

Canada/USA

# MATHCAMP

2024 Year-End  
Report

*Mathcamp is a project of the Mathematics Foundation of America, EIN 57-1035414.*

# Looking back: Mathcamp 2024 at Puget Sound



*“Mathcamp has helped shape me into the person I am currently, even after only 5 short weeks. The math, the people, and the culture all mixed together make this a truly incredible experience.”*

– Bo (Rocky Mount, North Carolina)

Mathcamp 2024 was held June 30–August 4 at the University of Puget Sound in Tacoma, Washington.

From Aurora, Ohio to Quispamsis, New Brunswick; from Tolfa, Italy to Bangalore, India, this year’s Mathcampers came together from 23 U.S. states, 4 Canadian provinces, and 10 other countries. There were 47 girls, 4 non-binary students, and 69 boys; 48 alums, and 72 fantastic new campers, selected through a competitive application process (from 1001 applicants!) based on their mathematical and personal qualities and fit with Mathcamp’s mission.



*“Everyone will find a fit at Mathcamp because of how diverse and large the community is.”*

– Tima (Kyiv, Ukraine)

## Challenge yourself with a Quiz problem!

Here is a curious fact you may not have known about mathematicians: when asked a yes-or-no question, number theorists will always tell the truth, while analysts will always lie. Be careful: if you ask someone a yes-or-no question, and they cannot answer either “yes” or “no” to it, then the universe explodes in paradox. For example, this happens if you ask a number theorist, “Is your answer to this question ‘no’?”

(a) What yes-or-no question can be asked to both a number theorist and an analyst to cause the universe to explode in both cases?

(b) To try to prevent the universe from exploding in paradox, logicians have decided to act as paradox detectors. When you ask a logician a yes-or-no question, the logician will answer “yes” if asking the question to a number theorist would cause the universe to explode, and “no” otherwise. For example, if you ask a logician, “Is your answer to this question ‘no’?” the logician will answer “yes”. What yes-or-no question can be asked to a logician to cause the universe to explode?



# Math at Mathcamp 2024



## Classes

Mathcampers begin each summer by talking with their academic advisor, whose role is to help you answer the question: *What kind of academic experience do you want to create this summer?* The possibilities aren't endless, but they're vast: from "Cantor's leaky tent" to "Gödel's incompleteness theorems"; from "Quantum computing" to "The  $Ra(n)do(m)$  graph", students had over 100 classes to choose from. Here is just one example, from Mathcamp instructor Travis Dillon:



*"I learned more math in just five weeks than I have in the past year."*

—Linsey (Tallahassee, Florida)

## Fermat is False in Finite Fields (FFFF)

Fermat's Last Theorem says that there are no solutions to the equation  $a^n + b^n = c^n$ , if  $n \geq 3$  and  $a, b, c$  are positive integers. It's pretty hard to prove. On the other hand, Fermat's Last Theorem for Finite Fields says that  $a^n + b^n \equiv c^n \pmod{p}$  has no solutions if  $n \geq 3$  and  $a, b, c$  are not divisible by  $p$ . Except this is **FALSE**.

In this class, we'll use graph theory to prove a result in number theory called Schur's Theorem, and we'll use that (plus a bit of general number theory knowledge) to show that Fermat's Last Theorem is not only false in finite fields, it's *very* false.

*"[F]rom pacing to difficulty to length to workload to subject to teaching style, there's enough diversity that you'll be able to find amazing classes to attend each week."*

— Evan (Windsor, ON)



## Projects

The Project Fair is when our work outside classroom hours comes together. Students worked on projects ranging from "Differential Geometry of Surfaces" to "Short Math Animation" to "Change ringing" (with handbells!) to "Gingerbread" Calculator, and presented their work in a joyous culmination to the summer.



# Outside the Classroom at Mathcamp 2024



*“Mathcamp is the first place I’ve ever been to where everyone gets my obscure math references and jokes, and this small thing has made me very happy.”*

– Ash (Clarkston, Georgia)

## Field Trips & Activities

As always, our schedule was packed with field trips and activities. Weekend classics included berry picking, a trip to Seattle, contra dancing, and sea kayaking. But the program was bursting with creativity, from silliness (“Walk to the dining hall like a flock of flamingos”) to mischevious (“August Fools Day”) to downright impressive: pictured at right, we built 100 “Counter Clocks,” telling time counterclockwise and in radians!



