

Report on the Seventeenth Annual UNB-CMS Math Camp

Grades 10-11

July 2016

The seventeenth edition of the UNB-CMS Math Camp at the University of New Brunswick, Fredericton, took place May 13-15 2016.

The residential camp is an exercise in enrichment and an **opportunity to recruit** young people into mathematics and related fields. The Camp seems not to be a significant recruitment tool for UNB; however campers consistently state on exit surveys that the Camp increases their interest in mathematics and that they intend to study math, science, or engineering after high school.

This year we had **9 female students and 19 male** students from across the province. Students from grades 10 and 11 are selected for the most part based on past success in the NB Mathematics Competition (grades 7-9) or in the Canadian Open Mathematics Competition (COMC). The female-to-male ratio seems to be stubbornly resistant to change in spite of our efforts, although this year represents a very slight improvement over last year (there were 8 females, 20 males in 2015).

Accommodation and meals are our greatest expenses. We cover all weekend expenses, although students' families are responsible for transportation to and from Fredericton. This year we benefited from a **generous increase in funding** from the CMS. Our intent was to increase the number of campers, and to this end we expanded our criteria for invitation and increased the number of invitees from roughly 35 to roughly 50. To our surprise and disappointment, however, only 27 could attend; this seems to have been due in part to several other camps occurring the same weekend and the fact that this calendar year resulted in our camp being offered one weekend later than usual.

With the extra funding we were able to purchase a set of Zometool and a set of Polydron—both are geometric construction kits that we will continue to use in future camps. Zometool in particular proved very popular, with several students using almost all of their break times to experiment and construct. We were also able to purchase a copy of *The Stanford Mathematics Problem Book* for each student as a gift, thanks to the funding increase.

A table of revenues and expenses is provided in Table 1.

During the 52 or so hours that students were on site we had several engaging problem-solving sessions which saw students working in small groups (and meeting peers from other schools in other parts of the province) and presenting their solutions to the group. We had several guest speakers visit the camp, giving mostly interactive talks on topics such as prosthetic limbs (by a guest speaker from UNB's Institute of Biomedical Engineering), precision in engineering (by a statistician in the Department) to gravitational waves (by a cosmologist in the Department). On Friday evening we played an energetic round of "Basketball math" at the gym, which was an excellent ice-breaker and encourages group participation in solving problems that get progressively more challenging. We also had the UNB Math society come

Revenue	
CMS	7000.00
Expenses	
Chaperones	1003.86
Student accommodation	1330.50
Student meals	2361.24
Snacks	207.45
Office supplies	249.31
Currie Centre Rental	55.00
Zometool	517.56
Polydron	348.61
Books	238.26
Total	6311.79

Table 1: Revenue and Expenses

and lead the students in a game of Nim, leading to discussions of binary arithmetic and game theory.

At the end of the Camp we ask students to fill out surveys; these provide us with helpful suggestions for improvements to the camp, but also are very rewarding to read, as students consistently state that they are more interested in mathematics as a result of attending the Camp. Here are some particularly encouraging quotes:

“The camp is so fun, it helps students to develop interest in math and gives students who are interested in math an opportunity to communicate with each other and to improve together. I love this camping experience, I’m sure others like it too. Please keep it going!”

“I think [the camp should be continued] because usually at school a lot of people do not really like math so if you ever want to talk to someone about an interesting problem that you found, it is very hard to find the right person. I think camps like this one are a unique opportunity to meet people of similar mind set and I wish that there were more of them.”

“I believe that this program sparks interest and introduce[s] different fields that needs math. We began to realize how important math is in our future studies. . . It is also a chance for us to meet new people and develop new friendships.”

We will be continuing this valuable outreach project in 2017, and beyond. A little more information is available at <http://www.math.unb.ca/camp/>.

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