

More than Math

The Lasting Benefits of Summer Programs

by Yasha Berchenko-Kogan

“Raise your hand if you’ve ever felt lost in a math class.”

This question was asked at an assembly on my first day at Canada/USA Mathcamp. To my surprise, a lot of people raised their hands, including all of the staff. I thought about my own experience in school and couldn’t think of any time I had felt lost in a math class. By the end of the first week, that would change. At the time, the experience didn’t seem all that significant: I was in a new place, meeting new people, learning new games, discovering new hobbies, and encountering new math. Being lost in a math class was a tiny drop in a very big bucket of new experiences.

Ten years later and having attended a few more summers of Mathcamp as well as the Math Olympiad Program, I am much more aware of how useful those challenges were. Unlike homework problems in school, problems in real life are too hard to solve just by being “smart.” Encountering problems that you can’t easily solve is inevitable, and, sooner or later, everyone must learn how to deal with them. If hitting your head against the wall isn’t working, you learn to try a few more times, to find useful resources and tools, or to train yourself in relevant skills. Failure becomes more of a temporary setback.



Some of my friends in college were at the top of their class all throughout high school, and college was the first time they encountered serious obstacles, and also the first time they encountered role models whose hard work they could emulate to overcome those obstacles. They found their footing eventually, but it was much easier for me, since I had had the opportunity to learn how to deal with these issues back in high school summer programs in a much less stressful environment.

As a student, though, Mathcamp wasn't about learning life lessons. It wasn't even about math, though I couldn't help but learn quite a lot. At the time, it was all about fun. I went on full-day hikes, chatted late into the night with friends, sang in an a capella group, played frisbee, learned to dance, went whitewater rafting, and much more. Mathcamp also encourages students to arrange their own activities, which I did, organizing events ranging from parties with tea and watermelon to a staff parody at the talent show. Although I didn't realize it at the time, the skills I learned while running events at Mathcamp came in handy time and time again in projects ranging from running a math contest for high school students at Caltech to leading hikes in the mountains at a conference.

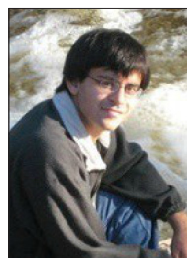
These sorts of skills are useful in any career. Although I'm pursuing a career in math research, the majority of my friends from Mathcamp are not, and many of them didn't even major in math in college. On the surface, one might think that Mathcamp must not have been that useful to them, given that the classes are introductions to college-level and graduate-level mathematical concepts. However, it's quite the opposite: Many of them view Mathcamp as an essential and formative part of their high school years. The community of peers, the friendships, the problem-solving and organizational skills, the network of professional contacts, the new hobbies, and the happy memories are priceless regardless of career path.

Mathcamp was also the first time I met people who got top scores at national math contests. One might expect that this experience would be intimidating, but it was actually motivating. Before going to Mathcamp and the Math Olympiad Program, I thought of people who did well in national contests as mythical supergeniuses whom I could admire but never hope to match. One of the lasting benefits of the summer camps was meeting those "supergenuses" and seeing that they were actually

just ordinary people. They were people like me who just worked really hard and had good resources to guide them. The flip side of that realization was that, with the resources available to me, I could become like them by working really hard.

The spring following my first year at Mathcamp, I took the USA Math Olympiad exam and scored zero out of 42 points. I expected to do better, but my experience at Mathcamp taught me not to take that score as a sign that I was bad at math. Instead, I was thinking that since most of the folks who did better than I did would graduate in a few years, all I had to do to get to the top was to train harder than the folks in my grade. I did the practice problems sent out by the organizers of the Math Olympiad Program. I founded a math club at my high school and signed us up for various local and national contests that we trained for at our meetings, and I attended online classes and participated in discussions on Art of Problem Solving. I was a USAMO winner two years later.

The math I learned at Mathcamp has certainly helped me hit the ground running in college math classes. The networks, role models, and resources that came out of Mathcamp and MOP have helped me professionally. However, the impact of these summer programs didn't stop there. I hike with the MIT outing club and dance in part because I explored those hobbies at Mathcamp. Most important, though, were the lasting friendships I formed over the course of those summers. I met many of my closest friends over late night conversations in the lounge at Mathcamp or MOP, and I feel I have old friends to catch up with in almost any city I visit. All but a couple of my friendships from my high school have faded away with time, but the Mathcamp friends I still keep in touch with are too many to count. **i**



Yasha Berchenko-Kogan is a third-year graduate student in mathematics at MIT. He was a student and then a counselor at Canada/USA Mathcamp, as well as a student and then an online instructor at Art of Problem Solving. When he's not researching differential geometry, teaching high school students, or writing about math on Quora, he might be found on a mountain in New Hampshire, at a play, or having dinner with friends.

One of the lasting benefits of the summer camps was meeting those "supergenuses" and seeing that they were actually just ordinary people.