THE SEAWAY CURRENT

Newsletter of the Seaway Section of the Mathematical Association of America

SPRING 2023
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IN THIS ISSUE...

THE SEAWAY CURRENT

The Seaway Current is published at least twice per year by the Seaway Section of the Mathematical Association of America (MAA) for the benefit of its members. Its pages are open to all members of the MAA and, by invitation to others, for the exchange of information and opinion. Contributed announcements, articles, and editorials are welcome and should be sent to the editor.

Material may be submitted to the editor by e-mail. Opinions expressed in this newsletter are those of the editor or of individual contributors and do not necessarily represent the views of the MAA or of the Seaway Section.

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SEAWAY SECTION SPRING MEETING

University of Waterloo, Ontario

May 5-6 2023

Check out the program!

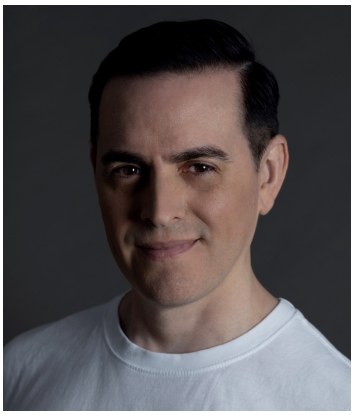
Thank You to the University of Waterloo Math Department for hosting us — especially Diana Skrzydlo, local organizer!!

SPRING 2023: THE INVITED SPEAKERS

Friday Banquet Speaker:

Dots and Lines: The Hidden Networks Around Us

Anthony Bonato, Toronto Metropolitan University



Abstract: Networks measure interactions. The last twenty years, especially, have seen an explosion of network methods applied to every discipline imaginable. From early examples like the web graph, we now study networks from food webs, mobile calls, political votes, smart grids, characters in novels, conflicts, protein interactions in living cells, supply chains, Bitcoin transactions, and neural connections in the brain.

Although networks are everywhere, many are invisible. Mathematicians are only beginning to reveal these hidden networks and unlock their secrets. We give a guided tour of the modern field of network science, with insights along the way into what makes networks tick.

Saturday Invited Speakers:

- Penny Haxell, University of Waterloo: Graph Theory for the Cruise Director
- Karen Lange, Wellesley College: Different Problems, Common Threads
- Frédéric Gourdeau, Université Laval: A Mathematicians' journey in education and outreach

FALL 2023 MEETING: MAA Seaway will be at **St. Bonaventure University October 13-14, 2023**.

Mark your calendars! We'll be treated to another warm welcome from the St. Bonaventure Math Department and local organizer Maureen Cox. We hope to see you there!

SPRING 2023: THE INVITED SPEAKERS

Graph Theory for the Cruise Director and the Mathematics of Voting Theory

Penny Haxell, University of Waterloo

Abstract: In this lecture I'll share two of my favourite topics to teach in graph theory courses. I'll describe them both as solutions to problems that might be faced by the cruise director on a luxury cruise ship, who is responsible for arranging all the social events on board. How can the passengers be organised into harmonious groups for dinner seating or excursions? How can we find a good way to assign partners for an evening of tango lessons? We can formulate these questions as certain graph colouring and matching problems, that have particularly beautiful solutions. We'll even solve one of them together on the spot, using a human computer made up of audience members.

Different Problems, Common Threads:

Computing the difficulty of math problems

Karen Lange, Wellesley College

Abstract: Mathematics is filled with theorems that state the existence of a desired object. For example, a result known as Weak König's Lemma (which I'll introduce) states that "every binary tree with infinitely many nodes has an infinite path." But just because we know an object exists, doesn't mean we can find it. Given Weak König's Lemma, it's natural to ask whether we can compute a path through a given binary tree with infinitely many nodes. It turns out the answer to this "Path Problem" is "no," so we say that the problem is not "computable." But then just what exactly is the computational power of this Path Problem?

Using this Path Problem as a test case, we will explore the key ideas behind taking a "computable" perspective on mathematics (over an "existence" one) and describe an approach for measuring the computational power of mathematical problems. We'll see that the computational power of problems varies widely and studying problems' power helps to illuminate what really makes problems "tick."

A mathematicians' journey in education and outreach

Frédéric Gourdeau, Université Laval

Abstract: My journey as a mathematics educator started more than 25 years ago, at Université Laval. Early on, I started teaching pre-service courses for elementary and secondary school teachers, and I attended annual meetings of the Canadian Mathematics Education Study Group. These early experiences led me to reflect on the type of mathematical experiences pre-service teachers (K-12) can benefit from. While I have learnt a great deal with colleagues in mathematics and mathematics education in different settings, as well as from some reading and my own experience, there is still much I wonder about.

Over the years, I also had the chance to work with and get to know some fantastic school consultants and in-service teachers (through my involvement with various associations and projects). Gradually, I saw that there was a space where I could contribute: in this space, my aim is specifically to support in-service teachers. Over the years, this part of my work grew in importance and some of the material we developed is accessible on the "La magie des maths" website. (Some activities are available in English.)

The talk will be about teaching strategies and outreach, as I try to convey an interesting mix of activities and intentions, both for in-service and pre-service teachers. I hope it will be the beginning of many conversations.

DO YOU KNOW WHY WE HAVE SUCH *AWESOME* SPEAKERS?

