



# CMS NOTES de la SMC

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# Donations and Gift Planning

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## Cover Article

**David Pike** (Memorial University), *President, CMS*

Let me begin with words that are painful to write. In 2019 my father died tragically, and in 2022 my mother passed away from the combined effects of dementia and COVID. These past few years have been marked by crisis and trauma for me and my family. Honestly, it has been a struggle for us to cope with it all.

I have carried the additional burden of being executor for each of my parents, and in this capacity I have learned a great deal about probate, estates, and the tax implications that accompany death. I want to share some of what I have learned in this regard, and in so doing I hope to encourage people to include the CMS in their estate and gift planning. Note, however, that I am neither a lawyer nor a financial advisor; hence what follows should not be taken as professional advice.

One of the first things that I learned after the death of my father is that joint assets, such as joint chequing accounts or jointly owned real estate, easily pass through to the surviving joint owner(s) when a person dies. Other assets are treated differently and might or might not be included within a person's estate, depending on various factors.

Many of us have personal investments in the form of RRSP, RRIF and TFSA accounts. Financial institutions allow clients to designate beneficiaries for these types of "registered" accounts, not unlike how we can also specify beneficiaries for life insurance policies that many of us also have (often via insurance policies provided by our employers). We are asked to name beneficiaries when we initially open such accounts or when we are initially enrolled in a life insurance policy, although we can update our designations at any time. As personal circumstances change, it is advisable to make updates. For instance, when I initially opened some of my accounts many years ago, I likely named my parents as my beneficiaries. If I were to now update my beneficiary designations so that 99% of my TFSA is to go to my siblings and 1% to the CMS, then upon my death the bank that holds my TFSA will distribute its holdings according to these new instructions. When a beneficiary is a surviving spouse, the bank is able to transfer the inherited money directly to a registered account of the same kind as the source account. This is especially helpful for RRSP and RRIF accounts, for otherwise their balances would need to be counted as taxable income earned by the deceased person immediately prior to their death.

Another feature of designating beneficiaries for life insurance and registered accounts is that the corresponding money avoids being considered part of the deceased person's estate and therefore it is not subjected to provincial probate fees.

However, in the absence of a surviving beneficiary, then the money would flow into the estate and be subjected to probate fees. Probate fees are akin to a tax that is calculated as a percentage of the value of a person's estate. These fees are charged when somebody applies to be appointed as executor or trustee of an estate. Moreover, settling of an estate can be a lengthy process, sometimes taking years, and during part of this time the assets within the estate may be frozen by the associated financial institutions. By designating beneficiaries for registered accounts, not only do these accounts escape the probate fee, but their funds can be distributed sooner than funds that are part of a person's estate.

In the event that a person has a will, it generally specifies what their executor is to do with their estate. It is common practice for people to make provision for legacies within their wills. Note that bequests made to registered charities are considered to be charitable donations made by the person's estate, which is a recent change in taxation policy. For deaths prior to 2016, the CRA deemed that gifts described in a person's will were given by the individual immediately before their death. For deaths since 2016, willed bequests are treated as having been given by the person's estate. These donations are therefore reported on the estate's income tax return, with provision that the corresponding tax credit can then be applied to the return that was previously led for the person's year of death (i.e., the "final return" for the individual). Yes, there are two separate income tax returns involved here: one for the person up until their death, and one for the estate that came into being at the moment of their death. This may sound convoluted, but my point is that donations made within a will can help to offset income that must be reported in the person's final income tax return, which is important because a person's final tax return can include a lot of income that was not anticipated.

For instance, I've already mentioned that RRSP and RRIF accounts that are not transferred to a surviving spouse (by way of having previously told the bank that the spouse is the designated beneficiary) are redeemed in full and treated entirely as the deferred income they were set up to be. However, the original intent was likely to spread out the deferred income over several years, rather than to receive it all at once.

Additionally, when a person dies, the CRA generally considers that they have disposed of all of their capital property immediately before their death. This has the potential to trigger substantial capital gains. Some exemptions exist for stocks and securities that are donated to charity. There are also special exemptions for a person's home, but any other real estate they had, and that was not jointly owned, must be assessed for the purpose of capital gains, even if the property is bequeathed to family members without being sold.

Given that these several sources of actual and deemed income can generate a significant spike in taxable income for a person's final tax return, quite possibly limiting them into a higher tax bracket, having charitable deductions that are planned to coincide with the income can help to reduce the tax liability. On that note, I encourage each of you to examine your own circumstances, think about what types of legacy and philanthropy you would like to be remembered for, and to formalise your wishes within a will and through beneficiary designations on your registered bank accounts, etc.

Preparing a will is also helpful to whomever it is that must administer your estate (as executor for each of my parents, I can attest to this from personal experience). If you have not yet prepared a will, I strongly recommend that you prepare one. If you do have a will in place already, and you would like to make a new bequest to the CMS or other recipient, then you have two options. One is to draft a completely new will. The other is to prepare a codicil, which is essentially an addendum to an existing will (for an example codicil, [click here](#)).

At this point I would like to remind everyone that the CMS is a registered charity, and as such it depends on donations in order to be able to pursue its mission. I would particularly like to call on CMS members to join me in including the society in each of our legacy plans by making provision for a bequest of some nature to be given towards the society. Among the many worthy activities that are supported by donations are specialty math camps that give youth rewarding experiences and exposure to mathematics, training camps for students who are preparing to represent Canada at the International Mathematical Olympiad and the European Girls Mathematical Olympiad, competitions that we organise each year for elementary and secondary level students, the annual Canadian Undergraduate Mathematics Conference, as well as activities that take place in conjunction with our semi-annual meetings. Of course there are also operational expenses as well as costs associated with maintaining the heritage building that we purchased in 2022 as a new home for our Ottawa office.

My hope is that we can collectively develop a culture of generous gift giving, whereby we can take personal comfort in knowing that we are contributing towards the continued support and celebration of mathematics through our final directives. That said, annual giving to the CMS while we're still alive is also very much appreciated!

The Registered Charity Number for the Canadian Mathematical Society is 118833979 RR 0001. For information on how to donate, please go to <https://cms.math.ca/about-the-cms/donations/>.

# Syllabus Silliness

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Editorial

**Robert Dawson** *Editor, Notes*

There is a fable about an emperor whose wife died. So heartbroken was he that he ordered the grandest tomb for her that he could imagine, a monument to outshine the Taj Mahal in its opulence of marble, chalcedony, and gold. For years the empress's body lay in the plain black coffin dictated by custom, while the masons and gilders toiled away. The building was not completed until after the emperor's death, and it was every bit as grand as the architects had envisioned. The only thing marring its splendor was the black coffin: so, the tale runs, the new emperor had the coffin removed.

