

Summer 2023

NAZARETH COLLEGE MATHEMATICS DEPARTMENT

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Bonaventura Cavalieri (1598-1647) was an Italian monk and mathematician. He struggled to find work until support from Galileo helped him land a position as Chair of Mathematics at the University of Bologna in 1629. According to Galileo, "few, if any, since Archimedes, have delved as far and as deep into the science of geometry."

Before the advent of calculus, Cavalieri used his method of "indivisibles" to calculate the area under x^n from 0 to 1 (equal to $1/(n+1)$) for $n=2, 3, \dots, 9$. He is also credited with introducing logarithms in Italy.

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Our Newsletter

The Bonaventura Francesco Cavalieri Courier Bee

just BeCause

The Class of 2022: Where are they now?



Sarah Garber ('22): After graduating, I got a job teaching math at the middle and high school levels in Spencerport. I started taking some Master's classes through UAlbany's "Curriculum Development and Instructional Technology" graduate program. My plan for the next school year is to finish my Master's degree while substitute teaching in a few local school districts. I also want to get a tortoise and name it Tortellini... not sure when that will happen yet.

Gio Greer ('22, minor) is a Staff Tax Accountant with the Bonadio Group.

Owen Ledermann ('22): After graduation in 2022, I accepted a position at Waste Harmonics in Victor, NY, as an account payable specialist. In 2023, I decided I was unhappy with that career path and moved out of New York. I accepted a position at Travelers Insurance in March 2023 in Nashville, TN, as a Claim Operations Specialist.

Emmett Lewis-McKinzie ('22) went to Wisconsin to work for Epic Systems. He enjoyed the work and the people, but the siren call of Rochester was too strong and he has now returned and is working for Geva Theater and studying for actuarial exams.

Olivia Minor ('22): I just finished my first year of grad school for education and mathematics! I am currently long-term subbing for a Math Support Lab teacher at a local middle school. I begin my last year of graduate school in the fall, and plan on continuing to sub next year as well!

Sarah Stolberg ('22): I am finishing my Master's degree in curriculum development and instructional technology and on the hunt for jobs! I took this year to wait to teach full-time and ended up getting a long-term sub position teaching sixth grade math for the entire year. It was the best experience to help me feel completely ready to teach!

Ning Zhang ('22, minor) is certainly doing awesome things.

Alumni Corner



Back in 1994 the Math Club at Naz participated in a fundraiser for PBS and the students got special hats for the occasion, which had to be picked up on a Rochester winter day with icy roads and dangerous driving conditions! **Doug Gorham ('94)** still wears his hat with pride, and wondered how many others are out there.



Angela (Tessoni) Messenger ('06) made some AMAZING math cookies for Naz Weekend this past September. She and her kiddos delivered them, making the treats all the sweeter.



Mikaela Middleton ('06) stopped by Heather's house to say hi and enjoy the lilacs in Highland Park! Dr. Mikaela just finished her second year of residency in Emergency Medicine in Buffalo. She is also helping medical professionals learn how to support transgender and gender diverse people.



Career Night was extra special with **Megan Searing ('18)**, who is an Academic Opportunity Support Coordinator at SUNY Geneseo and has been coaching the Dance Team here at Naz; **Stephanie Mongelli ('18)**, who teaches at Mendon Center Elementary School in Pittsford; and **Stephanie (Mumpton) Fame ('16)**, who works in Human Resources at Harris Beach PLLC Attorneys at Law.

Math (and an alumna!) in the News

Caitlyn Parmelee ('10) was interviewed by the [Washington Post](#) about a study she co-conducted on push-ups; said study was also published in the [International Journal of Exercise Science](#). Caitlyn and her colleague Melanie Adams at Keene State College in New Hampshire (where Caitlyn is a math professor) worked with their students in Applied Statistics and Exercise Science and developed a linear regression model showing a relationship between regular push-ups and modified push-ups (often called “girl push-ups”) among college-aged women.

The scientists then applied a formula by co-author and mathematics professor Caitlyn Parmelee to develop a new scale for assessing push-ups by women. In the current ACSM testing, 15 to 20 “girl” push-ups are considered “good” among women aged 20 to 29, while in the Keene College group’s study, 8 to 11 full push-ups would get the same grade for that age group. (from “No more ‘girl’ push-ups” by Gretchen Reynolds, *Washington Post*)

Cemal Ozemek, senior editor of American College of Sports Medicine’s Guidelines for Exercise Testing and Prescription, 12th edition, is looking into using these results as they update their standards, with a goal of using the regular full push-ups for everyone.

High school seniors Calcea Johnson and Ne’Kiya Jackson at St. Mary’s Academy in New Orleans just came up with a new proof of the Pythagorean Theorem! They presented their proof at the American Mathematical Society meeting, and several news outlets picked up their result. As [Keith McNulty of Medium.com](#) explains:

Claims in the media that Johnson and Jackson’s proof is the first trigonometric proof of Pythagoras are overblown, but their proof could well be the most beautiful and simplest trigonometric proof we have seen to date.