It's all due to the hard work of our Program Chair (Brad Emmons), the members of the Program Committee., and our local organizers. These folks work hard to make sure we offer interesting programming with a variety of perspectives and topics, and they are already hard at work to organize the speakers at *next year*'s pair of meetings!

And YOU can be the next Program Chair — come to the Business Meeting and nominate yourself for the job!

Section Notes and Announcements

Spring 2023

MAA Seaway Section Elections

Section elections will be held at the Business Meeting on Saturday, May 6. All members are encouraged to attend and vote. This spring the positions up for election are **Secretary**, **Program Chair**, **Chair-Elect** and **At-Large Member**. Nominations coming from the Nominations Committee include: Brad Emmons (current Program Chair) is nominated for Chair-Elect and Elizabeth Wilcox (current At-Large Member) is nominated for At-Large Member. Additional nominations can be made on the floor during the Business Meeting — feel free to nominate yourself, or a colleague (with their permission, of course!) for any of the positions!

MAA Seaway Section Executive Committee

The term for our Program Chair ends at the Spring 2023 meeting and we have no nomination for the next Program Chair. If you, are organized, enjoy working with others, and want to see the Seaway Section thrive like it did before the pandemic, then come to the Business Meeting and nominate yourself! **We need you!**

SUNY Broome

Here at SUNY Broome, the Mathematics Department is nearing the end of the self-study portion of our first-ever program review for our Mathematics A.S. program. Also, Sara Rose is piloting a corequisite model for our Applied Algebra & Trigonometry course. *(Submitted by Timmy Bremer)*

Spring 2023: The Invited Speaker Bios

Anthony Bonato is an expert in graph theory and network science. He authored over 140 papers with over 120 co-authors. He is the author of five books, with the most recent one *An Invitation to Pursuit-Evasion Games and Graph Theory* published by the AMS in 2022. Bonato is currently a full Professor in the Department of Mathematics at Toronto Metropolitan University. Bonato has a passion for writing and communicating mathematics, and his words have been published in *Salon*, *The Conversation*, and *Maclean's*.

Penny Haxell received her Ph.D. in pure mathematics from the University of Cambridge in 1993. In the same year, she joined the Department of Combinatorics and Optimization at the University of Waterloo, becoming a full professor in 2004. She spent one year as a visiting professor at Bell Laboratories in Murray Hill, NJ in 2002. Her research interests focus on extremal combinatorics and graph theory. She is a recipient of the Krieger-Nelson Prize of the Canadian Mathematical Society for outstanding research by a female mathematician (2006), a Friedrich Wilhelm Bessel Research Award of the Alexander von Humboldt Foundation (2011), and the Faculty of Mathematics Award for Distinction in Teaching of the University of Waterloo (2014).

Frédéric Gourdeau completed his Ph.D. in functional analysis at the University of Cambridge in 1989 and is full professor at the Department of Mathematics and Statistics of Université Laval, which he chaired from 2010 to 2018. In 2014, he was awarded the Adrien Pouliot Award of the CMS in recognition of his outstanding contributions to mathematics education in Canada. He is also a recipient of the 3M National Teaching Fellowship (2006) and of the Excellence in Teaching Award from the CMS (2005). Founder of the Association québécoise des jeux mathématiques (AQJM), which provides mathematics activities that support elementary and secondary school teachers, he regularly gives talks or leads sessions for teachers. He is a keen hiker, a happy grandfather, and enjoys playing board games and team sports.

Karen Lange is the Theresa Mall Mullarkey Associate Professor of mathematics at Wellesley College. In her research, she studies the "balance scales" used to calibrate computational information and applies these tools to measure the difficulty of algebraic problems. She's also passionate about undergraduate mathematics education and teaches a seminar on writing for the public about mathematics. She earned her undergraduate degree at Swarthmore College and her doctoral degree at the University of Chicago, and she completed an NSF Postdoctoral Fellowship at the University of Notre Dame.

SPRING 2023: MEETING SPECIAL EVENTS

Refer to the online meeting program for locations and updates.

FRIDAY

Friday Workshop — "Math Teaching Colloquium"

Facilitated by: Diana Skrzydlo (University of Waterloo)
3:00 pm - 5:00 pm
Registration fee: $0

Abstract: Many math faculty colleagues have attended teaching conferences throughout the 2022-2023 academic year, and this is your chance to hear the highlights of what they learned. There will be several short presentations focused on the most practical, actionable advice that you can use in your own teaching, and a roundtable discussion for you to share what you have learned as well.

Banquet + Lecture: 6 pm - 8:30 pm
Math Game Night with Host, Ryan Gantner: 8:45 pm - ??

SATURDAY

Leadership in Mathematical Sciences Workshop: Budgetary Constraints and Solutions in Math Departments

Organizer: Mihail Barbosu (RIT)
12:30 pm - 1:30 pm

Every semester Mihail Barbosu leads a workshop on effective leadership in the mathematical community. This meeting's workshop will highlight approaches for managing various budgetary constraints with which a chair or department leader must contend. Recent chairpersons, former chairpersons, and especially anyone who has considered the path to becoming a department chair are all welcome to participate!