For some time, one of my departmental jobs has been evaluating other universities' courses to see how they correspond to our own, so that the registrar's office can assess what, if any, transfer credit to offer. When I started, this was usually done using the calendar entry from the other university, either via an electronic link or a photocopy that somebody had submitted by mail. This was the official course description, and by reading it we knew about the course what the student knew on the first day of class. Once in a very long time, the entry was too brief or too vague ("some topics of the instructor's choice in modern graph theory") and we had to ask for more information. Often it was enough to find out what textbook had been used.

These days, it seems, every term's offering of every course has a Syllabus. According to the dictionary, this is a listing of the topics covered in the course. (We can't always do that in the calendar anymore, because there's a tight word limit on course descriptions. One might have thought that one advantage of online calendars over the paper calendars of yore would be that any department could use as many words as it needed to describe a course, but apparently this is not so.) To this, however, instructors everywhere are urged (or required) to add large amounts of other information.

First, there's the stuff we used to write on the board at the beginning of the first lecture: name, course name, course number, office number, phone number, email, textbook, and office hours. Fair enough. Including the grading scheme and midterm date seems reasonable. But at many universities this is just the beginning. There are lists of learning objectives: not a bad thing when they stick to the mathematics, but when (as happens in some cases) they stray into professional and spiritual development, I feel the document is getting far from being a "syllabus." I have seen—I kid you not—syllabi claiming (implausibly in each case) that a particular section of a math course will support students' development in Christianity, Islam, or Marxist-Leninist thinking.



Then there are the university policies on everything from harassment to snow days and cheating. Don't get me wrong—these policies are all important, important enough that I hope they're being made available to the students somewhere where they might think to look for them. If instructors are circulating this information in their syllabi so that the administration doesn't have the obligation to do so directly, this is cause for concern. The instructors do not set these policies; they do not vary from course to course; and there's surely a better way to inform people.

As a result, these documents are often several pages long, with little in them fitting the usual meaning of "syllabus." Yet they've become the accepted medium of communication between universities with regard to course content. Last month I was trying to help a frantic student who was applying for a program elsewhere. They hadn't kept and led the "syllabus" from a course that they'd taken here several years ago; the instructor who wrote that particular syllabus was a part-timer, no longer teaching for us; and the calendar description of the course, though clear and reasonably complete, was unacceptable to the other school because it lacked the magic S-word. I think we found a copy on file.

This reached its height of absurdity recently when I was asked to assess transfer equivalency for a course from a very fine Canadian university. The syllabus (for so it called itself) was eight pages long, long enough to have its own table of contents, and covered everything from textbook to masking policy. The one thing missing was the content of the course, for which the reader was referred to a university web page—to which I, as an outsider, was denied access. The empress had clearly left the building.

And so, of course, I got the information that I needed from their online calendar.

# When Organizational Histories, Anniversaries, and Women in STEM Intersect

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CSHPM Notes

**Amy Ackerberg-Hastings** (MAA Convergence)

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*CSHPM Notes bring scholarly work on the history and philosophy of mathematics to the broader mathematics community. Authors are members of the Canadian Society for History and Philosophy of Mathematics (CSHPM). Comments and suggestions are welcome, they may be directed to either of the column's co-editors:*

**Amy Ackerberg-Hastings**, Independent Scholar (aackerbe@verizon.net)

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In general, organizational and corporate histories are not well-regarded forms of historical writing. They are innately prone to pitfalls, since they are often commissioned by the organizations or corporations about whom they will be written, which can mean that the resulting studies are celebratory rather than critical and analytical. The sponsoring institution may choose an author who is not a professionally-trained historian or even look to an insider who may have knowledge not available to a scholar from outside the organization but who may also find themselves wrestling with bias.

Yet there are situations in which organizational histories can be useful to historians, where they provide an available and useful synopsis of how the organization or corporation changed over time. The writers of these histories may have utilized primary sources that are not accessible to the general public, and their bibliographic trails can provide jumping-off points for further scholarship. During the COVID-19 pandemic, as the 50th anniversary of the Association for Women in Mathematics (AWM) approached, I found myself in one of these situations. When I was invited to contribute to AWM's massive commemorative volume [6], I realized that I wanted to look at the society's history against the backdrop of other associations for women in science, technology, engineering, and medicine (STEM) [1]. It was not possible to travel around and look at physical archives, so I dug through websites, collected digitized primary sources when I could, and placed a few targeted Amazon orders. I finished the project thinking that it would be fantastic for a graduate student to do a larger version the "right" way, with actual legwork, but I also think I found evidence that sheds light on AWM's similarities to other major professional societies for women in STEM:

- Graduate Women in Science (GWIS, established in 1921);
- the Society of Woman Geographers (SWG, established in 1925);
- the Society of Women Engineers (SWE, established in 1950);
- Sociologists for Women in Society (SWS, established in 1971);
- the Association for Women in Science (AWIS, established in 1971);
- the Association for Women Geoscientists (AWG, established in 1977); and the Earth Science
- Women's Network (ESWN, established in 2002).

For instance, the need for camaraderie while navigating male spaces was a key motivation for each group's founders. Thus, Graduate Women in Science originated as a sorority house and honor society at Cornell University in 1921 before members shifted their focus to securing funding for graduate students [8; 11; 19, vol. 1, pp. 300–301]. In a retrospective, Margaret Mead noted that the Society of Woman Geographers came together because women were banned from New York City's Explorers Club, and she described how SWG continued to offer a good place for socializing with other professionals [10]. In the late 1960s, the women who would establish AWM met when they were comparing notes about discrimination and their lack of opportunities [7]. Even as late as 2002, the Earth Science Women's Network came about because women wanted to communicate with each other and build mentoring relationships [2].



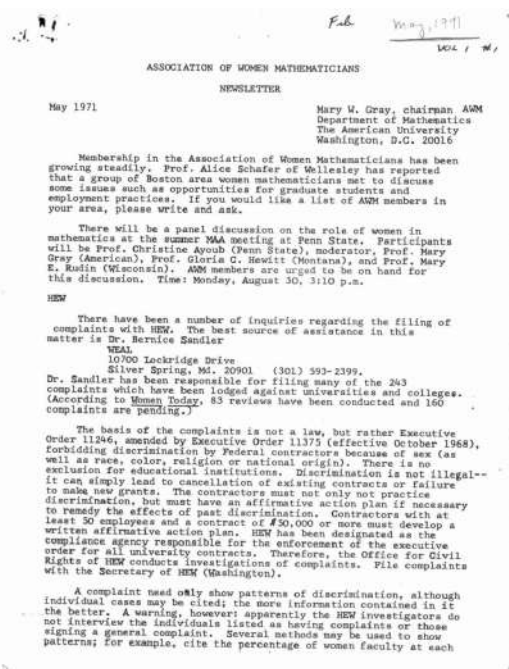
Some members of the Society of Woman Geographers in June 1932. History of the [Society of Woman Geographers](#).