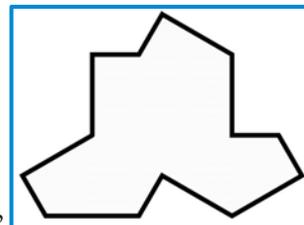
You can hear the two mathematicians on YouTube at www.youtube.com/watch?v=YQ5Pz9qh25w

(There are quite a few news articles about this: in addition to the one linked above, one by [Leila Sloman in Scientific American](#) gives a good overview.)



There’s been some exciting math in the news lately about Einstein. Not a person, but a special shape dubbed the “einstein hat”.

A tessellation is a way of covering a plane with tiles so there are no gaps or overlaps. By putting a few or a lot of restrictions on the tiles, like only using one shape and the tiles having to match edge-to-edge, you can get some interesting symmetric results. Then there are *aperiodic* tessellations, which avoid repeating patterns altogether. Until recently people didn’t know if there was a single tile that would form an aperiodic tiling. Such a potential shape was called by the German name *ein Stein*, which mean “one stone” (like one tile).



It turns out that there is a tile that does this! Last year David Smith found a tile that seemed to work, and with a little help from his friends wrote a paper verifying it. You can create your own version of this tiling and the hat at the [authors’ website](#), and read more about this aperiodic tile at [The Aperiodical](#).

NAZARETH COLLEGE MATHEMATICS DEPARTMENT



Outstanding Senior Award (left to right):
Charlotte Paille ('23), Madeline Klein ('23), Matt Koetz, Helene Becker ('23)



Evan Brauer Award (left to right):
Charlotte Paille ('23), Nicole Juersivich, Helene Becker ('23)



Pi Mu Epsilon inductees (left to right): **Quentin Lewis-McKinzie ('25), Liam Beaudoin ('24), Megan Forney ('23, minor), Julie Filipski ('24), Marissa Bell ('24), Ali McLane ('24), Ashley Blesy ('24), Annalyse Greider ('23), Ryann Stefaniak ('23)**



We had the pleasure of seeing **Josh ('17)** and **Claire (Hardy) Thorp ('18)** at the Department Awards Ceremony on April 8. Claire was the guest speaker, and her talk was titled, "The Mathematical Perspective: Applying Math Skills in Non-Mathematical Situations".

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Study abroad has resumed! This spring a group of folk, half from Math, went to Hungary to visit historical sites and give talks at the America Week Conference in Veszprém. Standing in front of the St. Stephen's Basilica in Budapest (left to right) are: Scott Campbell, Heather Lewis (math), **Quentin Lewis-McKinzie ('25, math)**, **Zach Chesure ('25, math)**, **Alex Horgan ('24)**, **Kim Holder-Callender ('23)**, **Helene Becker ('23, math)**, Nicole Juersivich (math), **Alexis Lakatos ('24, math)**, **Patrick Blot ('24)** and **Cecilia DeGross-Ceiri ('25)**

Pi Day 2023



Creativity: **Helene Becker ('23)** – Pie r Squared



Presentation: **Erich D'Eredita** (Lab Coordinator, Biology) – S'mores Tart



Taste: **Heather Lewis** – French Silk Pie

Issue Sponsor

This issue is brought to you by the letter B and the number C. There are exactly C “b”s in this newsletter, under the equivalence relation $A \approx a$ applied to b (so $B \approx b$).

C is the sum of the first IX primes.

$$C = I^{III} + II^{III} + III^{III} + IV^{III} = (I + II + III + IV)^{II}$$

Water boils at $C^\circ\text{C}$.

$C\text{€}$ bills have a **Baroque** bridge on them, while $\$C$ bills feature **Benjamin Franklin**.

The record number of points scored in an **NBA** game is C.

Problems

Solutions to Problems 15.1

15.1.1: 1, 2, 3, 5, 8, 13, 21, 34

15.1.2: 1

15.1.3: 72

🏆 *Congratulations to Kevin for his solution!*

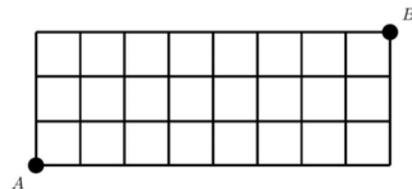
Problems 15.2

15.2.1: The integers from 2, 3, ..., 14 are written on 13 cards. You and a friend each take five numbers, and you notice that the product of the numbers you have collected is equal to the product of the numbers that your friend has collected. What is the product of the numbers on the three cards that neither of you has taken?

15.2.2: Find all integers n such that

$\sqrt{n - 4\sqrt{n - 19}}$
is an integer.

15.2.3: How many paths are there from A to B if you are allowed to travel right, left, or up (without retracing any segments)?



Send solutions, crosswordes, [NYT Digits](#), wrong solutions, beads, mochinuts, amigura, oxford commas or suggestions to Heather (hlewis5@naz.edu) or Matt (mkoetz1@naz.edu).