Canadian Mathematical Society
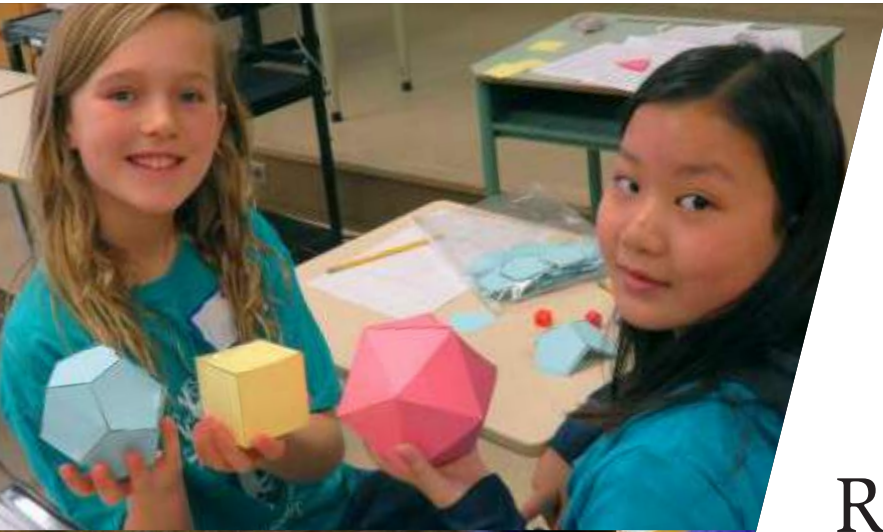## Société mathématique du Canada

CMS Math
Camps Report

2018

Rapport des Camps
mathématiques
de la SMC

About CMS Math Camps

Since its inception in 2000, the CMS Math Camps program continues to capture the spirit of mathematics from coast to coast and to inspire young minds across the land. The program offers a unique opportunity for young Canadian students to explore a side of mathematics that is not accessible in a classical classroom setting. Although the CMS gives local organizers the freedom to choose the topics and activities of their camps, the main goal of a typical camp is to engage students in an authentic learning environment in mathematics and its broad applications to Science, Technology and Engineering. This is achieved through stimulating presentations, hands-on activities, building projects and competitions. Students who attend the camps leave with new friends who share the same passion for the subject, new ideas to explore, and a fresh outlook on mathematics and the role it plays in our lives.

In 2018, a total of 25 camps were held across Canada with more than 1000 students and volunteers participating. Organizers are encouraged to engage students from visible minority communities and to have as many gender balanced camps as possible. Like in previous years, regional CMS Camps were a combination of weekend camps, day camps and week-long overnight camps. There were some specialty camps, such as, the Math Quest Camp for Girls, in (Kingston), the math camp for Black students at Dalhousie, and math Olympiad training camps in Toronto and Banff.

Camps mathématiques de la SMC

Depuis sa création en 2000, le programme de camps mathématiques de la SMC continue de diffuser l'esprit des mathématiques d'un océan à l'autre et d'inspirer les jeunes esprits de tout le pays. Le programme offre une occasion unique aux jeunes canadiens d'explorer un aspect des mathématiques auquel ils n'ont pas accès dans une salle de classe ordinaire. Bien que la SMC laisse les organisateurs locaux choisir les sujets et les activités de leurs camps, l'objectif principal d'un camp typique est de faire participer les élèves à un milieu d'apprentissage authentique en mathématiques et à ses vastes applications en science, en génie et dans les technologies. Cet objectif est atteint grâce à des présentations stimulantes, des activités pratiques, des projets de construction et des concours. Les élèves qui participent aux camps se font de nouveaux amis animés d'une passion commune pour le sujet, ils ont de nouvelles idées à explorer ainsi qu'une nouvelle perspective des mathématiques et de leur rôle dans nos vies.

En 2018, 25 camps ont été organisés un peu partout au Canada et ont accueilli plus de 1000 participants et bénévoles. Les organisateurs sont encouragés à inciter la participation des élèves de minorités visibles et à offrir le plus possible des camps auxquels participent autant de garçons que de filles. Comme les années précédentes, les camps régionaux de la SMC étaient des camps de fin de semaine, des camps de jour ou des camps d'une semaine. Il y avait des camps spécialisés, comme le camp de mathématiques Math Quest pour les filles à Kingston, le camp pour élèves noirs à Dalhousie ainsi que les camps d'entraînement pour les olympiades mathématiques à Toronto et à Banff.

2018 Regional Camps / Camps régionaux 2018

Alberta

University of Alberta August 5-12, 2018

Participants:	6 girls and 24 boys, Grades 8-10
Camp Leader:	Prof. Sean Graves, University of Alberta
Topics:	Problem of the Day, Puzzle Party, Team Contest, Computer Programming, Traveling Salesman Problem, Talent Show, Graph Theory, Geometry, Algebraic Inequalities, Excursions, Site visits, Linear Programming, Combinatorial Proofs, Rook Polynomials.