The new organizations then engaged in a second common characteristic, collective action. For example, in 1971 AWM encouraged members to raise complaints about unequal treatment in their departments, while the Association for Women in Science went so far as to sue the National Institutes of Health to force it to commit to appointing more women to grant-review committees [4; 12]. In 1972 the Society of Women Engineers joined the Federation of Organizations of Professional Women to discuss employment equity; leaders also decided to support the Equal Rights Amendment, although backlash from some members led the Society to draw back from issuing public statements and to concentrate their efforts for the rest of the 1970s and 1980s on conducting surveys that gathered valuable data about the status of women in engineering professions [17].

Third, leaders and members intentionally set out to create professional organizations that would be afforded recognition and legitimacy by existing scientific societies. In addition to graduate training, historians of science and technology typically identify three markers of



professionalization: establishing an academic association, generating publications, and holding conferences. Indeed, these societies generally undertook steps toward official incorporation, such as writing a constitution and by-laws, fairly quickly, although completing the bureaucratic processes may have stretched over several years. Conferences and publications usually came together more rapidly. Largely through the efforts of Mary Gray, AWM sent out advertisements in February 1971 and had a printed newsletter up and running in May [13]. The Society of Women Engineers also began a newsletter in its first year [21]. Sociologists for Women in Society needed twelve months to start their newsletter; by 16 years of existence they had established a formal academic journal, 1987's *Gender & Society* [16; 18].



The first page of the first issue of the AWM Newsletter. Note the emphasis on activism against employment discrimination. [AWM Newsletter Archive](#).

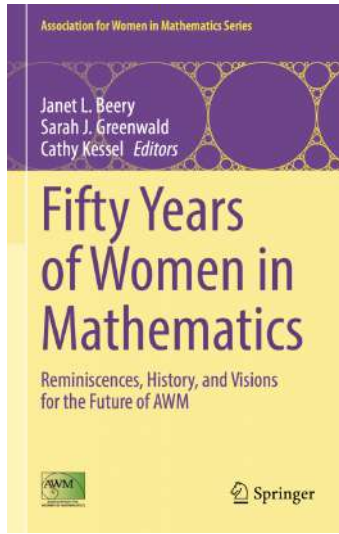
Similarly, most professional organizations for women in STEM began holding formal conferences nearly immediately. An especially interesting story about this marker of professionalism comes from the Society of Women Engineers. During a conference at Drexel University in 1949, the leaders of several small groups of undergraduate and graduate women engineering students agreed to combine their efforts into what would become SWE. The next year, about 50 women formally established SWE during a two-day camp for engineers at Cooper Union that they completely organized themselves—not only did they conduct all of the business, they also took care of all of the logistics, even cooking and serving the meals. For their first official annual meeting in 1951, they outsourced the more mundane tasks [17].



A photo and program from SWE's do-it-yourself conference in 1950. [SWE Stories, Tales from the Founders' Families.](#)

A final shared attribute, attention to the choice of prepositions, was especially important for the three professional societies formed in 1971. From its beginning, Sociologists **for** Women in Society intentionally chose the word “for” to welcome men as well as women. “In Society” was also significant phrasing, as the group’s organizational aims addressed both the profession of sociology (“Sociologists for Women”) and wider society (“Women in Society”) [16; 18]. (See also [5] for a scholarly analysis of the choice of “in” during this time period.) AWM started out as “Association of Women in Mathematics”, but male allies provided essential encouragement and public endorsement of the society’s goals even before AWM was officially formed. By September 1971, the organization had changed its name from “Association **of** Women” to “Association **for** Women,” again to signal that men were welcome to join the endeavor of promoting women in mathematics [7]. The Association **for** Women **in** Science appears not to have done much navel-gazing over its name, but the development of the Association of Women Geoscientists from a local group in the San Francisco area in 1977 to a national organization in 1981 again involved a name change from the preliminary “Association **of** Women Geoscientists” to the final “Association **for** Women Geoscientists” [3; 4; 20]. Perhaps too much can be made of a name, but it is striking that none of these societies wanted to be women-only. Rather, they associated institutional and professional strength with partnership and collaboration.

As I mentioned above, my paper was published in a doorstop of a book that itself can be seen as an example of an organizational history [6]. Its 1146 pages contain 94 chapters organized into 17 parts. The vast majority of the chapters are reminiscences by AWM members; these personal accounts not only provide information about their authors’ lives, careers, and roles in AWM, but also, when read as a whole, construct an overlapping narrative of AWM’s five decades and highlight other themes that appear in histories of women in STEM, such as two-body problems, employment discrimination, and the formation of intellectual communities. Chapters that may be of particular interest to Canadian mathematicians include an account of the founding of AWM from the point of view of the New Left Mathematicians Action Group, which is one of the final publications of Chandler Davis, who was a member of both CMS and CSHPM [9].



The AWM's 50th-anniversary volume. [Springer](#).

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Amy Ackerberg-Hastings finally got around to joining AWM shortly after publishing the chapter discussed in this column. She co-edits "CSHPM Notes" with Hardy Grant, co-edits MAA Convergence with Janet Heine Barnett, and researches the histories of mathematics education, mathematical instruments, and women in science and mathematics.

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**Keywords:** women in mathematics; history of mathematics in Canada; history of mathematics in the United States

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# Reflections on the Teaching of Mathematics with Art

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Education Notes

**Zdeňka Guadarrama** (Rockhurst University)

I recently created a virtual museum which I have called the Museum of Art in Math Teaching[1] showing examples of the work I have done with my students in undergraduate mathematics classes using art to explore, develop, apply, reflect on, or assess mathematical concepts. The intent of this virtual space, which I will continue to expand and refine, is to inspire mathematics teachers at all levels to explore the possibilities that exist at the intersection of mathematics and art as enriching pedagogical tools. In the museum's Hall of Reflections, you can listen to a student who graduated from Rockhurst University in 2012 reflect on the impact of having experienced art as part of his undergraduate learning of mathematics.[2]

I have used art in the teaching of undergraduate level mathematics in a variety of classes. For example, inspired in the Math Horizons paper on Fibonacci Mobiles by Alison Frane and Susan Goldstine[3], I created a semester long project for Calculus 2 that lead students through the design and construction of a mobile while studying areas, centers of mass, sequences, and series. [4] The mobiles were displayed in our building's main hallway at the end of the semester. I directed an undergraduate research project in measure theory in which students created art pieces to further their understanding of concepts after every chapter of readings and exercises related to measure theory.[5] We showed the pieces at two venues at the end of this project. During the pandemic, while working with my students fully online on Calculus 1 and considering how to create meaningful assessments that could minimize dishonesty while creating opportunities for conversations with students, I developed a half semester project in which students wrote and illustrated a story book aimed at 5th graders and based on a calculus concept. The stories went through a few iterations of revisions before the final draft was turned in as part of the final exam, and the illustrated versions were read to 5th graders.[6]