Listening Session with your Section Chair and Program Chair

Facilitated by: Brad Emmons (Utica University) and Leah Bridgers (SUNY Oneonta)
1:30 pm - 2:20 pm

Sit down with the Chair of the Seaway Section to discuss initiatives for the future. Do you have suggestions for future meetings? Any requests for workshops, mini-courses, or other fun events? Suggestions or thoughts about charity fundraisers? Do you want to get involved with the section? Maybe you just want to talk about mathematics? Our section chair, Dr. Leah Bridgers (SUNY Oneonta) and Program Chair, Dr. Brad Emmons (Utica University) are ready to listen!

UNYIBL/ Workshop : An Introduction to IBL Methods in Undergraduate Math Teaching

Coordinator: Stan Yoshinobu (University of Toronto)
4:00 pm - 6:00 pm

In this hands-on workshop, attendees will work together, share, and discuss inquiry-based learning (IBL) techniques and approaches to teaching undergraduate math classes. There will be an emphasis on large or large-ish classes; however, attendees teaching small courses are welcome, as many of the ideas discussed apply broadly and MAA Seaway has members with experience teaching IBL in small class sizes. We will discuss sample course structures, "IBLizing" standard textbook lessons with IBL handouts, creating inclusive class environments, and supporting new or new-ish instructors, such as graduate student instructors and early-career faculty. All experience levels are welcome to join the discussion.

Shikaku! *by Johnnie Hong*

			3				5		
					4	5			4
								2	
								2	
9		6	8						
	6		12				2	4	4
						5			
							3		
2			2		2			4	

This one is a little different! Your job is to *divide up* the grid into rectangles in such a way that each rectangle contains exactly one numbered square and that number equals the area of the rectangle. You'll be partitioning the grid, not filling values into the squares. You can see more explanations and examples online for this, too, and a printable version of the instructions and puzzle are at the end of the newsletter.

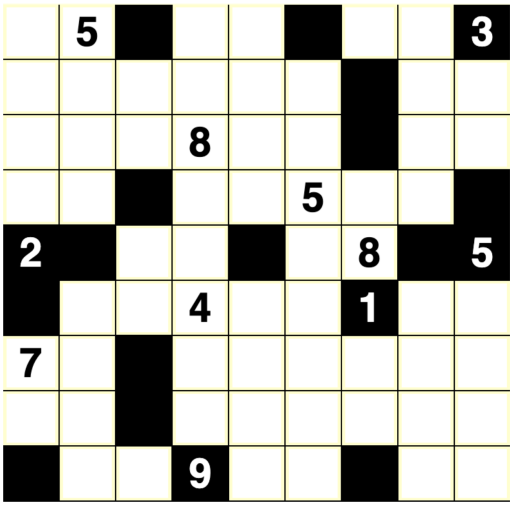
HAVE FUN!

SOLUTIONS ARE AVAILABLE, TOO!

Just hop over to the end of the newsletter.

Str8ts *by Johnnie Hong*

Have you played str8ts yet? Rows and columns are divided into 'compartments' of white squares; compartment squares need to be filled in with single numbers. These must complete a 'straight,' a set of numbers with no gaps, such as $\{6, 8, 7\}$ or $\{3, 2, 4, 5\}$. No number can repeat in a row or column. Clues in black cells remove that number as an option in that row and column, and are not part of any straight. More explanations and examples are available online, and there's a printable version of the instructions and puzzle at the end of the newsletter.



A Note from the Section Chair

Leah Bridgers, State University of New York at Oneonta

Like people everywhere, members of the Seaway Section have been affected by the changes brought by the COVID pandemic. As things shift into a new normal, we are all making decisions about how to spend our time and energy. One thing that is important to me is to see the Seaway Section continue in the vibrant form that I first encountered as a new faculty member. I have valued the conversations I have had with so many of you at our meetings. I have learned from the wonderful speakers and workshops. I hope to continue to be able to do these things.

Right now, for these things to be able to happen, we need the excitement and energy of our members. There are many ways that you can be involved in the section. The first is to attend our meetings. Come to Waterloo! Give a talk! Interact with colleagues! If you're looking for more, talk to me about joining a committee. We are always looking for people to work on committees. It's a great way to get to know people and contribute to the section.

If you want to know more about what's happening or want to suggest ideas for the future, please come talk with Brad Emmons and me during the listening session on Saturday afternoon in Waterloo. Most importantly, I encourage you to find ways to be involved in the Seaway Section.

I hope to see many of you in Waterloo!

Leah Bridgers (State University of New York at Oneonta), Section Chair

RECURRING PROBLEMS: A story of laziness and a love of abstract thinking.

Elizabeth Wilcox (State University of New York at Oswego)

Last spring I was teaching two sections of a computer science class in discrete structures, and desperately needed a plethora of problems to link recursion, recurrence relations, and induction. I needed the problems to be comparable in difficulty and easy to manufacture, so I would have multiple versions for exams and homeworks across the two sections.

What began as a search for nice recurrence relations, ones where there was a closed formula and a simple recursive Java method for implementing the relation, became a frustrating mess! All I wanted was to have four versions of a similar question, easily available and at the ready, but the internet was not helping and my "lazy" approach of just playing with recurrence relations was getting me nowhere fast. And then I stopped, and used my brain. Here's the result.

Problem. Let $r(n)$ be the piecewise-defined function below and let $p(n) = (\alpha + \gamma)\beta^n - \gamma$.

$$r(n) = \begin{cases} \alpha & \text{if } n = 0 \\ \beta r(n-1) + \gamma(\beta - 1) & \text{if } n > 0 \end{cases}$$

1. Write out the first five terms of $r(n)$, namely $r(0)$, $r(1)$, $r(2)$, $r(3)$, and $r(4)$.
2. Write out the first five terms of $p(n)$.
3. Write a recursive Java method that calculates $r(n)$, when a non-negative integer n is input.
4. Prove that $r(n) = p(n)$ for all $n \in \mathbb{N}$.