"Before this camp, I've never had the opportunity to learn any of the advanced and contest mathematics from an expert, and everything I knew I'd taught myself by looking at textbooks and using logic. My favourite sessions were Geometry, Linear Programming, and sessions on Combinatorics and Probability. I found these sessions to be both interesting and evocative, as well as easy to follow and understand"

– Student

British Columbia | Colombie-Britannique

Camosun College July 3-6, 2018

Participants:	4 girls and 21 boys, Grades 9-11
Camp Leader:	Amanda Malloch, Camosun College
Topics:	Fractals, Cryptography, Rationals, Euler circuits in diagraphs, among other topics, as well as talks and games and a tour of the Innovation Lab at Interurban.

"Math camp was really fun if you like math and enjoy challenging your thinking. There's lots of different areas covered and most importantly it gives a taste of what math is really like."

– Student

Simon Fraser University – Burnaby Campus June 25-29, 2018

Participants:	16 girls and 19 boys, Grades 8-10
Camp Leader:	Prof. Malgorzata Dubiel, Simon Fraser University
Topics:	Math games and puzzles, Linear Algebra, Logic Puzzles, Geometry, Hexastix and Tensegrities, Cryptography, and Fractals.

Simon Fraser University - Surrey Campus June 26-27, 2018

Participants: 20 girls and 29 boys, Grades 9-10

Camp Leader: Prof. Natalia Kouzniak, Simon Fraser University

Topics: Theoretical presentations, problem solving, contests, math puzzles and games.

"I enjoyed the presentation on artificial intelligence because I found it really cool how math can be applied to media"

– Student

University of the Fraser Valley July 3-6, 2018

Participants: 8 girls and 9 boys, Grades 4-6

Camp Leader: Prof. Robin Endelman, University of the Fraser Valley

Topics: Physics, biology, chemistry, math, computer science, geography, and kinesiology.

"I loved the origami! Loved learning genetics! Loved visiting the labs! Really enjoyed the chemical interactions and changing colours experiment. Had fun learning new things about science."

– Student

Manitoba

University of Manitoba, St. John's College July 22-25, 2018

Participants: 5 girls and 17 boys, Grades 9-10

Camp Leader: Prof. Don Trim, University of Manitoba

Topics: Mathematical induction, financial mathematics, permutations and combinations, puzzles, problem solving, and games.

"We had great fun with the many special activities planned outside of the classroom."

– Student

New Brunswick | Nouveau-Brunswick

École Mgr-Martin de Saint-Quentin 27 juin au 4 juillet 2018

Participants: 20 filles et 29 garçons, Niveau scolaire 5e, 8e et 12^e

Chef du camp: Prof. Donald Violette, Université de Moncton

Sujets: Conférences et ateliers sur algorithme, trigonométrie, et lémergence de l'apprentissage machine, ainsi que des jeux et simulations.

« J'ai vraiment aimé le camp en entier. Je souhaite que les camps continuent d'exister. »

– Étudiant

Université de Moncton, Campus de Shippagan 2 au 6 juillet 2018

Participants: 14 filles et 6 garçons, Niveau scolaire 7e et 8^e

Chef du camp: Prof. Jules de Tibeiro, Université de Moncton

« Merci de nous avoir donner la chance de vivre une nouvelle expérience. Maintenant, je m'intéresse beaucoup plus aux mathématiques et aux sciences. »

– Étudiante

University of New Brunswick May 3-5, 2018

Participants: 7 girls and 19 boys, Grades 10-11

Camp Leader: Prof. Patrick Reynolds, University of New Brunswick

Topics: Geometry, Symmetry, Game Theory, and Problem-solving.

"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!''

– Student

Newfoundland & Labrador | Terre-Neuve-et-Labrador

Memorial University May 16-17, 2018

Participants: 14 girls and 25 boys, Grades 10-12

Camp Leader: Prof. Margo Kondratieva, Memorial University

Topics: Problem-solving, Fibonacci Tricks, Square Roots, Linear Recurrences, Lectures, Team competitions.

"It's an amazing experience! I have met so many awesome people! Everything was nice! I had a very educational experience. Thank you for your hard work to organizing this."

– Student

Nova Scotia | Nouvelle-Écosse

St. Francis Xavier University May 18-20, 2018

Participants: 22 girls and 22 boys, Grades 10-11

Camp Leader: Prof. Joe Apaloo, St. Francis Xavier University

Topics: Team problem solving; computer science, math relays, golden ratio, fractals and more.