In spring of 2020, I started teaching a class called Math in the Modern World (MMW), which is our university's version of Mathematics for Liberal Arts. The class has a different focus depending on the faculty member teaching it, and I designed the class to engage students in mathematical reasoning through art. MMW: Art consists of a collection of very hands-on modules which have varied from class to class, spanning concepts like symmetry, tessellations, polyhedra, 2D to 3D and back, fractals, perspective, knots, and visual presentation of data.[7]

From the beginning, I perceived a higher level of mathematical anxiety in students in MMW: Art compared to what I was used to from teaching mathematics to STEM majors. To understand better the situation, I introduced a few surveys to gather data about students' mathematical anxiety and their attitudes towards mathematics. I have collected information about



Capturing if there is any change in students' perception of mathematics from the beginning to the end of MMW: Art has been a challenge I continue to pursue. I have gathered some quotes with regards to how this class, which focuses on teaching mathematical reasoning through art, has changed how students think about mathematics. Here are three representative quotes.

*“My understanding of math has changed significantly. I say this because now I don't think of math as something solely found at schools and STEM major careers but it's all around us in nature and in our everyday life. I think this was because the class focused on everything to do with math but not in the standard way, it made me feel like maybe I wasn't as bad at math as I thought.”*

*Jocelyn Garcia-Flores*

*“This semester I learned that math can be different than solving equations and that it has an art side to it.”*

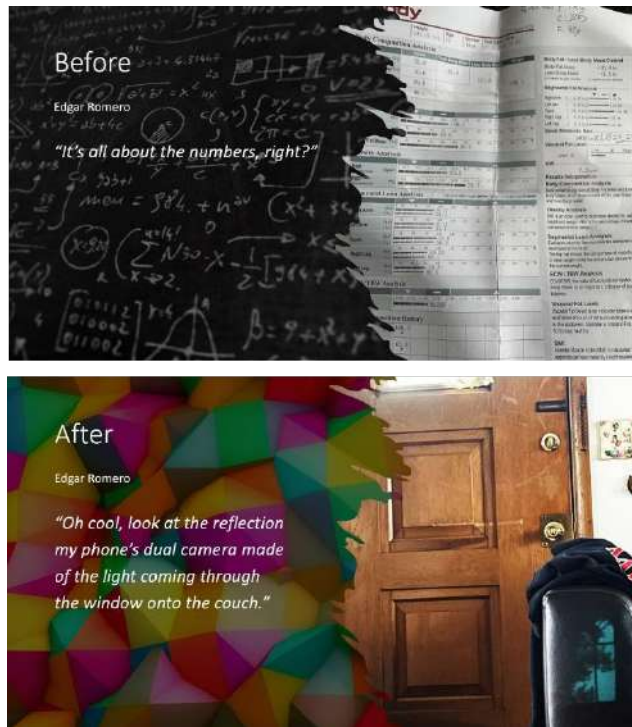
*Sarah Bernal*

*“I think just my concept of mathematics as a whole has changed. Before this class, I was very number oriented with my mathematical thinking, but now this class has shown me just how hands on and creative math can be.”*

*William Pender*

Though these comments reflect the sentiments expressed by many of the students, in the spirit of the class, I wanted to create a visual representation of their collective state of mind with regards to mathematics before MMW: Art, and after taking the class. I experimented with requesting that students submit a picture representing their relationship with mathematics at the beginning of the semester in the introductory quiz, and then again at the end of the semester in their final reflection. Figure 1 is an example of submissions by one student in the fall of 2021. I have annotated them with BEFORE and AFTER. The student, Edgar Romero, specifically commented on where he “sees” mathematics in each one of his submissions.

Figure 2. Edgar Romero **Before** and **After** MMW: Art Fall 21  
Insert an IMAGE that describes your relationship with mathematics



Combining all pairs of submissions (only students who submitted both images are represented) and using the images from Figure 1 as a background, I created the collages below. To be able to compare individuals within the group, every student's location on the collage remains the same on both images.

Figure 2. Insert an IMAGE that describes your relationship with mathematics (a) Before and (b) After Math in the Modern World: Art, Fall 21



a)



I believe there is great potential for enriching mathematics classes at all levels using art as a pedagogical tool. This approach has been very rewarding and fun for me and my students, and it has been especially helpful in my classes for non-STEM majors which have large proportions of students with mathematical anxiety by creating more positive attitudes towards mathematics.

*Zdeňka Guadarrama is a Professor of Mathematics at Rockhurst University in Kansas City, Missouri. She has taught mathematics classes across the undergraduate curriculum, and used art as a bridge into the exploration, development, application and reflection of mathematical ideas.*

*She is the Department Chair of Mathematics, Analytics and Technology, and Director of Mathapalooza, a Mathematics outreach program which focuses on engaging people of all ages in mathematical explorations outside the standard K-12 curriculum. Because she believes that there is enough variety of mathematics out there for everyone to enjoy, and that play can help challenge conventions about what mathematics is and how it is taught, she is also the Co-founder of the social enterprise Math through Play.*

*Zdenka has written mathematics curriculum, given talks, designed workshops for teachers to help them bring mathematical inquiry into their classes, and created a range of programs to introduce the community to meaningful, beautiful, and enjoyable mathematics.*

Email: [zdenka.guadarrama@rockhurst.edu](mailto:zdenka.guadarrama@rockhurst.edu)

## Endnotes

[1] Z. Guadarrama, Museum of Art in Math Teaching: <https://app.cloudpano.com/tours/aOZK1V5Py>

[2] Video Serge Nevsky, Software Engineer, currently at Meta.  
<https://drive.google.com/le/d/1MVbrDdokrnhqrU8bn2r3CF1ttuDzmL3e/view>

[3] Frane, Alison and S. Goldstine (2008) Fibonacci Mobiles Math Horizons, 16(2), pp. 24–25.