## Annual Puzzle Hunt

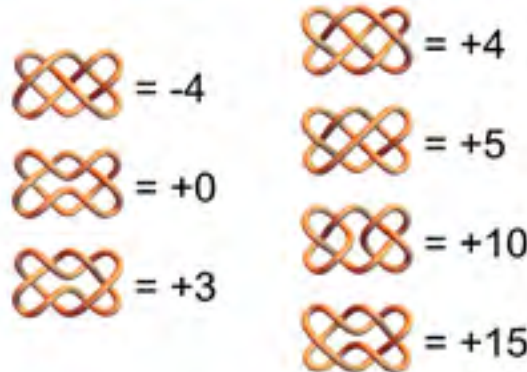
Each year, the staff design a day-long Puzzle Hunt, heralded as one of our best events. This year, the Enigmatic Vindictive Insidious Luminaries recruited campers to help build their evil division-by-two ray... but all is not as it seems. For a challenge, try to solve the puzzle below, entitled “Customization.”

*“It’s the best environment I’ve ever been to, and completely unparalleled for being surrounded by mathy people. Mathcamp lets me be the person I want to be.”*

– Ellie (Conway, Arkansas)

Each item on display in the showroom can be adjusted to suit your needs.

DISPLAY



# Supporting Mathcamp



Mathcamp 2025 will take place this summer at Lewis & Clark College in Portland, Oregon from June 29th to August 3rd. We look forward to welcoming new campers and alumni from all walks of life, and from all over the world, all sharing a love of math!



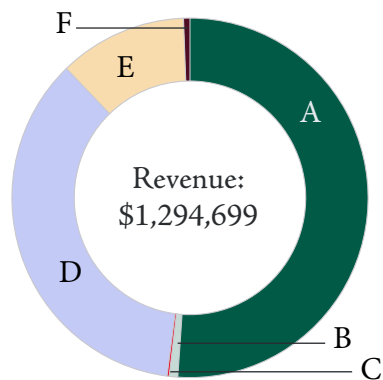
## FY 2023–24 Revenue

A Tuition (gross, before aid)	\$ 661,475
B NSF Grant	\$ 10,000
C AMS Epsilon Fund Grant	\$ 2,500
D Mathcamp Donations	\$ 462,654
E Consortium Donations	\$ 150,544
F Misc (e.g. interest earned)	\$ 7,256

Mathcamp gives a formative intellectual and social experience to incredible kids, and one of our guiding principles is that camp should be accessible to every qualified student – whether or not they can afford the tuition. Admission is irrespective of financial aid, and we fully meet the need of every Mathcamper.

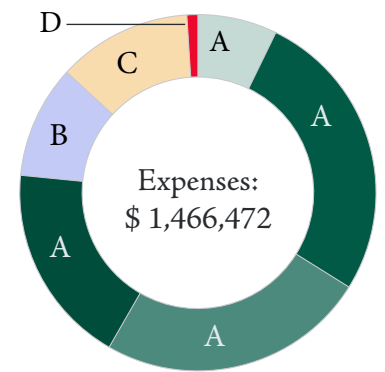
## FY 2023–24 Expenses

A Mathcamp 2024	\$ 1,122,809
+ Camper Scholarships - 9%	
+ Staff Salaries - 35%	
+ University of Puget Sound - 32%	
+ Other Camp Expenses - 24%	
B Consortium Conference	\$ 150,544
C Administrative	\$ 178,629
D Fundraising	\$ 14,491



## Donations keep Mathcamp open to all.

Mathcamp is *free* for families with household incomes of \$100,000 and below, with tuition on a sliding scale for middle-income families, and we offer travel grants to cover plane tickets to camp for students from . A small portion of our aid budget comes from the National Science Foundation and the American Mathematical Society, and the rest comes from the program's supportive alumni, families, and friends.



Give today: [www.mathcamp.org/donate](http://www.mathcamp.org/donate)