Ok, I admit it: the Greek letters are a bit much. Here's an example just comparing the recurrence relation $r(n)$ and the closed formula $p(n)$.

Example 1. If $r(n) = \begin{cases} 1 & \text{if } n = 0 \\ 3r(n-1) + 2 & \text{if } n > 0 \end{cases}$ then $\alpha = 1$, $\beta = 3$, and $\gamma = 1$. Note that the last variable, γ, is the number of multiples of $\beta - 1$ added onto the recurrence term; here $\beta - 1 = 3 - 1 = 2$, and so we are adding on $\gamma = 1$ multiple of 2. You can check that the sequence created is as follows.

n	0	1	2	3	
$r(n)$	1	5	17	53	$\cdots$

Also, $p(n) = (1+1)3^n - 1 = 2(3^n) - 1$. You can check that this formula produces the same sequence as defined by the recurrence relation.

As always, I want to know "Why?" and in this case, it's pretty reasonable to see what's happening.

Theorem. Let $r(n)$ be defined as below. The closed formula for the sequence $r(n)$ is given by $p(n) = (\alpha + \gamma)\beta^n - \gamma$.

$$r(n) = \begin{cases} \alpha & \text{if } n = 0 \\ \beta r(n-1) + \gamma(\beta - 1) & \text{if } n > 0 \end{cases}$$

Proof. Let's start by making the table of values in the sequence. This table will be unattractive, that can't be helped, but we can simplify the algebra a little bit by replacing $\gamma(\beta - 1)$ by x. Now, $r(n) = \beta r(n-1) + x$ whenever $n > 0$.

n	$r(n)$
0	α
1	$\beta\alpha + x$
2	$\beta(\beta\alpha + x) + x = \beta^2\alpha + \beta x + x$
3	$\beta(\beta^2\alpha + \beta x + x) + x = \beta^3\alpha + \beta^2 x + \beta x + x$
$\vdots$	$\vdots$
n	$\beta^n\alpha + \beta^{n-1}x + \beta^{n-2}x + \cdots + \beta x + x$

Substitution makes it pretty clear that $r(n) = \beta^n\alpha + x(\beta^{n-1} + \beta^{n-2} + \cdots + \beta + 1)$ for $n > 1$, but that formula also works when $n = 0$ to give $r(0) = \alpha$. The second through final terms in the expression create a finite geometric sum that can be replaced by $\frac{\beta^n - 1}{\beta - 1}$, so then

$$r(n) = \beta^n\alpha + x\left(\frac{\beta^n - 1}{\beta - 1}\right).$$

Don't forget that $x = \gamma(\beta - 1)$, though, and so now $r(n) = \beta^n\alpha + \gamma(\beta^n - 1)$. A bit of rearrangement and we have $r(n) = \beta^n(\alpha + \gamma) - \gamma$, as claimed.

Oh, shoot! Hold that QED symbol! What if $\beta = 1$? The geometric series formula falls apart! But, in this case, $\beta r(n-1) + \gamma(\beta - 1) = r(n-1)$, so that means our recurrence relation r is defined as:

$$r(n) = \begin{cases} \alpha & \text{if } n = 0 \\ r(n-1) & \text{if } n > 0 \end{cases} = \alpha.$$

And that's not a great sequence, is it? So, for $\beta = 1$, we have $r(n) = \alpha$ for all n. The direct formula $p(n) = (\alpha+\gamma)\beta^n - \gamma = (\alpha+\gamma) - \gamma = \alpha$, and so everything is trivially true!

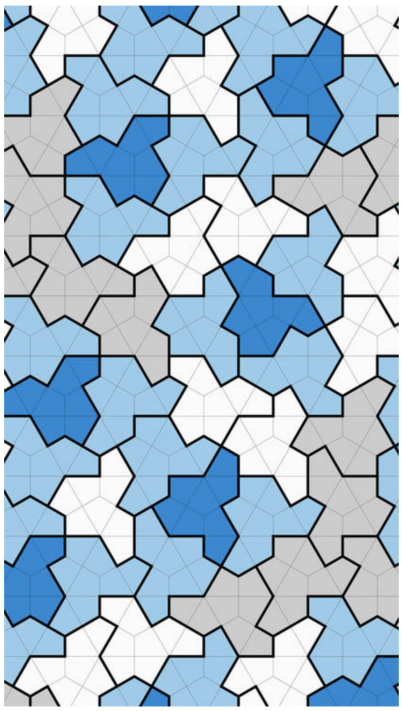
■

So now that we know the closed formula always works (and we know that it's smart to choose $\beta \neq 1$), I also want to make sure that the inductive step of the last part of the problem will always be comparable – the inductive step tends to be the hardest part for students and it really isn't fair to give one version of an exam with a significantly easier problem.