[4] Art in Single Variable Calculus: [https://app.cloudpano.com/tours/aOZK1V5Py?scenelD=zg\]oK49ZU](https://app.cloudpano.com/tours/aOZK1V5Py?scenelD=zg]oK49ZU)

[5] Art in Math Undergraduate Research: [https://app.cloudpano.com/tours/aOZK1V5Py?scenelD=1YF\]76el4](https://app.cloudpano.com/tours/aOZK1V5Py?scenelD=1YF]76el4)

[6] Art in Single Variable Calculus: [https://app.cloudpano.com/tours/aOZK1V5Py?scenelD=zg\]oK49ZU](https://app.cloudpano.com/tours/aOZK1V5Py?scenelD=zg]oK49ZU)

[7] Some examples of student work from these classes can be found in Art in Math for Liberal Arts Galleries:  
[https://app.cloudpano.com/tours/aOZK1V5Py?scenelD=t\]j874hPg](https://app.cloudpano.com/tours/aOZK1V5Py?scenelD=t]j874hPg) and <https://app.cloudpano.com/tours/aOZK1V5Py?scenelD=kXdCwqKNt>

[8] Numbers of students who provided data by class and its modality: Spring 21 (25 students – fully online synchronous class), Fall 21 (23 students- hybrid class: one day on ground and one day online asynchronous), Spring 22 (20 students – online hybrid: one day synchronous and one day asynchronous), Spring 23 (15 students – classroom-based meeting two times a week).

[9] From end of the semester reflection, MMW: Art: Spring 21, Fall 21, Spring 22, Spring 23.



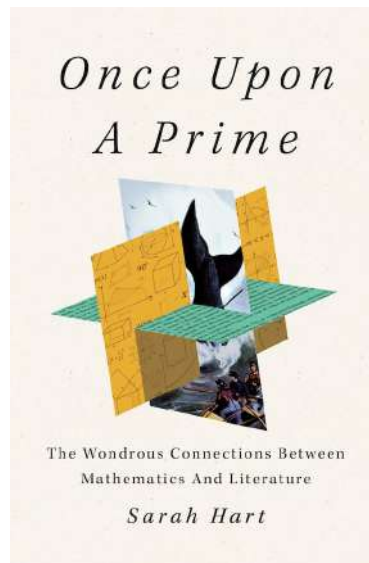
# Once Upon a Prime. The Wondrous Connections Between Mathematics and Literature

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Book Reviews

**Karl Dilcher** (Dalhousie University)

*Book Reviews Editor, CMS Notes Editorial Board & Editor-in-Chief, CMS-CAIMS Books in Mathematics Editorial Board*



By Sarah Hart

Flatiron Press, 2023 Hardcover, 290

pp., CA\$ 39.99

Reviewed by Karl Dilcher

Mathematicians tend to like puns, and this reviewer is no exception. Is the title just a gimmick to get our attention? It certainly worked for me, as I browsed through the Science section of “The Bookmark”, Halifax’s only, and very good, independent bookstore. But being rather cheap, I buy a \$40 hardcover only if it’s really necessary. A quick look at the table of contents, and reading some short random samples, convinced me that it was.

I was not disappointed – far from it! In fact, the author nominates “The Best Value Book of All Time” in Chapter 4. While it is difficult to beat her example (I’ll come back to this later), the book under review will be a strong contender for runner-up, at least in my opinion.

But back to the title. Searching my brain (an expression used a few times by the author) for other prime examples, I came up with “High Primes and Misdemeanours”, the proceedings of a BIRS conference in honour of Hugh Williams’s 60th birthday, edited by Alf van der Poorten and Andreas Stein (AMS, 2004), and “Prime Suspects”, a graphic novel by Andrew Granville and Jennifer Granville (Princeton, 2019). The first of these is exclusively mathematics and the second one is a detective story involving mathematicians and mathematics; both volumes have strong

Canadian connections. The third one, “Once Upon a Prime”, combines the two disciplines, as the subtitle indicates. Right from the beginning the book convinces the reader that there are indeed surprisingly many wondrous connections between mathematics and literature, and it does so in a wondrous way.

Of course, the title alludes to fairy tales, and indeed, the book contains numerous references to folklore and creation or foundation myths of different cultures around the world. I can’t help but mention at this point that I grew up in the part of Germany, just south of Göttingen, where the Grimm brothers collected their stories and fairy tales. Perhaps this contributed to my fascination with the title.

The book begins with, “Call me Ishmael”. Well, this opening sentence worked once, why not again? Further down on the first page the author writes, “The more Melville I read, the more mathematics I discovered. And it wasn’t just Melville.” She then mentions Leo Tolstoy, James Joyce, Arthur Conan Doyle, and Chimamanda Ngozi Adichie. As if this level of diversity wasn’t enough, these names are followed by Michael Crichton’s *Jurassic Park* and Aristophanes’s *The Birds*. Talk about grabbing the reader’s (or in my case the potential reader’s) attention in the first two dozen lines of the book! And it only gets better; the level of diversity of literary genres and authors is astounding, and I would never have imagined the diversity of connections with mathematics which often goes far beyond the elementary.

Towards the end of the Introduction, the author states her purpose: “If you don’t yet love mathematics, I want this book to show you the beauty and wonder of it, how it is a part of our creative lives, and why it deserves its place with literature in the pantheon of the arts. I want it to give you an extra perspective on the writing and writers you know, introduce you to writing you don’t, and give you a new way of experiencing the written word.

“If you happen to be a mathematician, then you already have poetry in your soul [Thank you, Sarah Hart!], but we’ll look at how this is manifested in places you may never have realized, as part of an enduring conversation between literature and mathematics. I warn you: you’re going to need a bigger bookcase.”

The author, Sarah Hart, is Professor of Mathematics at Birkbeck, University of London. Birkbeck’s courses are almost exclusively delivered in the evening and students can study part-time or full-time. In connection with her discussion of the life and work of the brilliant but little-known English writer B. S. Johnson (1933-1973) who attended Birkbeck, Sarah Hart writes, “[I] am constantly banging on about the vital importance of giving people the chance to pursue higher education at any stage in their lives.”

Hart is also the first female Gresham Professor of Geometry since its inception in 1597. Her area of research is group theory, but she has also made a name for herself as a successful expositor of mathematics. For instance, some of her excellent talks can be found on YouTube.

And how she can write! Although literature and mathematics are often portrayed as serious and heavy, this is a very light-hearted book. The author is funny, sometime self-deprecating, and she does use a few more puns; but all of this sparingly, with just the right dosage. The book “reads well”; in fact, it’s a page-turner, difficult to put down, partly because you know the next page, or the next paragraph may contain yet another delightful sentence or surprising fact. You feel that the author had fun writing this book, and she delights in telling you all these amazing stories. And yes, if there is one word that might describe this book, it is “delight”.

Another reason why the book works so well is the fact that the author brings a good deal of herself and her family into it. Some of the individual stories begin with describing visits with authors, or with media interviews. It’s not the usual anonymous omniscient narrator giving you the facts, it is Sarah Hart, mother of two girls and working full-time, who is sharing with you the wondrous stories and facts which she herself discovered possibly not too long ago, and who makes you share in her delight.

