

2025 Samuel Beatty Report

14th European Girls' Mathematical Olympiad (EGMO) in Pristina, Kosovo

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This past April, I had the honour to represent Team Canada at the 14th annual European Girls' Mathematical Olympiad (EGMO) alongside Sophie Zhang, Honjar Xing, and Yifan (Emma) Tang. The EGMO is a math competition for girls from countries all across the world, coming together in a different European country each year to attempt six problems (3 problems each on 2 days, each with a 4.5 hour period). EGMO 2025 was hosted in Pristina, Kosovo, with 219 contestants from 56 countries.

To prepare for EGMO, an in-person training camp was organized in March and I traveled to McMaster University with my fellow teammates for a weekend. Our deputy leader Courtney Allen, leader Kateryna Tretiakova and previous EGMO deputy leader and contestant Kathryn Dou accompanied us throughout the camp. Several trainers gave lectures on a variety of topics in Algebra, Combinatorics, Geometry, and Number Theory. We also got to visit restaurants, cafes, and even went bowling where we tried out all sorts of goofy bowling techniques. We also did an unboxing of our team uniforms and spent hours bonding and chatting with each other. On the last day, Kate and Kat presented us with a lesson on how to write well structured solutions and we completed a mock olympiad.

After much anticipation and excitement, on April 10th, we finally made our way to the airports. I met up with Kate, Sophie, Honjar, and Emma at the Toronto Pearson airport in preparation for our flight to Montreal, where we would meet up with Courtney. The flight to Montreal was only a bit over an hour flight, but our layover at the Montreal airport was only 1hr 20 mins as well, which was slightly concerning as our flight kept getting delayed. After a half an hour delay which included the plane needing to get sprayed down because it was freezing, we took off from Toronto! Upon arrival at Montreal we immediately started speed walking to the gate for our next flight. Luckily, we made it to the gate on time and met up with Courtney who had landed 6 hours prior from New Brunswick.

When we landed in Vienna, we met the teams from Czech Republic, Hungary, Denmark, Ukraine, and the deputy leader of Germany who would be on the same flight as us. We arrived in Pristina airport at 11AM. The chief guide and deputy chief guides greeted us, before we all boarded a bus to send us to our hotels. We were greeted by our guide Urta at the hotel and received our merch and lanyards. Emma and I joined the American team in playing games with the guides. It's a word game, and we played it for a bit. Sophie came downstairs to join us, and Urta took the 3 of us out into the city. We

toured some shops and stopped at a cafe where I tried kiwi ice cream for the first time (it's good!).

The first day of official activities began with the opening ceremony, during which we socialized with several other countries, received gifts, and stood up to wave our flag when Canada was called. We took several team photos as well as photos with other countries, and sported our signature Canadian flag headbands! Later that afternoon, guides took us on tours around the city, telling us about the history of Kosovo and introduced all the landmarks to us. We visited the NEWBORN statue, the national library, and the cathedral from which we were able to see amazing views of the rest of the city. Upon returning to the hotel, we played some card games with the American team in the lobby.

We tried to sleep early in preparation for the first day of competition the next day. Unfortunately, I woke up with a sore throat and nauseousness, feeling especially cold as we stood outside waiting to be let into the competition building. The onsite medics checked on me and gave me medicine, and after a while of waiting, finally all contestants were seated into the competition room. Problem 1 was number theory, and required contestants to make a key construction. Although the solution was simple, it took me almost 3 hours of aimlessly trying things before I finally saw the construction after coming back from a washroom break. Luckily, most of my teammates solved this problem much faster. Unfortunately I wasn't able to make much progress on problem 2, an algebra question asking us to prove there exists a sequence that satisfies some conditions. I only received 1 point for finding the correct sequence that satisfies, without being able to prove that this sequence always exists. My teammates had much better luck with this question, with Sophie and Emma solving it, and Honjar having most of the correct ideas and getting a 4. Problem 3 is a difficult geometry problem, and only Sophie was able to gain points from her key insights.

After the competition, we enjoyed lunch with Courtney, and we also gave some feedback about the organization of day 1 to Kate who will give it to the organizers. We were scheduled to go to a sponsored formal dinner event, but due to overall tiredness, we opted to stay in the hotel instead and ordered pizza takeout.

Logistically, the second day of the competition went much better than the first, and we got some more sleep as well. My sore throat lessened quite a bit, and I felt much better going into the competition, but some of my other teammates started feeling unwell that day. Problem 4 was a relatively easy geometry problem, with everyone on the team receiving 7 points and solving it pretty fast. However, problem 5 was combinatorics with the dreaded Turbo the Snail. After experiencing firsthand the horrors of Turbo on EGMO

two years ago and hearing the stories of last year's IMO, I didn't have much hope of solving this problem. All four of us were only able to make various progressions on proving the constructions and working out some of the cases. We will later find out during coordination that the grading scheme to this problem was more strict than we thought, leading to Emma and I receiving 1 point for our work, Sophie receiving 2, and Honjar receiving 3. Problem 6 was the most difficult problem in the contest, with only 2 people in the entire competition getting full marks. None of the Canadians were able to make much progress on this problem.