General Induction Step (Recall $\beta \neq 1$). Suppose there is some $k \in \mathbb{N}$ such that $r(k) = p(k)$. Then:

$$\begin{aligned} r(k+1) &= \beta r(k) + \gamma(\beta - 1) \\ &= \beta p(k) + \gamma(\beta - 1) \\ &= \beta\left((\alpha+\gamma)\beta^k - \gamma\right) + \gamma(\beta - 1) \\ &= (\alpha+\gamma)\beta^{k+1} - \gamma\beta + \gamma(\beta - 1) \\ &= (\alpha+\gamma)\beta^{k+1} - \gamma\beta + \gamma\beta - \gamma \\ &= (\alpha+\gamma)\beta^{k+1} - \gamma \\ &= p(k+1). \end{aligned}$$

So the algebra is pretty neat and tidy with variables, and with numbers in place it turns out to be quite straightforward. And, my problem of finding comparable problems is solved!



HAVE YOU HEARD THE NEWS?

David Smith, Craig S. Kaplan, Joseph Myers, and Chaim Goodman-Strauss have proven that the plane can be aperiodically tiled with a single tile, called *the hat*. The picture at left is the "canonical" image of *the hat* that you can see all over the *New York Times*, Quanta, *Scientific American*, . . . and also on the news site of the University of Waterloo's Math Department!

Why is this cool? If you're not a tiling enthusiast, you may not know that until this discovery, aperiodic tilings required two more shapes of tiles. Check out Penrose tilings for some famous examples of such tilings.

Why is there something about it at the Spring 2023 MAA Section Meeting host website? Because Craig S. Kaplan is at the University of Waterloo!

WEAR *your* HAT TO THE MEETING, YO!

Reports & Minutes Since Fall 2022

1. Treasurer's Report – Spring 2023
   Gordon Craig, Seaway Section Treasurer

   Under normal circumstances, I would have presented a 2023 budget for approval at the Fall business meeting at Siena, but I chose to wait until the Spring meeting, since we didn't know what to expect in terms of the results of our first post-pandemic meeting. (A provisional budget will be presented for approval at the Spring meeting in Waterloo.)

   As it turned out, we lost a bit over $1000 on the Siena meeting. Half of this was due to a mistake on my part; I authorized the Section to pay for breakfast on Saturday at the meeting, which is a charge that is normally borne by the host institution. We're still in very good health financially, but with the drop in our subvention (the annual payment we get from the central MAA), we can't afford to lose that much money on every meeting. (The financial statements for 2021 are below.)

   On the topic of the subvention, I'm in touch with the MAA central office in DC, and I hope to share an explanation of why it's so much lower than pre-pandemic at the business meeting at Waterloo. Other projects for the treasury for the near-future include formalizing our spending procedures and enhancing oversight of the bank account by other members of the Executive Committee.

   Respectfully submitted,
   Gordon Craig (Glendon College [York University]), Seaway Section Treasurer

The Balance Sheet

		Revenues	Expenses	2021	Budgeted	
Beginning of Year Balance	$13,528.82			$13,401.76	$13,528.82	
Revenues						
MAA Subvention		$781.00		$895.00	$781.00	
Workshop/Meeting Registration Fees		$4,503.96		$50.05	$5,500.00	
Total	$5,284.96			$945.05	$6,281.00	
Expenses						
Honoraria			$200.00	$300.00	$500.00	
Speakers Expenses			$881.48	$13.99	$1,000.00	
Meeting Expenses			$4,485.50	$ —	$5,000.00	
Awards			$50		$ —	
Office			$166.89	$504.00	$400.00	
Distinguished Lecturer Program		$ —		$500.00		
Travel Support for Section Rep		$ —		$250.00		
Total	$5,783.87			$817.99	$7,650.00	
Net	-$498.91			$127.06	-$1,369.00	
End of Year Balance	$13,029.91			$13,528.82	$12,159.82	

All amounts shown are in USD.

2. THE EXECUTIVE & EXTENDED EXECUTIVE COMMITTEE MEETING – October 28, 2022

In attendance: Cesar Aguilar, Kieko Dow, Brad Emmons, Leah Bridgers (Chair), Ryan Gantner, Gordon Craig, Jane Cushman (minute taker), Elizabeth Wilcox, Jeff Johannes

Minutes from Spring 2022 — not sure if they exist, so will hold off approving them.

Treasurer's Report (Gordon Craig):
- He would like to propose a budget in Fall and submit the update at the Spring meeting.
- Subvention is down by 50% (memberships and institutional memberships).
- Can lose money from this meeting: 107 total attendees (34 undergraduates, 7 graduates, 57 faculty and 8 retirees).
- There is a cushion in the budget. $17,649.31 is the balance (we had approximately $14,000 before registration).
- We need to set up a Google phone number for 2-Factor Authentication.
- We need a refund policy: cut off dates and fee charge.
- We ask registrants if they are MAA members but charge the same amount from members and non-members; might want to charge more for non-members.
- The minimum number for the banquet tonight was 70, but have 57 paid attendees.

Program Chair's Report (Brad Emmons):
- There is a lot of participation: 20 contributed talks, 6 student talks, 24 attendees for Friday afternoon session and 39 for the IBL/Project NExT workshop.
- The University of Waterloo will host the Section meeting May 5th and 6th — Diana Skrzydlo is the local host.
- If there are any programming ideas, let Brad know.
- We need a host for Spring 24 – will make an announcement and email Bob Rogers.

Chair's Report (Leah Bridger):
- We need a Chair for the Randolph Lecture Committee; Blair has stepped down to be Secretary.