Let me share a small sampling of delightful phrases with you. In Chapter 4 (The Arithmetic of Narrative Choice), the number 25! appears in connection with The Best Value Book of All Time, and the author gives the number explicitly, adding, “That’s 15.5 septillions, if it helps (and I know it doesn’t)”. In the following chapter, she tells a story in which she is challenged to say something interesting about the number 22. At first, she is stumped, but later on she does come across a fascinating property related to a certain numerical sequence. This prompts her to conclude this segment by writing, “all number are interesting if you give them a chance.” The second half of this sentence is the delightful part, especially since many of us mathematicians are familiar with the “proof” by contradiction that all numbers are interesting.

The author would likely consider this last statement to be “form without content”; in her opinion this should be avoided in good mathematics as well as in good writing. In fact, in Chapter 4 she writes in connection with experimental fiction and random plots that “structure for the sake of structure, in literature just as in mathematics, risks being arid and pointless.” Further on the topic of structure, she concludes Part 1 of the book by writing, “Above all, I hope I’ve shown that behind every work of literature there is structure, and behind every structure there is delightful mathematics to explore.

Before leaving this topic behind, let me summarize the structure of the book, which is divided into three parts and ten chapter. (And yes, the numbers 3 and 10 are indeed featured in Chapter 5: “Fairy-Tale Figures. The Symbolism of Number in Fiction”. But this may just be a coincidence, or an instance of Richard Guy’s “Strong Law of Small Numbers”). Part I has the title “Mathematical Structure, Creativity, and Constraint”, Part II is about “Algebraic Allusions. The Narrative Uses of Mathematics”, and Part III, “Mathematics Becomes the Story”. Enumerating the individual chapters (which all have interesting and fascinating titles) might go too far here.

The book also contains nine pages of notes; it appears that, thankfully, the author and/or the editor resisted the temptation of overwhelming the reader with too much additional information. And finally, before a helpful and detailed index, there is a 6-page “Mathematicians Bookcase”, which the author describes as “a collection of some of the books on my shelves that we have discussed, with a few bonus recommendations thrown in for good measure.”

I already mentioned the opening sentence of the book, so at the end of this review I also wish to quote the last sentence of the body of the book: “In literature, as in life, there are as many different ways to be a mathematician as there are different ways to be a person.”

Dear friends and colleagues, if you haven't yet bought a new book in your local independent bookstore this year (or this month), let this be your first one. You will not regret it.

*Sarah Hart will be an invited speaker at this year's Bridges Conference, as part of the annual conference series subtitled "Mathematics—Art—Music—Architecture—Culture. Bridges 2023 will take place at the Sexton Campus of Dalhousie University in Downtown Halifax, 27-31 July 2023. Please see <https://www.bridgesmathart.org/bz2023/>*

Key words: History of mathematics; mathematics and literature.

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Email the author: [dilcher@mathstat.dal.ca](mailto:dilcher@mathstat.dal.ca)

# Personalizing equity, diversity and inclusion: How my experiences shaped my views

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MOSAIC

**Kseniya Garaschuk** (University of the Fraser Valley)

*Editor-in-Chief, CRUX & Chair of Equity, Diversity and Inclusiveness Committee*

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I was recently appointed to the role of a Chair of the CMS EDI committee. What qualifies me for the job? What are the qualities that one should possess? What does EDI mean to me and where do I fit in?

I am a woman. I am white, Eastern European, an immigrant, a mother. I can list many nouns and adjectives that describe me; some of them will place me into a historically underrepresented group (in math) and some of them will place me into the majority.

I am direct, candid, opinionated, outspoken, present. These qualities often metamorphose into their unfavourable counterparts when my gender gets applied to my traits: loud, rude, argumentative, cocky (how ironic). I wasn't always this way. The ability to speak up took me a while to grow into. Along the way many, I think people believed that I was naturally outspoken, whereas to this day bringing up a contentious topic to a meeting makes my heart race and my accent thicken. I do not enjoy conflict or bringing up uncomfortable topics to the table, but I also don't avoid it like a plague. In my experience, discussion avoidance results in a dysfunctional or toxic atmosphere. On the contrary, a productive (although likely initially uncomfortable) conversation allows for a richer understanding of all viewpoints and offers ways forward.

So in the spirit of sharing, below I collected a few stories to highlight some of my experiences and how they form my way of thinking about equity, diversity and inclusion.

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I was hired at UFV in 2016 when I was pregnant (ask me about that experience in person), so I started my position on maternity leave. I should point out that at UFV the entire Faculty of Science and Math and Stats Department in particular has a much higher ratio of women than other departments that I have been a part of, so having a female colleague and working around parental leaves is not uncommon. Despite being on leave, I came in for department and faculty meetings to meet people and get a head start on my work. And just like that one negative student review that ruins the whole batch, there was one experience I remember vividly despite many positive ones. My first Faculty of Science meeting, a senior colleague came up and, laughingly, said "We hired you months ago, when are you actually going to come in and start teaching?". I brushed it off as a joke. Next meeting, he (let's



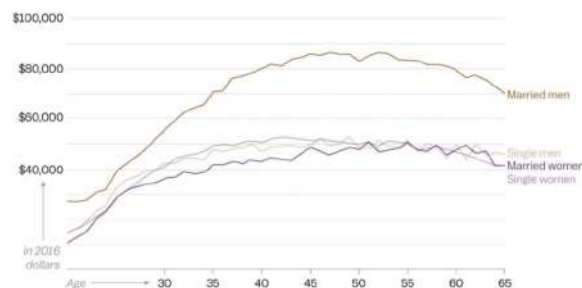
call him Bob) said the same thing; I walked away. Third time it happened, he still clearly thought it was funny; I told him it was not okay to keep asking me, that I was taking my legal leave and I needn't be ashamed about it. He looked surprised, and I got worried... It was a senior colleague that might later be on my tenure committee and would carry on the sentiment that "I did nothing" for the first year that I was hired, even though I was on legal leave.

The fact that Bob made those remarks in the presence of other faculty didn't result in anyone else speaking out. I also told this story to a few other colleagues, most of whom (in fact, all but one) brushed it off as "Bob being Bob". Why are we so quick to dismiss inappropriate behaviour as a minor offense not worth discussing? Why did it have to be me correcting that person when I was in the most vulnerable position — both not tenured and on the receiving end of the commentary?

We can dismiss Bob as being insensitive, old-school, ignorant, you can say that this isn't something you'd ever do. But would you tolerate it? Bobs are present everywhere, they speak their opinions and they act based on those opinions; so what could people around me have done to make this experience a successful EDI story?

A diverse population does not mean the environment is inclusive and it does not automatically make it so.