We enjoyed mocktails after the competition, and a games hub was hosted for the competitors later that day. My teammates and I enjoyed a fun game similar to a verbal version of charades, where each person had to describe the goal word with one word, but no two people could write the same word. We received many more gifts from other countries and some of them joined us in our game as well.

The next few days were filled with fun events and excursions. The first excursion was to Prizren, another major city in Kosovo. Unfortunately, since the excursion included walking around the entire day, Emma and I chose to stay at the hotel to recover from our illnesses. Honjar stayed back as well, while Sophie went on the excursion. We spent the day eating takeout pizza, napping, and I spent time reading a book. Halfway through the afternoon, we realized scores were starting to come out on EGMO's live scoreboard. Emma and I anxiously refreshed the website over and over again in our room to see if new scores had come out, as the scores came out individually per problem and per country.

By dinner, those on the excursion returned, and we spent dinner agonizing over the fact we were one of the only countries left whose problem 2 scores had not come out yet, when most countries were only missing problem 5. We find out this is because Kate and Courtney were trying to appeal for an extra mark. Surprisingly, we were one of the first countries to get our problem 5 scores, and it was lower than what most of us expected. Later, our leader tells us there was a line of the proof most of us thought was trivial and omitted but the grading scheme stated we must have it in order to gain more points. Many leaders and deputies were trying to fight for those marks, leading to exorbitantly long coordination times for problem 5, and much lower scores than expected (Turbo the Snail strikes again!). By the time I decided to sleep, there were still many countries missing their problem 5 scores, and even though we were anxious for medal cutoffs to come out, we realized the leaders and coordinators definitely weren't going to be able to finish all the coordinating *and* vote on medal cutoffs that night.

The next day, the leaders were set to vote on medal cutoffs while the contestants were going on an excursion to Pristina Mall. We first played some mafia games with our guide and other countries, before wandering around the food court of the mall. The American team and us enjoyed some stir-fried ice cream—something I had only seen Instagram reels influencers post about before. Then our two teams faced off against each other at the bowling alley, before getting lunch with several other countries.

During lunch, we found out about the medal cutoffs, Honjar and I received bronze, while Emma and Sophie got silvers. Upon arriving back at the hotel, we dressed in our uniforms and got ready for the closing ceremony. We clapped for everyone receiving their medals, listened to a couple of speeches, and watched the introduction video for the next EGMO. After the ceremony was over, we got to take a lot of pictures and enjoy dinner while socializing with other countries. We took pictures with the Americans, the Americans and the Chinese, and the Americans, Chinese, Australians, New Zealanders. It soon turned into a dance party and all the contestants, guides, and some of the deputies and leaders vibed to the music together. Some countries even taught some traditional dances.

That night, we joined many countries in some final card games and socializing before teams started departing for the airport. Honjar left with another team, while the rest of us stayed for an extra day before our flight the next night. We walked around the city, enjoyed scenery, and Kate told us many stories of what she was up to during the week as we barely saw her while she attended leader duties. Unfortunately, by afternoon, I was feeling sick yet again with a borderline low fever so we returned to rest before heading to the airport. The next half a day of flights, layover spent sleeping on chairs in the Vienna airport, and finally arriving back in Toronto, I lived off of a sandwich and Tylenol pills. Luckily we all got home in one piece!

With that, our EGMO journey came to an end. Being able to compete at EGMO was an amazing experience. Having the opportunity to meet other girls interested in mathematics from all over the world, and it was incredible to reunite with old friends as well as make new ones. The memories I made will stay for me for years to come.

I am beyond grateful to be able to represent Canada at the EGMO, and there are many people I'd especially like to thank:

First, I'd like to thank my family for always supporting me during my competition journey and my friends who always believed in me.

I'd like to thank Sophie, Emma, and Honjar, for being amazing teammates and making the trip all the more fun with our gossip sessions, card games, and exploring Pristina together.

I'd like to thank our leader and deputy leader, Kate and Courtney, for looking after us, fighting for points in our solutions, and being overall super awesome!

I'd like to thank Urtina Sada, our local guide who told us stories about the history of Kosovo, took us to delicious restaurants and cafes, and provided us with all the logistics of each day during the week.

I'd like to thank my teachers and coaches who constantly encouraged my pursuit of mathematics.

I'd like to thank all the trainers who helped prepare us for the competition by creating lectures and problem sets.

I'd like to thank the EGMO organizers for hosting all of us and helping to create such a memorable experience.

I'd like to thank everyone at the CMS for their constant hard work put into selecting and training us as well as creating competitions and camps for all students to participate in.

Lastly, I'd like to thank the Samuel Beatty Fund for their support. Thank you so much for making this incredible experience come true.