

2021 European Girls' Mathematical Olympiad

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Introduction

The European Girls' Mathematical Olympiad (EGMO) is an international mathematics competition for women. Although it is held in Europe, countries from around the world are invited to take part. EGMO is a demanding contest that spans over two consecutive days, with each day consisting of 3 problems to be solved in 4.5 hours. The event brings together talented girls from all over the world and inspires the next generation of female mathematicians.

In the last year, I have had the pleasure of representing Canada at the 2021 EGMO. I am grateful to have been able to participate for a second time, under the guidance of three encouraging leaders (Anna, Elnaz, and Mariya) and alongside three supportive teammates (Allison, Emma, and Kaylee). EGMO was an incredible experience that has allowed me to feel empowered within the mathematics community, pushed me to become a better problem solver, and inspired me to continue my studies.

Experience

Before the competition in April, the team participated in multiple training sessions. My first-year training experience consisted of a four-day training camp at The Fields Institute, followed by weekly problem sets. A typical day of the camp looked like this:

- Eating breakfast together at a local restaurant while talking about the day's schedule
- Attending a morning lecture and problem-solving session facilitated by a guest speaker
- Taking a break for lunch and getting to know each other, beyond our shared interest in math
- Listening to an afternoon lecture on a different topic and working on old problems
- Going out to dinner, bonding over heartfelt discussions about challenges we face
- Participating in a nearby Escape Room to wind down for the evening

The training session exposed me to advanced topics in mathematics. However, it also allowed me to connect on a deeper level with my fellow teammates. I am very grateful for the experience. A few days after the camp ended, our leader Dorette organized a correspondence program to continue our training. She sent us problem sets that we would submit each week. This was incredibly helpful in developing my solution-writing ability.

In my second year, all of our training was online as a result of the pandemic. Our leaders organized guest lectures, followed by problem-solving sessions, each weekend in March. While I wasn't able to meet the speakers in person, I took a lot away from these lectures. Some of the topics that we studied were projective geometry, inequalities, and advanced number theory. These talks exposed me to new topics in mathematics and gave me a chance to collaborate with my other team members.

As the start of the competition drew near, the team settled on when we would be taking the contest. Each team member would log onto the same Zoom meeting, where our proctors would be monitoring us. I felt a flurry of emotions: excited to be working on some interesting mathematics problems, honoured to be representing Canada, and nervous to be participating in this prestigious competition.

I was surprised by the overall difficulty of the contest. This year's questions did not feel as approachable as they did in my first year. In particular, I was challenged by the first problem on the second day. I spent a lot of my time on it, but I was unable to crack it. After discussing the problem with the rest of my team members, it was clear that many of them felt similarly.

When the scores and cutoffs were announced, they reflected the difficulty of the contest. We were proud to take home a gold medal and silver medal, bringing back Canada's first EGMO gold medal. As a team, we tied for 19th among 55 participating countries. I am very proud of the team for working so hard and persisting throughout the contest, especially given the circumstances.

Reflection

I have often been one of the only girls in my grade to participate in a mathematics contest, and this has made me accustomed to the gender imbalance that is so prevalent in all areas of mathematics. While some may call the lack of girls to be purely coincidental and look poorly upon affirmative action, I strongly believe that the disparity can be attributed to societal expectations. Girls are often considered not to be good at mathematics, discouraging them from studying the subject more deeply. This is not only a detriment to the women being pushed away from mathematics, but it is also a detriment to the development of society. Diversity brings in new perspectives and ideas, which will ultimately drive the field forward.

Initiatives that encourage female participation in mathematics, thus, are extremely important. It provides more opportunities to girls that may have otherwise decided to stop pursuing mathematics. Being able to look up to female mathematicians inspires the next generation of girls to explore the field. Personally, I know I felt motivated to work harder at mathematics when I saw other girls that I knew succeed at EGMO.

Participating in EGMO has been an incredible experience. Although there weren't any male contestants, the atmosphere was just as exciting as any other mathematics competitions that I had been to. I thoroughly enjoyed solving so many fascinating problems alongside so many other ambitious, hard-working girls—many of whom I call my close friends. It was refreshing to be in an environment where I didn't feel like I was on my own or felt like my ability was underestimated because I was a girl.

Over the last two years, EGMO has not only pushed me to become a better mathematician, but it has also made me more aware of the different challenges that women face in mathematics. I have better understood the discomforts that females feel in such a male-dominated field—whether it be imposter syndrome or implicit/explicit discrimination. I am so incredibly grateful to have had this opportunity to be a part of the conversation.

Acknowledgement

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I'd like to thank my lecturers—Howard, Edgar, Yuqing, Jacob, James, and many more—for teaching us and making problem sets to help us improve.

I'd like to thank my teammates—Allison, Emma, and Kaylee—for making the experience more enjoyable.

I'd like to thank the contest organizers—the Canadian Math Society and EGMO Organizing Committee—for coordinating the competition logistics in this challenging year.

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