTHING.

*Favorite math department memory:*

I really enjoyed the first semester of student presentations from the directed reading program. It was such a comfortable and collegial atmosphere, and it was great to see the undergraduates learning about non-standard topics.





# CELEBRATING OUR GRADUATES!

## Roman Aranda Cuevas:

*Subject of Roman's Dissertation:* My thesis studies certain decompositions of 4-dimensional spaces called trisections of 4-manifolds. I was part of the topology group working with Maggy Tomova.

*Plans after graduation:* I am going to be a Visiting Assistant Professor at Binghamton University starting this Fall 2021. I am excited to meet new people and other ways to do math.

*What was most helpful to Roman when getting a job:*

Luck. One helpful piece of advice I had from my advisor was to "apply more than one year." Don't be afraid of applying for jobs in your fourth year (or earlier!). The job market keeps getting more competitive, and not every year the right places for you are looking for people in your area. The moment your advisor thinks you are ready to graduate: try for jobs. I have to admit I struggled with this idea (believing in my math), but I believe it helped me succeed in my fifth year.

*Advice Roman would give to his first/second-year self:*

Make your number one priority to find an advisor. Every area of research (and each advisor) has its preliminaries (books/papers/ideas) you have to digest to start thinking on a research project. Some advisors have less than others, but there is never enough time to read them all. The sooner you start getting used to the ideas, the better.

Attend seminars (since your first semester) even if you only understand more than the first minutes. I always get lost in a talk (the last  $60-x$  minutes,  $x>0$ ); the trick is to keep attending and (eventually) start asking questions and reading on your own.

*Favorite Math Department Memory:* My friends.



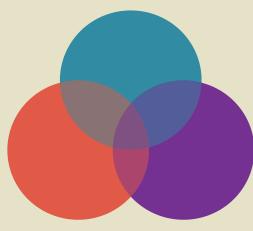
## Geoff Converse

For my thesis work (under Dr. Suely Oliveira), I've developed machine learning algorithms for application in educational measurement. Specifically, I use neural networks to better quantify student's knowledge acquisition from their performance on exams. After graduation, I'm hoping to find a machine learning scientist job in an industry that my values align with -- I'd like to focus on using "data for good." I'm looking more extensively at education technology companies because of the overlap with my experience, but am open to other industries as well. A few things that I would tell 1st/2nd-year Geoff: put yourself out there more and attend more departmental events. Even hanging out in the Muhly lounge to do work or during the weekly tea times would have been good. I would also encourage 1st/2nd-years to attend student-run seminars to get a feel for student research and engage in a low-stress environment to talk about math.

My favorite memories at Iowa revolve around the relief that came with 1) finishing my last qualifying exam and 2) reading the letter saying I passed the quals. Hard work really does pay off!



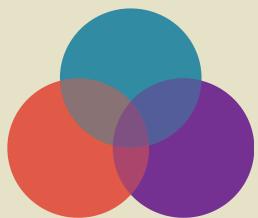
# FUN WITH MATH BIO JOURNAL CLUB



(left to right: Fatou, Natalie, Kerry, Parker)

Math Bio Journal Club, overseen by Dr. Zahra Aminzare, meets semi-weekly and offers graduate students the opportunity to read research in mathematical biology. This semester, students read "Membrane potential resonance in non-oscillatory neurons interacts with synaptic connectivity to produce network oscillations" (Bel and Rotstein, 2019) and "Mathematical Approach to Differentiate Spontaneous and Induced Evolution to Drug Resistance During Cancer Treatment" (Greene, Gevertz, and Sontag; 2021).

Those interested in joining can email [kerry-tarrant@uiowa.edu](mailto:kerry-tarrant@uiowa.edu)!



## SEMINAR SCHEDULE



Algebra: Mondays: 3:30 pm - 4:20 pm.