Last term I was teaching Calculus 1 for Business. On the midterm, I gave students this graph that illustrates the data for marriage and gender salary income of employed men and women with a high school diploma:



Source: IPUMS-USA, University of Minnesota

Several parts of the question asked the students to compute average and instantaneous rates of change of salaries of various groups. Last (bonus) part asked: "Give one possible real-world explanation for the salary gaps between married men and everyone else." Vast majority of my students are first-years, the Gen Z's that we sometimes consider being "too woke". Their answers surprised me. About half the class came up with reasons why men get paid more than women, which of course doesn't answer the question of why married men get paid more than all other groups, including single men; but at least this is not offensive. The other half of the class gave reasons that divided into roughly 3 categories:

- men feel the responsibilities of raising a family;
- men work harder/more;
- wealthy men are more attractive as potential spouses.

“Married men tend to work more hours since they provide for their whole family”, “married men are the breadwinner of the family”, “married men work longer hours than women”, “men work full-time or more whereas women work less”, “most of the married women do not seek higher salaries if their husband works”, “men who are rich are more likely to marry as compared to everyone else”, “men with higher wages are more likely to get married”... Is it me or does this sound like women do not feel the need to support their families, women are not career-motivated and women’s choice of life partners is based on the size of their paycheque?

What is striking is that all of the answers focused on men and the end reason why they make more money (take on more responsibilities, more work hours, look out for promotion opportunities, etc.) None of the answers presented the situation from the point of view of either single men or women, e.g. what allows married men to accelerate their career and make more money than any other group.

My response to the class can be summarized by this tweet:



We tend to focus on what one group of people can do rather than what other groups of people are unable to do and why. We need to consider the situation (data, information, an event, an initiative) from points of view of different groups of people. We need to pay attention not only to what is present or what is presented, but also to what is specifically absent.

Inclusion is creating and supporting spaces for meaningful and successful participation of all.

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I first joined CMS in summer 2006. I just began my Master’s degree at Simon Fraser University. A friend of mine went to the Canadian Undergraduate Math Conference earlier that year and wanted to bring the next edition of the event to SFU. I happily agreed to be on the organizing committee. I went to my first CMS meeting in winter 2006 in Toronto and I don’t believe I missed a single CMS meeting for over a decade after that. I served as a chair of the Student Committee and participated in Board of Directors meetings in that role, I started student poster sessions at CMS meetings and created a student newsletter, Notes from the Margin, I was a member of the Education Committee and several of its subcommittees, I organized 6 CMS Math Camps, I became Editor-in-Chief of Crux Mathematicorum in 2013 (while still a PhD student), I rid the journal of its year-long backlog and eventually moved it to be an open-access publication freely available online. I organized numerous CMS sessions, panels and events, I was an education lead organizing CMS’s first-ever online meeting during the pandemic.

In 2020, a friend and a colleague decided to nominate me for the CMS Graham Wright Distinguished Service Award. My initial reaction was “have I really done enough to be a worthy recipient?” I wasn’t even tenured yet and it felt like a career award. But then I thought of the list above (which isn’t even complete).

I received the Award. I was subsequently named a CMS Fellow (I’m told I’m the youngest person to be named a CMS Fellow so far). The best part of being recognized was getting emails from people I haven’t talked to in a while and didn’t have a specific reason to connect to. But one congratulatory email was to the point as it summed up my feelings and fears regarding the initial nomination: “Having served on these kinds of panels before, I know that giving the award to a (very!) young colleague is a tough sell.”

All awards encourage participation from all groups — it is clearly stated on the CMS Awards pages. But how does this encouragement look like on the receiving end? Here is the table from MOSAIC column by Habiba Kadiri that I think we need to look at carefully and look at often ([My response to the class can be summarized by this tweet:](#)):

Awards	Women (since beginning)	Women (since 2012)
Fellowship of the CMS [19] (since 2018)	11.8%	11.8%
David Borwein Distinguished Career Award [20] (since 2006)	0%	0%
Graham Wright Award for Distinguished Service [21] (since 1995)	10.3%	20%
Adrien Pouliot Award [ 22] (since 1995)	14.3%	20%
Excellence in Teaching Award [23] (since 2004)	16.7%	20%
Coxeter James Prize [24] (since 1978)	4.5%	0%
Jeffery-Williams Prize [25] (since 1968)	1.9%	0%
CMS Blair Spearman Doctoral Prize [26] (since 1997)	7.7%	0%
G. de B. Robinson Award [27] (since 1995)	15.4%	27.3%
CRM-Fields/CRM-Fields-PIMS Prize [28] (since 1995)	7.4%	10%

We need to understand the problem before we can solve it: do various under-represented groups not apply? Are they found lacking in excellence? Are they not qualified because of some systemic barriers?

Let’s take Coxeter-James Prize. Its eligibility states that “Nominations may be made up to ten years from the candidate’s Ph.D” (and until recently I believe that is all it stated — it now allows for exceptions with explained eligible leaves of absence). Women who have kids and take parental leaves (as they do at a much higher rate than men) are likely to do so exactly during the first 10 post-PhD years, which means that for each child a female candidate’s eligibility and body of work are reduced by at least a year. And it doesn’t stop at gender. A person with a disability or an ongoing medical condition might take time to attend to their health. An Indigenous person with strong ties to their community might take time off after their PhD to reconnect before rejoining academia. A 10-year cut off is a systemic barrier that disproportionately affects certain groups.

If you are on any kind of committee (hiring, awards, CMS or otherwise), start asking questions about eligibility and the transparency of the competition process as understanding hidden constraints is the first step in closing glaring gaps.

Equity is fairness in context. It starts with access, but it does not end there.

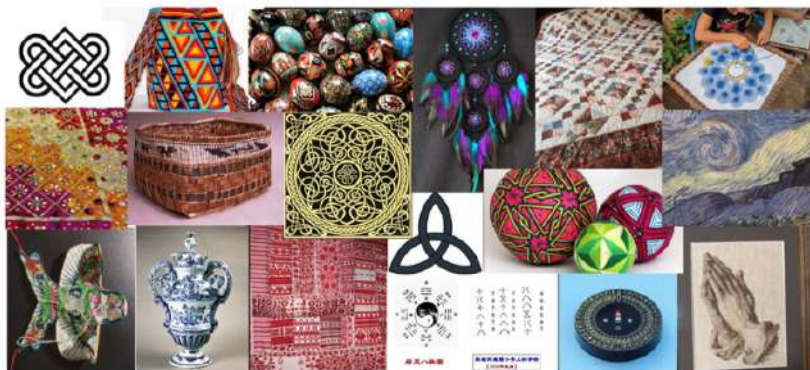
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My favourite course to teach is History of Mathematics, Math 410 at UFV. This course is not about teaching math chronologically or examining ancient math techniques in a vacuum. It is about exploring mathematical ideas as embedded in culture and environment, dispelling both the Eurocentric and the impassive view of the development of mathematics.

