2022 Math Attack
Summer Camp for Girls

Final Report

July 10th – 17th, 2022
Description

The 2022 Math Attack Summer Camp for Girls was an 8-day overnight camp that was held at the University of Calgary and the Banff International Research Station (BIRS) from Sunday, July 10th - Sunday, July 17th. The camp brought 21 grades 6 - 10 students who identify as girls together to engage in fun mathematical activities and build connections. Students stayed in the university residence for the first five nights of the camp and stayed at the Banff Centre for the last two nights.

The camp aimed to encourage girls to pursue their passion for mathematics and make connections with peers who shared similar interests. Throughout the week, students engaged in mathematical sessions that explored topics such as cryptology, data science, probability paradoxes, and actuarial science. They investigated the spread of disease by modelling a zombie outbreak, learned what you can do with a math degree at a Women in Math Panel, and competed in the Amazing (Math) Race. These sessions and panels exposed students to over 20 female role models, including recent high school graduates, undergraduate math students, graduate math students, mathematics faculty, and mathematicians in industry.

During the camp, there was also plenty of time for friendship building and physical activity. Evening activities included sports, swimming, board games, karaoke, and a walk along Bow Falls Trail. On Friday, students also took some time to explore the town of Banff and hiked up Tunnel Mountain.

There was no registration fee for the camp and all meals and accommodations were provided.

Sponsors

- University of Calgary
- Banff International Research Station (BIRS)
- Callysto
- Canadian Mathematical Society (CMS)
- Pacific Institute for the Mathematics Sciences (PIMS)
- SNAP Math Fair
- University of Alberta
## Schedule

<table>
<thead>
<tr>
<th>Time</th>
<th>Sunday July 10th</th>
<th>Monday July 11th</th>
<th>Tuesday July 12th</th>
<th>Wednesday July 13th</th>
<th>Thursday July 14th</th>
<th>Friday July 15th</th>
<th>Saturday July 16th</th>
<th>Sunday July 17th</th>
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<tbody>
<tr>
<td>8 – 9am</td>
<td>Breakfast</td>
<td>Breakfast</td>
<td>Breakfast</td>
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<td>Breakfast</td>
<td>Breakfast</td>
<td>Breakfast + Lunch</td>
<td>Lunch</td>
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<tr>
<td>9 – 10:15am</td>
<td>Visualizing the Pythagorean Theorem (Jenny Lawson) MS 431</td>
<td>The Amazing Math Race (Jenny Lawson) MS 431</td>
<td>Modeling Zombies (Ariane Cantin) MS 431</td>
<td>Data Science (Katie Burak) MS 571</td>
<td>Bus to Banff</td>
<td>Mathematical Communication (Lauren DeDieu)</td>
<td>Combinatorics (Dami Wi)</td>
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<td>10:15 – 10:30am</td>
<td>Break</td>
<td>Break</td>
<td>Break</td>
<td>Break</td>
<td>Break</td>
<td>Break</td>
<td>Break</td>
<td>Lunch</td>
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<tr>
<td>10:30 – 11:45am</td>
<td>Probability Paradoxes* (Keria Gunn) ENA 201</td>
<td>The Amazing Math Race (Jenny Lawson) MS 431</td>
<td>Modeling Zombies (Ariane Cantin) MS 431</td>
<td>Data Science (Katie Burak) MS 571</td>
<td>Drop-off luggage and explore Banff (participants purchase their own lunch)</td>
<td>Undergraduate Student Panel (hosted by Michelle Mo)</td>
<td>Feedback + Closing Ceremony</td>
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<tr>
<td>11:45am – 1pm</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch</td>
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<td>Lunch</td>
<td>Group Photo + Lunch</td>
<td>Lunch</td>
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<tr>
<td>1 – 2:15pm</td>
<td>Callisto Hackathon (Rania Mahdi &amp; Jenny Lee) MS 571</td>
<td>Free Time</td>
<td>Women in Math Panel* (hosted by Kristine Bauer) ENA 201</td>
<td>Data Science (Katie Burak) MS 571</td>
<td>Free Time</td>
<td>Free Time</td>
<td>Bus to Calgary</td>
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<td>2:15 – 2:30pm</td>
<td>Break</td>
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<td>Break</td>
<td>Lunch</td>
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<tr>
<td>2:30 – 3:45pm</td>
<td>Actuarial Science (Elia Charpentier) MS 431</td>
<td>Probability Paradoxes (Keria Gunn) MS 431</td>
<td>2:15 – 3pm: Women in Math Meet &amp; Greet MS 457</td>
<td>Data Science (Katie Burak) MS 571</td>
<td>Hike (Tunnel Mountain)</td>
<td>Mathematical Card Tricks (Lauren DeDieu)</td>
<td>Departure (Aurora Hall)</td>
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<td>3:45 – 4pm</td>
<td>Feedback</td>
<td>Feedback</td>
<td>Feedback</td>
<td>Feedback</td>
<td>Feedback</td>
<td>Bus to Calgary</td>
<td>Feedback</td>
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<tr>
<td>4 – 5:30pm</td>
<td>Arrival and Registration (Aurora Hall)</td>
<td>Prepare Questions for Panel/ Puzzle Day</td>
<td>Monty Hall* (Vince Chan) ENA 201</td>
<td>Math Context (Vince Chan) MS 431</td>
<td>Problem of the Day</td>
<td>Check-in and Free Time</td>
<td>Cryptography: Classical Ciphers (Lauren DeDieu)</td>
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<tr>
<td>5:30 – 6:30pm</td>
<td>Dinner</td>
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<tr>
<td>6:30 – 9pm</td>
<td>Introduction, Ice Breaker Activities MS 431</td>
<td>Sports</td>
<td>Board Games</td>
<td>Feedback/ T-Shirt Design</td>
<td>Movie</td>
<td>Origami (Dami Wi)</td>
<td>Walk (Bow Falls Trail)</td>
<td>Lunch</td>
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</table>
Organizing Committee