<https://uiowa.zoom.us/j/98311358684>



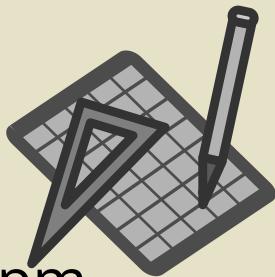
Math Biology: Mondays: 3:30 pm - 4:20 pm

<https://uiowa.zoom.us/j/96741891819>



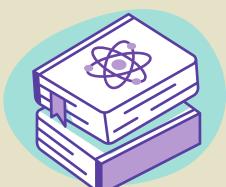
Differential Geometry: Tuesdays: 10:30 am - 11:20 am

<https://uiowa.zoom.us/j/91949941413>



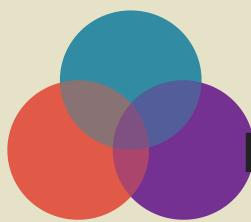
Math Physics: Tuesdays: 2:30 pm - 3:20 pm

<https://uiowa.zoom.us/j/96071568501>



Operator Theory: Tuesdays: 1:30 - 2:20 pm

<https://uiowa.zoom.us/j/93595938832>



## WORDS OF WISDOM FROM SOMEONE WHO HAS BEEN THERE



As the first-year students prepare for qual prep this summer, some of the upper-class students were kind enough to offer thoughtful advice as the first-years tackle the most monumental exams of

their graduate career. A huge *Thank you!* to all who took the time to submit their experience and invaluable guidance.

### From Violet Tiemma:

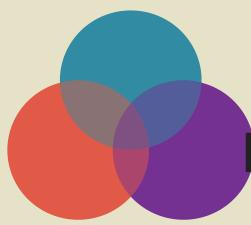
Quals are very daunting and nerve racking, and finding ways to reduce your anxiety and stress is key. Hanging out with my friends and studying with them helped alleviate some of this stress. It reminded me that I was not alone and that I could get help whenever I needed it. A good friend advised me to keep writing when it came to the exam, and I did not know how to answer the question (Analysis! cough cough). Showing how you are attempting the problem as opposed to nothing at all goes a long way. You can do this by doing several practice problems that could give you a hint of what the problem may be asking and how you may tackle it. Learning theorems and definitions do help, but learning how to apply them is the icing on the cake. Finally, if you don't know how to start, ask.

### From Quentin Chediak:

Divide your time working alone and in groups, because both are important. Also, don't neglect the "easy" stuff you learned at the beginning of the semester (quotes are necessary because none of it is actually easy).

### From Yariana Diaz:

Basically, I think it comes down to regular study advice but with more emphasis on problems. What I mean is: don't spend time reviewing notes from lectures and textbook reading like I did, you should jump right into problems and look up the necessary information pertaining to a problem you struggle to solve. I personally tend to place too much emphasis on understanding something theoretically and not enough on being able to use the theory. Also participating in the quals summer review sessions is not the only studying you should do. The more problems you see, the better off you'll be on the actual exams.



## WORDS OF WISDOM FROM SOMEONE WHO HAS BEEN THERE



From Sara Reed:

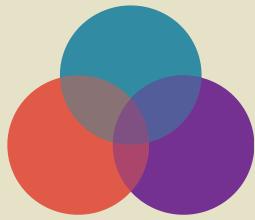


Good luck to those of you preparing for qualifying exams this summer! The preparation for qualifying exams is a journey and it is important to remember that everyone's journey is different. Here are some things that helped me during my qual preparation:

- **Learn something new every day.** You will not learn any particular subject overnight. However, you can learn something new every day. Focus on those triumphs to stay committed to studying for quals throughout the summer. It's a marathon, not a sprint.
- **Prepare for all your quals all the time.** For me, there was one qualifying exam that I knew I would need basically the entire summer to learn. Be careful not to put all your energy into that single subject at the expense of the others. You do need to pass all three. Although I spent more time preparing for one of the qualifying exams, I set aside time to practice material in the other two subjects every day.
- **Take practice quals early and often.** One of the most helpful activities during qual prep for me was getting together with other students to take practice quals. We sat for a given amount of time to work on problems individually, then spent time working through the problems together. The first one didn't go so well, but practice makes perfect (or at least better!) Don't let your actual qual be the first one in that kind of environment. Practicing helps you to learn strategies on how to tackle problems as well as sit and focus on a set of problems for a given amount of time.
- **Find ways to relieve stress.** Studying for quals was the focus of my summer after the first year. Strategize your time and allow for breaks. For me, I focused on quals from 8 AM-5 PM every day, but left evenings open to go to a Zumba class with friends or get together for a game of sand volleyball. Studying for quals is important but so is your mental health.