Student Program (Keiko Dow):
- Ryan Gantner is hosting the Game Night and there is a career panel on Saturday.

Randolph Lecture Committee (Blair Madore, email):
- Xiao Xiao (Utica College) is giving the Randolph Lecture tomorrow.

Gehman Lecture Committee (Darren Narayan, email):
- Nothing to report – will look for a speaker from the University of Toronto.

Education Policy Committee (Jane Cushman):
- AP Pre-Calculus coming in 2023-2024. Should begin to see students with that credit in Fall 2024.

Distinguished Teaching Award Committee (Keary Howard):
- Send nominations.

Nominations Committee (Gary Towsley, email):
- Elections happen in Spring; which positions are needed?

Seaway NExT (Dan Vischer):
- Co-sponsoring the discussion and workshop by Alex Rennet.
- There are three members on the committee.

Distinguished Lecturer Committee (David Brown):
- The program is on hold due to the pandemic.
- An announcement is needed for a lecturer nomination.

Registration Committee (Ryan Gantner):
- Credit card payments are accepted through a centralized payment and registration system.
- The website is mobile friendly.

- The committee proposed a Data Governance Policy, to clarify who owns the data that the section collects and who is responsible for it. The policy states that the Secretary of the section is primarily in charge. The policy was adopted by the Executive Commitee; all members present approved.
- The committee proposed disbanding as its initial charge of exploring options for a streamlined mobile-friendly registration system that accepts credit cards has now been fulfilled. Leah, the Chair, moved to disband the committee.

Seaway Current (Elizabeth Wilcox):
- The most recent Current has been posted to the website, along with all past editions.

MAA Seaway Section Representative (Jeff Johannes):
- National will be ready to take over registration in Spring 2023, for all section meetings, if desired.

By-Laws Report (Leah Bridgers):
- Election struction needs to be changed since we are out of compliance.
- Elizabeth Wilcox moved that Article 3 Section 4 be suspended by striking the even/odd year clause until we can amend the Article through National. Gordon Craig seconded and all present approved.

Meeting adjourned at 4:46 pm.

Respectfully submitted,
Jane Cushman (Buffalo State College) (On Behalf of the Secretary, Blair Madore (SUNY Potsdam))

Str8ts Puzzle

How to Play:

Rows and columns are divided into compartments of white squares. Look at the diagram on the right which has two 'straights' filled in and highlighted. The black cells separate the compartments. Compartments can be both vertical and horizontal.

Squares in compartments need to be filled in with single numbers. These must complete a 'straight'. A straight is a set of numbers with no gaps and in any order, such as [6,8,7] or [3,2,4,5], as shown on the diagram.

No single number can repeat in any row or column - same rule as Sudoku.

Clues in black cells remove that number as an option in that row and column and are not part of any straight.

Example Game With Solution

Board

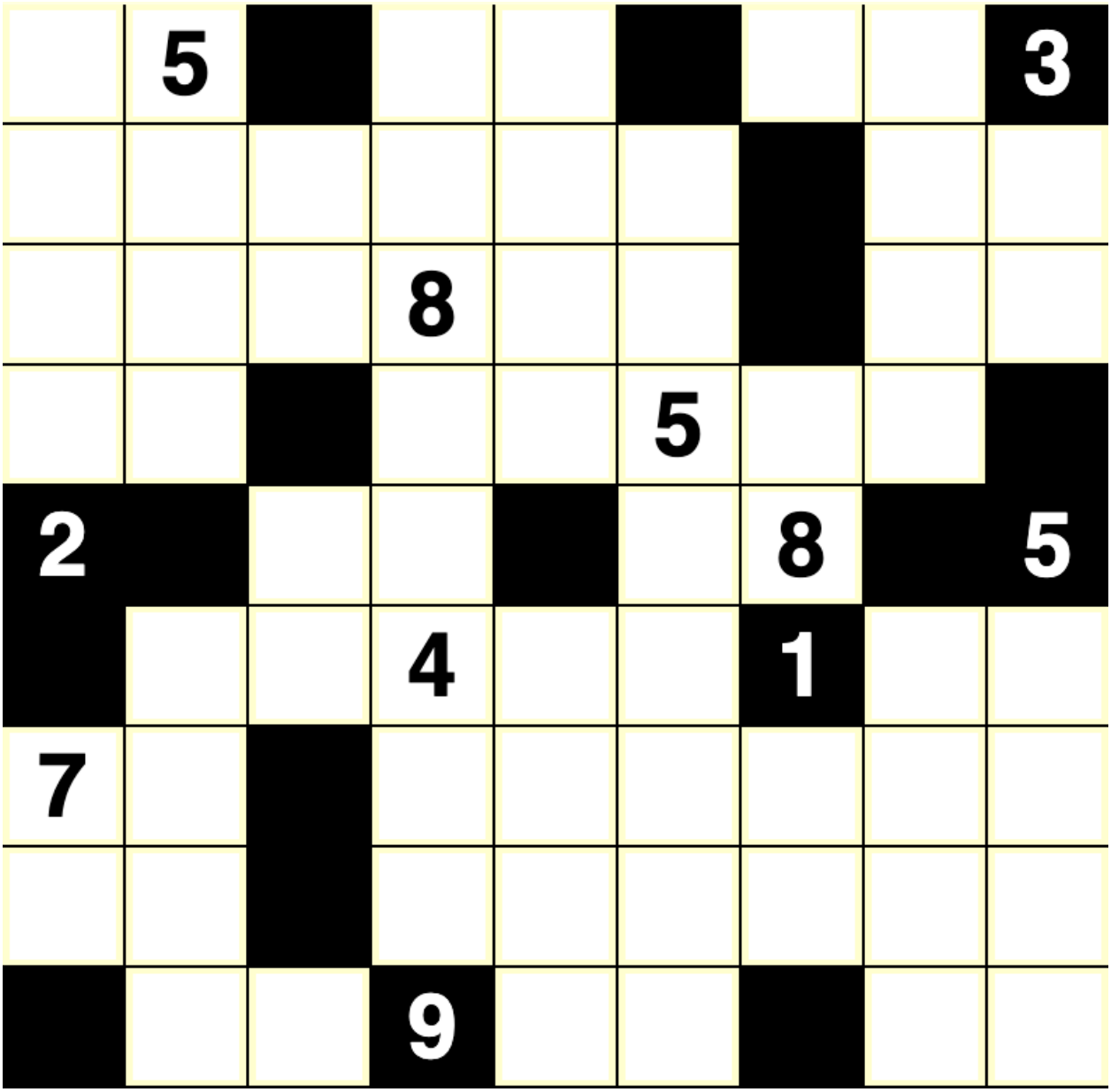
■			8			■		3
■	1					■		
		4	9			■		
3			5					■
5				■		8		■
■						9		
	5	■			■	3	8	7
		■	1	2			■	6
	6	■	4					■