Camp Director:

- Lauren DeDieu, Associate Professor (Teaching), University of Calgary

Other Organizers:

- Sean Graves, Lecturer, University of Alberta
- Emily Yang, High School Student
- Jenny Hua, High School Student
- Michelle Mo, Recent High School Graduate

Camp Leaders

- Dami Wi, University of Alberta Alumna (Chaperone)
- Michelle Mo, Recent High School Graduate
- Alice Yang, Recent High School Graduate

Speakers

- Ariane Cantin, Assistant Professor (Teaching), University of Calgary
- Dami Wi, University of Alberta Alumna
- Ella Charpentier, University of Calgary Alumna
- Jenny Lawson, Graduate Student, University of Calgary
- Jenny Lee, Data Science Intern, Callysto
- Katie Burak, Graduate Student, University of Alberta
- Keira Gunn, Graduate Student, University of Calgary
- Lauren DeDieu, Associate Professor (Teaching), University of Calgary
- Rania Mahdi, Education Specialist Intern, Callysto
- Vincent Chan, Math Teacher, Renert School
Panel Hosts

- Kristine Bauer, Associate Professor, University of Calgary
- Michelle Mo, Recent High School Graduate

Panelists

- Elham (Ellie) Negahdary, Senior Data Scientist, Auspice Capital Advisors
- Farah Khandwala, Biostatistician, Berry Consultants
- Lei Xiong, Technical Manager, Enbridge
- Nicole LeBlanc, Director: Markets & Tariff, Alberta Electric System Operator (AESO)
- Chrisy Xiyu Du, Research Associate, Harvard University
- Dora Woodruff, Undergraduate Student, Harvard University
- Serina Hu, Graduate Student, MIT
- Zosia Adamska, Undergraduate Student, Caltech

Application Process

The camp was advertised on the University of Calgary Department of Mathematics and Statistics’ Educational Outreach webpage. The camp organizers shared the call for applications with all of their junior/high school teacher contacts, including teachers whose schools participate in other math outreach activities and school board math specialists.