One of the things that I value most about the graduate programs in math is our community. We are a community that wants everyone to succeed so remember that we are all rooting for you! If you need help, don't hesitate to reach out to your fellow qual-takers or older graduate students that have become experts in these areas. Good luck!





# GARDENS [ & PLANTS] GALORE!



Featuring some of our readers' plants to celebrate the spring and summer seasons!



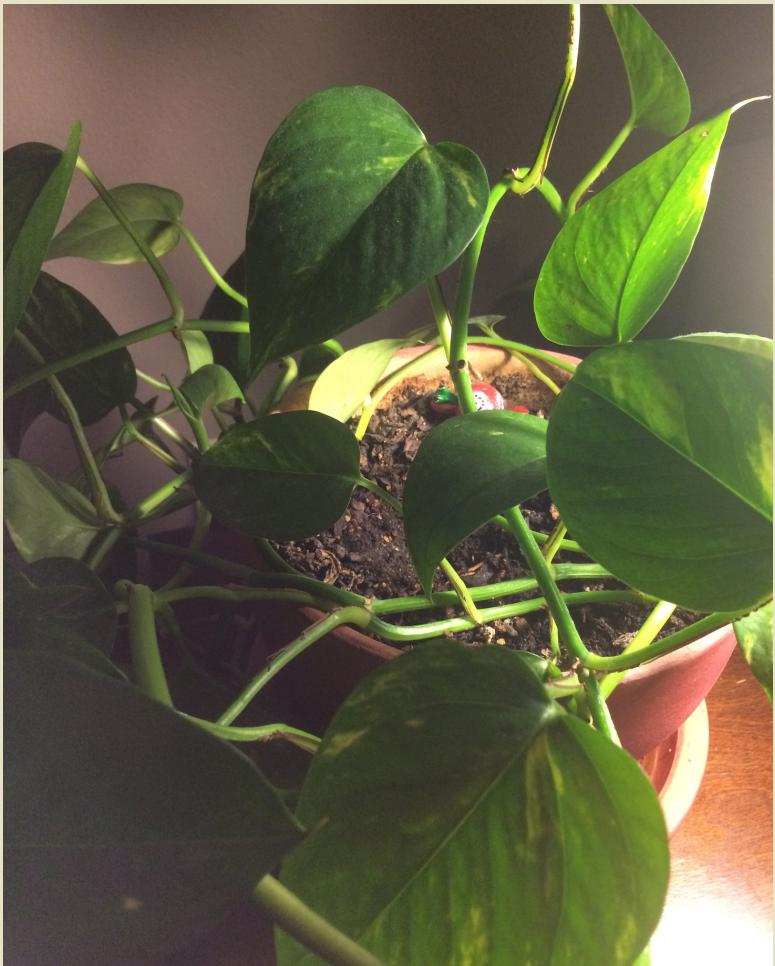
(above) These are all my plants! From back left to front right, their names are: Goldie (Goldfish Plant), Nellie (Spider Plant), Spike, Geo (very geometric), Corey (Coral Succulent), Missy (Mistletoe Cactus), Po (Panda Plant), Kris, Val, Lily, Harry, Violet, Dionysus (Echeveria Dionysos Succulent), Creamsicle, Charlotte (Cobweb Succulent), and Lulu.

Fun fact: Po knows kung fu. One morning, my tension rod for my curtains fell, so I had to move my plants out of the way to rehang it. While moving him to the other side of the room, he jumped out of his pot and landed on the ground. He must have been defending my apartment from the tension rod haha. Another morning, there was a thunderstorm. When I woke up, I looked down and there was dirt all over the table that I keep my plants on. I was wondering why and when I looked at them, I saw that Po had escaped from his pot again. He was defending my apartment again lol.