Solution

■	9	7	8	5	6	■	4	3
■	1	6	7	8	5	■	3	4
2	3	4	9	7	8	■	6	5
3	8	1	5	6	4	7	2	■
5	4	2	3	■	9	8	7	■
■	2	3	6	4	7	9	5	8
6	5	■	2	1	■	3	8	7
8	7	■	1	2	3	4	■	6
7	6	■	4	3	2	5	1	■

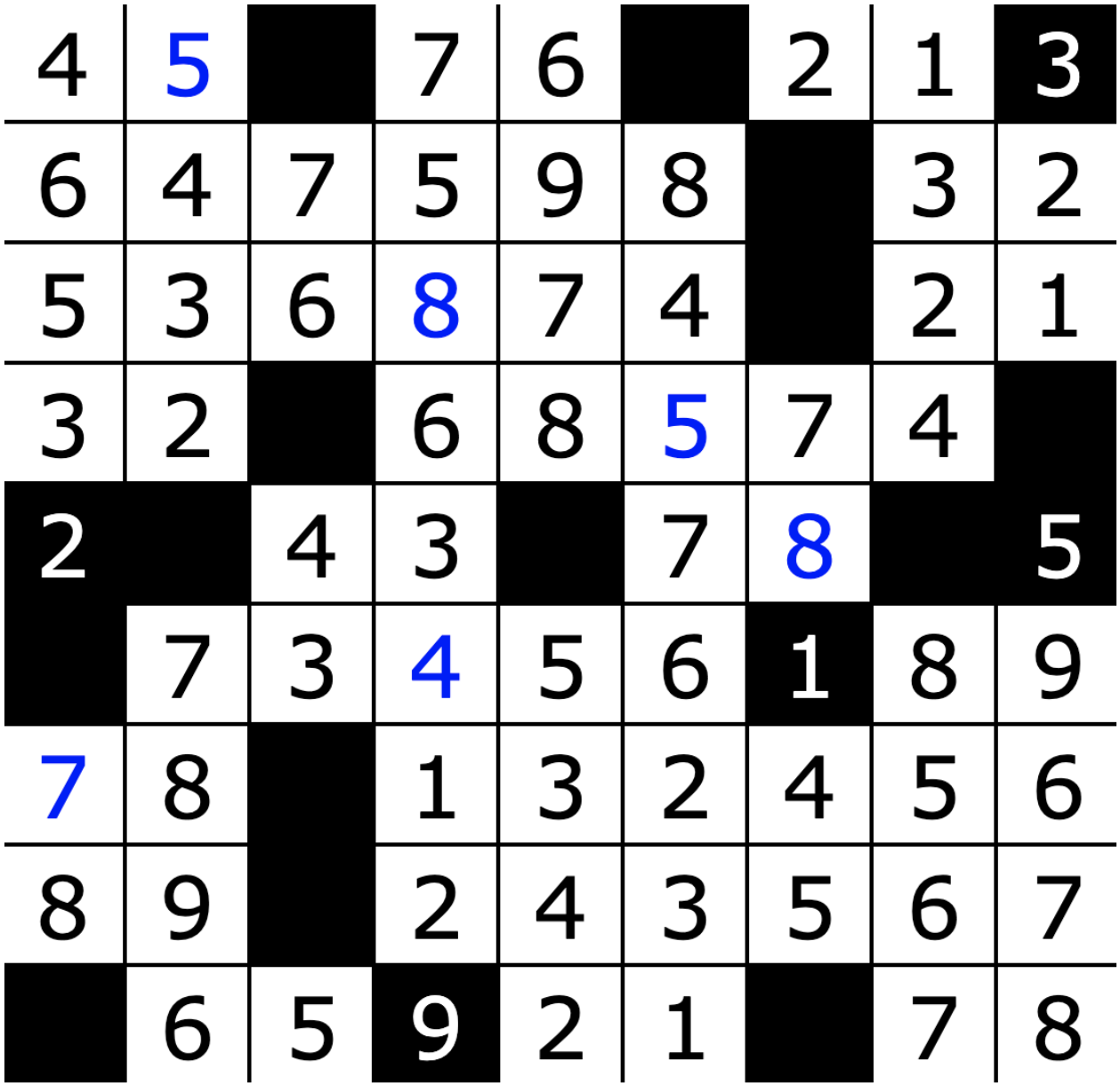
Created By: Johnnie Hong

Try one yourself below! You can find more and more explanations at https://www.str8ts.com/Str8ts.html



The solution is on the following page...

