

## European Girls' Mathematical Olympiad 2018 Samuel Beatty Report

by Elnaz Hessami Pilehrood

I've loved problem solving and mathematics since I was a kid, first being intrigued by the colourful shapes and puzzles as a child, and then by the creativity and abstractness of mathematics as a high school student. Being interested in math, I started participating in math contests in grade 7, both to challenge myself, and also to meet other students with similar interests. When I started high school, I became even more involved, attending math circles, math clubs, and math camps. As I started participating more and more, I began to notice the lack of girls in these events. In a camp or club of 20 students, there were usually only three to four girls.

When I was invited to the Winter Math Camp this year and was informed that Canada would be participating in the European Girls Mathematical Olympiad, I was beyond excited. I had known about EGMO for a couple of years, but never thought that I would one day be able to participate in it myself. I loved the idea of meeting hundreds of other girls who were as passionate about mathematics and problem solving as I was.

I was also excited that in this year's Winter Math Camp there would be four other girls besides me. When I met Karen, Anna, and Jennifer at math camp, we instantly became close friends. We shared and laughed about many stories that we had all experienced as girls doing math contests and Olympiads. It was very refreshing and inspiring. The Winter Math Camp was an intense week of learning and problem solving, with amazing instructors who are passionate and experienced. We learned about functional equations, generating functions, game problems, inverses in geometry, and much more. We also had mock Olympiads which gave us extra practice in problem solving and time management.

In the months after the camp, our training continued online. We all studied individually a few hours each day, going through old Olympiads, working through past camp handouts, and learning new concepts from math Olympiad books. Sarah (Sun) and Dorette (Pronk) also sent us weekly problem sets, and they helped us improve by giving us feedback on our solutions and our proof writing. Karen, Anna, Jennifer, and I were always in touch during these months, and we constantly discussed problems, problem solving strategies, and our preparation for the contest.

After months of preparation, the week of the contest came, and we met up to fly to Florence. When we arrived, we were greeted by a very welcoming EGMO staff in a beautiful city. We spent the first couple of days exploring Florence, meeting other teams, and adjusting to the new time zone. The day before the contest, all four of us sat with Sarah and Dorette and talked about the contest for a couple of hours. Sarah and Dorette gave us all the tips that they had gathered from years of Olympiad training, explained the marking process in great detail, and encouraged us to do our best, but not worry or stress about the results.

The Olympiad problems on both days were challenging, which is why it was fun to spend hours trying different techniques and theorems to come up with a solution. It felt very rewarding to find a beautiful solution to a problem, which motivated me even more to tackle the next problem. Each day after the four and a half hours, we all met together, asking each other how we solved each problem and what strategies we used. Most of the time we all had different solutions, and it was amazing to see all the different thought processes that different people go through to solve the same problem. At the end of the contest, we went home with a silver medal, two bronze medals, and an honourable mention. I was proud of myself, Karen, Anna, and Jennifer for improving so much and learning so many new concepts in just a few months after the winter camp. We all worked very hard, studying and solving for hours each day, and the EGMO week was a great place to celebrate our hard work and persistence over the last couple of years and months.

That week in Florence was the first time I saw so many girls passionate about mathematics in one place. Although we all spoke different languages and were from different places in the world, we were all familiar with the language of mathematics. We all had one thing in common: the love for problem solving and an appreciation for the beauty and creativity in mathematics. For me, it was very inspiring and empowering to see all these smart girls doing what they love and doing it so well. It was inspiring to see girls who managed to solve three very difficult problems in four and a half hours each day. It was inspiring to see girls younger than me who had already reached a higher level than I had. It was inspiring to see girls discussing math problems together, tossing ideas back and forth.

This is why I believe such events made specifically for girls are so amazing. When year after year we see only a few girls interested in math among hundreds of boys, it can seem against the norm to be a girl who loves math. It can be a bit discouraging and demotivating. However, after this wonderful week in Florence, I was inspired by all the girls around me, and I was more motivated than ever to learn more mathematics, solve more problems, follow my passion, and encourage more girls around me to give mathematics a try.