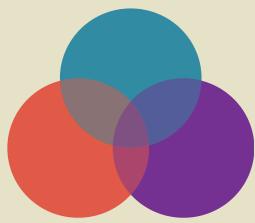
[Casey] (top left; top right)

(above) [This is] the flower that grows on goldfish plants. The buds start out red and as the flower grows, it becomes yellow; and when it is done growing, it turns orange and looks like a goldfish.



[Jessa]

[Kerry]



# GARDENS [ & PLANTS] GALORE!

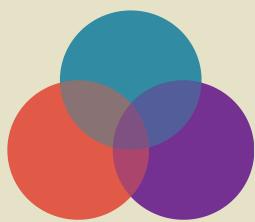


[Elise]



*For the Porch Flowers:* This spring I have realized just how much I enjoy growing flowers and vegetables, which is an activity my mom always included me and my sisters in growing up. I planted my herbs early in eager anticipation of a healthy crop of cilantro and basil to use in some of my summer favorites-- guacamole and caprese salad. Perhaps the plant I am most proud of is my avocado tree. Patience is key when watching this guy grow. My research says it may be 5-13 years before it produces avocados.

*For the Tulips:* Looking for something fun to do this spring? Tulip Time in Pella, Iowa is the perfect spot to be! Just an hour and a half or so west of Iowa City lies this touch of Holland. Each year, the city plants over 300,000 tulip bulbs and welcomes visitors from near and far for their annual celebration to enjoy the beautiful sights and smells of all things Dutch. This year tulip time is May 6-8th but sneak over anytime before because the tulips are already in full bloom! Or put it on your calendar for next year!

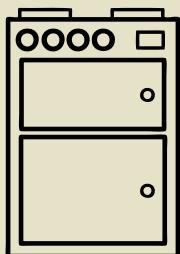


# TRIVIAL ADVICE

WITH KERRY TARRANT

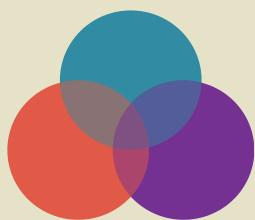


Welcome to our newest column, "Trivial Advice with Kerry Tarrant," where Kerry reminds us how we can better live our lives as logical human beings.



- Do not touch hot stoves.
- Stop signs are more than a suggestion.
- Don't spit in the wind.
- Always use two-step verification.
- Don't invade Russia in winter.
- Take a shower at least once a day.
- If you are chilly, put on a jacket. A hoodie or a long sleeve shirt are also acceptable.
- Don't spend more money than you have.





# RECIPE OF THE MONTH



Now that the semester is coming to a close, you may have the inkling to have a celebration. What better way to celebrate than to make a wonderful dessert! We invite you to try this recipe, which is a classic southern dessert: peach cobbler. Just like they say in the South: Ain't nothin to it but to do it! Without further ado, let's begin!

## Dishes and Kitchen Tools Needed:

9x13 inch baking pan  
Pastry blender  
Cookie sheet

## Ingredients for Cake Topping:

2 cups all-purpose flour  
1/2 cup white sugar  
1/2 cup firmly packed brown sugar  
2 teaspoons baking powder  
1 teaspoon salt  
12 tablespoons cold unsalted butter cut into small pieces  
1/2 cup boiling water

## Ingredients for Fruit Mixture:

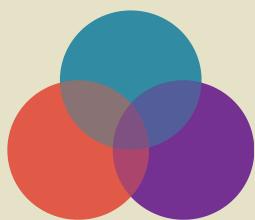
8 fresh peaches that are peeled, pitted, and sliced into wedges  
1/4 cup white sugar  
1/4 cup firmly packed brown sugar  
1/4 teaspoon cinnamon  
1/8 teaspoon nutmeg  
1 teaspoon fresh lemon juice  
2 teaspoons corn starch