The application consisted of questions that gauged applicants’ enthusiasm for attending the camp and their mathematical maturity; these components received weightings 25% and 75%, respectively. Due to the high quality of the applicants, the top students were interviewed to further gauge their enthusiasm for attending the camp. After the interviews, 21 students were invited to attend.

Over 150 girls applied to attend the camp. Due to the high level of interest, the camp director, Lauren DeDieu, created a second camp, the Girls Excel in Math Summer Camp, and invited the remaining 130 applicants. This 3-day camp had many of the same speakers and was held at the University of Calgary; the Math Attack girls joined the Girls Excel in Math girls for one session per day.
Participants

We had 21 grades 6-10 participants who identified as girls:

- Ashlyn Lu
- Bella Jiao
- Caroline Zhang
- Chenwei Pan
- Chloe Zhai
- Claire Andrew
- Emily Yang
- Irene Ji
- Iris Wang
- Isha Goyal
- Jeena Aggarson
- Jenny Hua
- Julia Miao
- Karmin Kahlon
- Lisa Cao
- Michelle Chen
- Milly Nie
- Sofia Pyatalova
- Sunny Li
- Trinity Chen
- Ziyu Li

Participant Demographics

<table>
<thead>
<tr>
<th>Grade</th>
<th>Six</th>
<th>Seven</th>
<th>Eight</th>
<th>Nine</th>
<th>Ten</th>
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</thead>
<tbody>
<tr>
<td>Number of Participants</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>6</td>
<td>5</td>
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</table>

<table>
<thead>
<tr>
<th>City</th>
<th>Calgary</th>
<th>Edmonton</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Participants</td>
<td>13</td>
<td>8</td>
</tr>
</tbody>
</table>
Feedback

- This was a once in a lifetime experience, and I really loved it. The supportive attitude of everyone made it feel like home, and in only a week I’ve gotten so attached to everyone. It feels like we’ve been together for so long now. There are so many new concepts and unique ways of thinking that are going to stick with me for the rest of my life, as well as precious school advice from dozens of professionals and current students. If I could go back in time and do it again, I would.

- This camp encouraged me to pursue my passion for math because I got to see other people like me and some others to look up to.

- This camp changed the way I viewed mathematics as there are so many things that it is. I used to think that it is plain calculations, but it turns out that there is much more, such as programming, data science, and communication.

- It was amazing and I felt really at ease, surrounded by girls like me. I never had to wonder, ‘will they like me? Will they judge my sunburnt Vaseline-covered face?’ like I would around boys. Often, when I’m surrounded by guys, I worry more about my appearance or my presentation or my attitude. But around my peers, I was comfortable with being myself and speaking my mind. Not only was this camp an eye opening experience, but the best part was my friends.

- Thank you so much for opening my eyes up to the world of data science and more! I learnt about so many different careers that I believe I could potentially and realistically pursue. I loved seeing women that were so enthusiastic and confident in their areas, and it was inspiring to take a glimpse of what my future held by seeing the careers of those women.

- This camp was such an insightful and inspiring experience. Here, I have not only learned about STEM and womens' contributions, but also about the future of our understanding of our universe, through math, computer science and statistics. The classes were incredibly engaging and allowed me to get exposure to entire new ideas and fields. As well, I have connected with other outstanding and spectacular young women with whom I share similar interests to. I am sure this opportunity will build lasting relationships. This camp is an once in a lifetime experience to learn and explore with direction in STEM fields, while having an astronomical amount of fun.

- This camp made me realize that having a passion in math could be turned into a very interesting career with applying mathematics to different parts of the world.

- I loved being able to talk with the other girls and make connections! I think the people was what made this camp so fun!

- This camp has probably taught me more about the field of stem than any experience i have ever experienced prior.
Highlights