Solution



Created By: Johnnie Hong

Shikaku Puzzle

8/3 x 4/6

What is Shikaku Puzzle?

Shikaku (also known as Rectangles) is a logic puzzle with simple rules and challenging solutions.

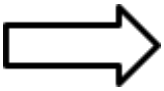
Rules:

The rules are simple...You have to divide the grid into rectangular and square pieces such that each piece contains exactly one number, and that number represents the area of the rectangle

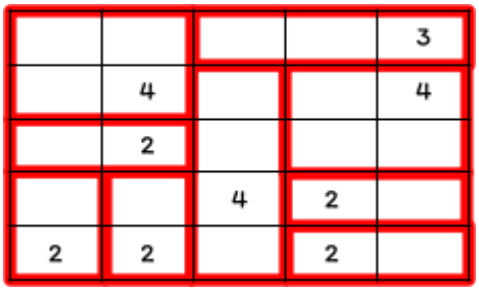
Example of a 5 x 5 board

Original

				3
	4			4
	2			
		4	2	
2	2		2	



Solution



NOW YOU TRY!

There's a 10 x 10 board on the following page for you to try out!

You can find more boards at https://www.puzzle-shikaku.com/

Created By: Johnnie Hong

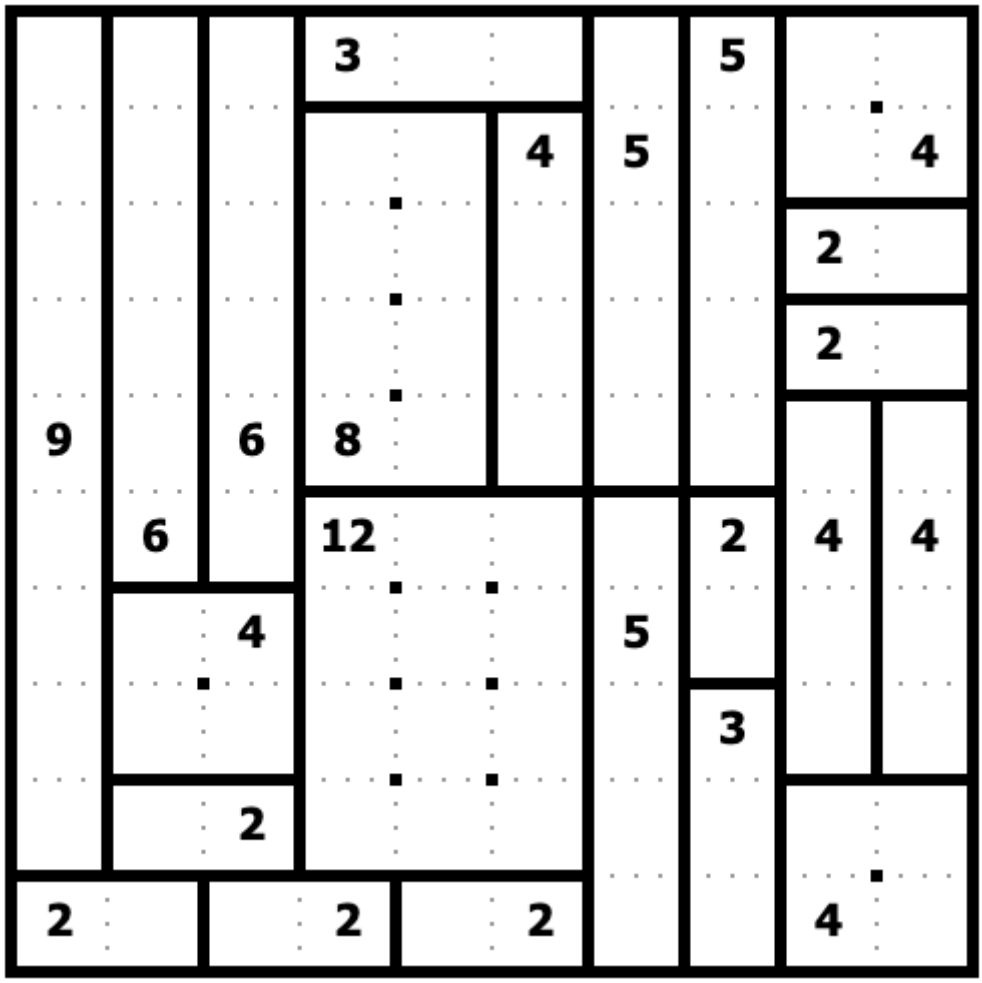
10 x 10 board

			3				5		
					4	5			4
								2	
								2	
9		6	8						
	6		12				2	4	4
						5			
							3		
2			2		2			4	

The solution is on the following page

Created By: Johnnie Hong

10 by 10 Solution



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