## Ingredient for Sugar Topping:

3 tablespoons white sugar

## Instructions:

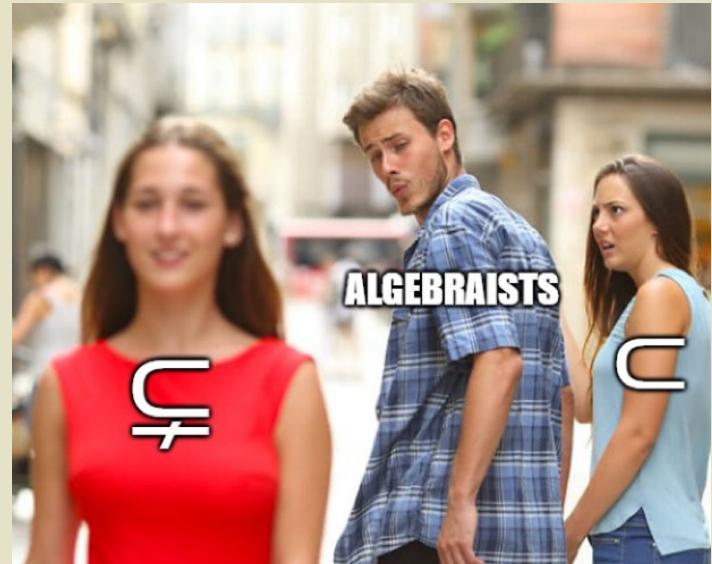
1. Preheat oven to 400 degrees.
2. In a large bowl, fold all the Ingredients for Fruit Mixture until they are all well combined.
3. Pour the fruit mixture into a 9x13 inch baking dish.
4. Place in preheated oven and bake for 10 minutes.
5. While the fruit mixture is baking, mix all the cake topping ingredients except the boiling water together in a medium bowl.
6. Use a pastry blender to cut the butter into the previous mixture until the mixture looks like a coarse meal.
7. Pour in the boiling water and stir until thoroughly mixed together.
8. Once the fruit mixture has finished baking the allotted 10 minutes, add this dough mixture on top of it.
9. Evenly sprinkle the top of the dough with the sugar topping ingredient.
10. Place the baking dish on a cookie sheet (in case the cobbler bubbles and drips) and bake for 30 minutes or until the top is golden brown and baked through and the peaches are tender.
11. Enjoy!



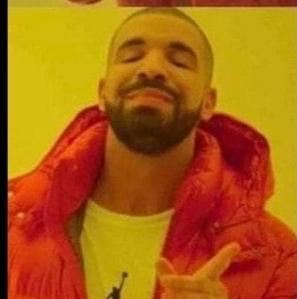
## MEMES!



$\int \frac{1}{\text{cabin}} d\text{cabin} = \ln \text{cabin} + c$   
 = natural log cabin + c  
 = houseboat

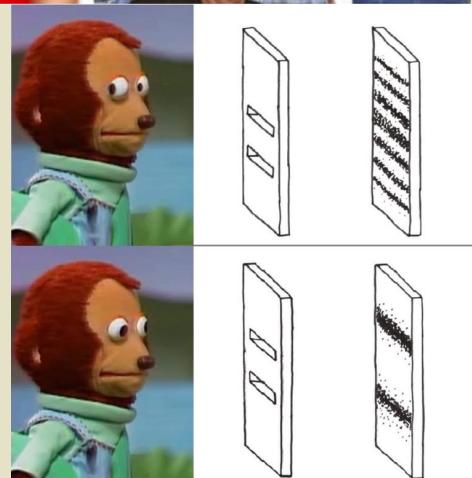


$$\frac{2x + 6}{2} - x = 3$$



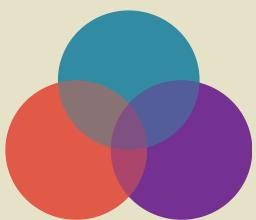
Math be like that sometimes

I DON'T KNOW WHAT  $\oplus$  MEANS ny.co



Math students every time the proof is trivial





# WAIT! THERE IS MORE!



45° in Fahrenheit



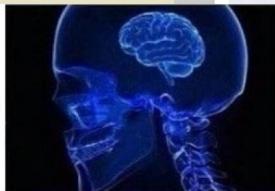
45° in Celcius



45° in math



**"SES"**  
MEANS "SAYS"



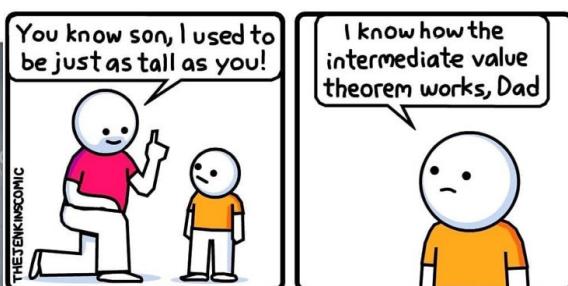
**"SES"**  
MEANS "SERVICE  
ENGINE SOON"