It is the hardest course to teach. I am neither a historian nor an anthropologist. I am as much of a learner as my students. For this reason, the course content delivery is divided evenly between me, my students and various other sources. I generally deliver the overview of a topic, students (through oral presentations and written blogs) dig into more specifics, while the final third of course materials consists of podcasts, videos and readings from various authors to provide exposition from different viewpoints.

It is the most rewarding course to teach. It's an elective and the prerequisites are simple: 27 math credits, equivalent to 8 previous math courses. My students are either math majors or future math teachers, so the captive audience seemingly doesn't need to be persuaded that math is beautiful. In standard curriculum our students see connections between math and other hard sciences, but this might be the only chance they get to see the development of mathematics as a human endeavour, to discuss the surrounding context of the time and place, to see math as a social science. They discover that there is much more humanity to the subject whose technical side they enjoy.

On the first assignment, I ask them to find a piece of art or craft native to the land where they were born or belonging to their family's cultural heritage and write about the tradition as well as what mathematics they see in it. Here was the tapestry of my last class's heritage:



So many different backgrounds, yet we all found beauty (and math) in each others'. A simple activity uncovered the rich culture already present in the classroom.

# Call for Submissions: CMS Notes Mathematics, Outreach, Society, Accessibility and Inclusiveness Column (MOSAIC)

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## MOSAIC

The Canadian Mathematical Society (CMS) invites you to submit articles to be featured in the MOSAIC column of the [CMS Notes](#).

[MOSAIC \(Mathematics, Outreach, Society, Accessibility, and Inclusiveness Column\)](#) is directed by the CMS Equity, Diversity, and Inclusion (EDI) committee.

The column offers a space of expression for you to ask, listen, learn, share experience, and propose solutions to build a more diverse, just, and stronger mathematical community. For instance, you are welcome to submit an article sharing challenges and successes in enacting EDI initiatives within your university, with competitions, outreach activities, or other events.

Your email submission should include your article in both Word and PDF formats. Please submit your article to the EDI Committee at [mosaic@cms.math.ca](mailto:mosaic@cms.math.ca)



# 2023 CMS Winter Meeting – Call for Sessions

CMS Meetings



The Canadian Mathematical Society (CMS) welcomes and invites session proposals and mini-course proposals for the 2023 CMS Winter Meeting in Montréal from December 1–4, 2023. In accordance with the CMS mandate to propose conferences that are accessible and welcoming to all groups, diversity amongst organizers and speakers is strongly encouraged. Diversity includes topics of interest, career stages, geographic location, and demographics.

## CALL FOR SESSIONS:

Proposals should include:

- (1) Names, affiliations, and contact information for all session co-organizers. Early career researchers are encouraged to propose sessions.
- (2) A title and brief description of the topic and purpose of the session. This can include an overview of the subject.
- (3) The total number of expected talks, with a list of possible speakers and/or papers in the theme. Sessions should strive to respect the above CMS policy of accessibility and diversity.

**Open Call for Abstracts:** The CMS will continue the open abstract submission process that was recently introduced to support session organizers in their important work and in their efforts towards inclusivity and diversity.

The CMS kindly asks session organizers to consider all eligible abstract submissions for their session, as up to 30 speakers per session can be accommodated.

The scientific sessions will take place from December 2–4, 2023.

**Deadline:** Proposals should be submitted by **Monday, July 31, 2023** to the Scientific Directors and the CMS Office should be cc'ed. There will be a second deadline of **September 1, 2023**, but earlier submissions will be considered first. Their contact information is as follows:

François Bergeron : [bergeron.francoiseuqam.ca](mailto:bergeron.francoiseuqam.ca)  
 Simone Brugiapaglia: [simone.brugiapaglia@concordia.ca](mailto:simone.brugiapaglia@concordia.ca)  
 Alina Stancu: [alina.stancu@concordia.ca](mailto:alina.stancu@concordia.ca)

Sarah Watson: [meetings@cms.math.ca](mailto:meetings@cms.math.ca)

# Call for University Hosts: Winter '25 / Summer '27

## Calls

The Canadian Mathematical Society (CMS) welcomes and invites host proposals from Canadian Universities for the 2025 CMS Winter Meeting, and the CMS Summer Meeting for 2027.

CMS will provide all logistical support and contract negotiation with local venues. CMS is looking for Canadian Universities that are willing and able to showcase their department and University to students and faculty from across Canada. It is asked that proposals include the following information:

### 1. Location

- How would people get from the airport to the venue?
- What are the reasons your city may be of interest to Canadian Mathematicians?

### 2. Site

(For summer meetings) Describe the University where the meeting would be held.

- Which building would the meeting be in and how many rooms are available for meeting sessions and plenaries?
- What technological support is available in session rooms?
- Will these rooms be available during the proposed dates?

### 3. Lodging

Is your university able to offer any residence lodging during the conference dates? CMS will take care of contracting and negotiating with hotels.

### 4. Host University

Please describe your institution and department briefly.

- What funding support will the Host University have for the CMS Meeting?
- Is the University available for regular calls and updates on the meeting's progress?
- Can the Host University commit and provide at least one scientific director for the meeting?  
What level of participation do you think there might be from academics at your institution?

The CMS Meetings typically run from Friday to Monday on the first weekend in June and December but we are open to other possibilities. Summer meetings typically have 250-350 registrants and winter meetings are typically 400-600 in larger cities. Please admit your submissions to Sarah Watson (meetings@cms.math.ca).

# Membership Ads

## Memberships



Canadian Mathematical Society  
Société mathématique du Canada

### INDIVIDUAL MEMBERSHIPS

### BENEFITS

- Reduced registration fees at CMS semi-annual Meetings and includes complimentary child care services while attending CMS meetings;
- Receive complimentary online access to the Canadian Journal of Mathematics and the Canadian Mathematical Bulletin;
- Online subscription to the CMS Notes (6 issues per year);
- Opportunity to serve on the CMS Board of Directors and on CMS committees and editorial boards;
- Voting rights in the CMS elections and at the Annual General Meetings;
- And many more!




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For more information, please contact the CMS Membership Department at [memberships@cms.math.ca](mailto:memberships@cms.math.ca).



Canadian Mathematical Society  
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### ROGERS DEAL

### INDIVIDUAL MEMBERSHIPS: SAVE MOBILE PROGRAM

The Canadian Mathematical Society (CMS) is pleased to introduce SAVE mobile plans for all CMS members, taking the hassle out of dealing with mobile carriers.

The SAVE Mobile program is powered by Rogers. Competitive invoice comparisons show 20-40% savings.

Come try out the Cost Calculator, enabling you to see the exact cost for your new plan and phone.

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