**"SES"**  
MEANS "SOCIO-ECONOMIC  
STATUS"



**"SES"**  
MEANS "SHORT  
EXACT SEQUENCE"



27) The volume of a cylinder is found using the formula  $V = \pi r^2 h$ . Using  $\pi = 5$ ,  $r = 10$  and  $h = 10$ . Find the volume,  $V$ .



Every letters and characters  
in the world: exist

Mathematicians:



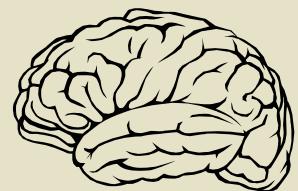
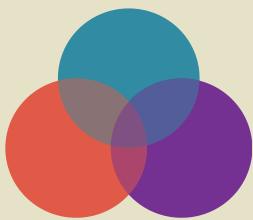
is for me?

$$\begin{aligned} \sqrt[6]{64} &= \sqrt[6]{64} \\ &= \sqrt{4} \\ &= 2 \end{aligned}$$

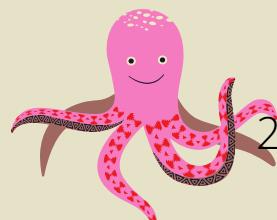
tEaChEr CoUnTeD iT wRoNg  
BeCaUsE i DiDnT uSe ThEiR mEtHoD



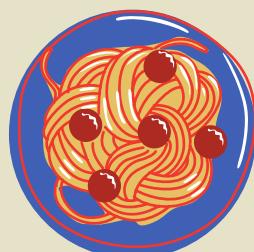
# NUGGETS OF KNOWLEDGE

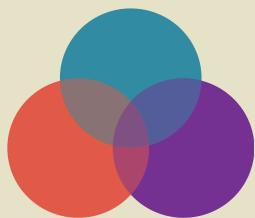


Since we value knowledge so highly, we believe these facts will be most welcome. Even though they may not be as useful as, say, the d'Alembert formula to help solve some wonderful wave equations, the Residue formula that we hold so dearly to solve those pesky integrals that we would never have dreamed of solving in Calculus II, or the subgroup lattice of the dihedral group of order 8 to acquire the correspondence to its Galois group, knowledge is power! Feel free to use some of that unoccupied space in your brain to remember these random facts:

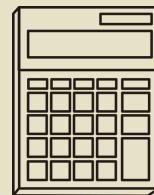


1. Octopi lay anywhere from 50,000 to 200,000 eggs.
2. No whole number before 1000 contains the letter A.
3. A giraffe tongue can be up to 20 inches in length.
4. Conjoined twins are born the same gender.
5. The oldest person to live was Jeanne Louise Calment from France who died at the age of 122 years and 164 days.
6. The tallest man was Robert Pershing Wadlow from Alton, Illinois, who was last measured at 8 feet, 11.1 inches tall.
7. In the Phillipines, McDonald's serves spaghetti.
8. Lobsters mate for life.
9. Ligers cannot reproduce with other ligers.
10. You only need 23 people in one room for a 50 percent chance that two of them share a birthday.
11. Pinocchio has an unlimited supply of wood.
12. One 18-inch pizza has more pizza than two 12-inch pizzas.





# KAKURO!



We have now come to the point in time where we present an exercise that is left to the reader. ☺ Just like in Sudoku, fill in the grid with the digits from 1 to 9. Each group of digits must add up to the number that is just to the left or above it. No group can repeat the same digit twice.

Although they are aligned vertically or horizontally, a group does not necessarily span the whole column or row. This means that even though you may not repeat a digit within a group, you may repeat it within a column or row. There is no requirement to use all of the digits.