"It broadened my idea and thoughts on how math is widely incorporated in the world naturally, and allowed me to realize how big of a subject it really is."
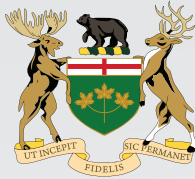
– Student

Dalhousie University July 15 – 20, 2018

Participants: 10 girls and 10 boys, Grades 10-11

Camp Leader: Prof. Roman Smirnov, Dalhousie University

Topics: Pythagorean Triples, Games, Geometry.

"What a difference you made in the life of our son. You gave [him] a rare opportunity to pass a week with peers who share his interest in math, in classrooms with instructors obviously enthusiastic about math. [Our son] was both challenged by the lectures, and engaged….you affirmed his early thinking about pursuing math at university, and beyond. Years ago [he] surpassed us in math, as he has in many things. We have to rely on the kindness of others to nurture [his] interest in math and to challenge him. That math camp, at nominal cost, was a gift, we're grateful, and we wanted you to know it."

– Math camp parents

Ontario

University of Ottawa June 24 – 29, 2018

Participants: 6 girls and 42 boys, Grade 10 (Ontario) and secondaire 4 (Quebec)

Camp Leaders: Prof. Joseph Khoury, University of Ottawa and Dr. Graham Wright, Canadian Mathematical Society

Topics: Probability and Game of Chance; Cryptology, a Math Challenge; Math and Games; Competitions, Project Presentations and more.

"The camp was a great opportunity to learn about new concepts, submerge in fun competitions and meet new friends with the same vision for math and science."

– Student

Université d'Ottawa June 24 – 29, 2018

Participants : 6 filles et 42 garçons de 10ᵉ année (Ontario) et secondaire 4 (Québec)

Chefs du camp : Professeur Joseph Khoury, Université d'Ottawa et Professeur Graham Wright, Société mathématique du Canada

Sujets : Probabilité et jeux de math, Cryptologie, Défi en mathématique, Jeux de maths, Compétitions, Présentations de projets et plus.

« J'ai très bien aimé le camp. C'était un des meilleurs camps que j'ai jamais attaint. »

– Étudiant

Western University July 24 – 26, 2018

Participants: 10 girls and 21 boys, Grade 9

Camp Leader: Prof. Gord Sinnamon, Western University

Topics: Problem-solving; Math Relay; Invariants; Fractals; Team Competitions and more.

"I really liked that I was able to collaborate with people who also enjoy math, to learn new concepts and topics. I especially enjoyed learning about factorials and that there was a competition every day."

– Student

York University July 9 – 13, 2018

Participants: 6 girls and 29 boys, Grade 9

Camp Leader: Mr. Chris Wu

Topics: Problem-solving, Competitions, Algebra, Fractals, Puzzles, Modular Arithmetic, Cyclic Quadrilaterals, Reflection Groups, and more.

This math camp increased my interest in math, science and engineering. I learned how interesting math could be and how much more there is yet to explore and the same goes for science and engineering. It surprised me how interconnected they all were and how important they were to society.

– Student

Prince Edward Island | Île-du-Prince-Édouard

University of Prince Edward Island May 4-6, 2018

Participants: 9 girls and 4 boys, Grades 10-11

Camp Leader: Prof. Ken Sulston, University of Prince Edward Island

Topics: Probability, History of Mathematics, Golden Ratio, Being an Actuary, Games, Puzzles, Math Relays and much more.

Quebec | Québec

Dawson College *(in conjunction with the Association mathématique du Québec(AMS))* 24 juin au 29 juin 2018

Participants : 8 filles, 16 garçons, niveau Secondaire 3, 4 et 5

Chef du camp : Professeure Andreea Panait, Dawson College

Sujets : Atelier de problèmes, géometrie, la théorie des graphes, mathématiciens célèbres, jeux en math, compétitions, et autres.

Université de Montréal 27 mai au 2 juin 2018

Participants : 3 filles, 20 garçons, niveau cégep

Chef du camp : Professeure Christiane Rousseau, Université de Montréal

Sujets : La finance mathématique, le cube de Rubik, les mathématiques de l'intelligence artificielle, les mathématiques de l'Origami, des jeux, paradoxes, des systèmes dynamiques, et autres.

« Je vois plus les maths comme des outils qui permettent de décrire et de modéliser des situations qu'on rencontre, et je remarque à quel point le bagage mathématique dont on a hérité des gens avant nous est vaste et passionnant à découvrir »

– Étudiant

Saskatchewan

University of Regina March 3, 2018

Participants: 32 girls and 58 boys, Grades 1-12

Camp Leader: Prof. Patrick Maidorn, University of Regina

Topics: Students were split into several age groups and led by chaperones from activity to activity.

Younger ages (Grades 1-4) worked on mathematical games (Nim, Fox and Goose,etc) in the morning and went on a «treasure hunt» in the afternoon, during they had to visit multiple locations and solve problems and puzzles to help put together pieces of a larger challenge.

Sessions for older grades included work on Platonic Solids, Mayan Arithmetic, a mathematics based Escape Room, a walk-through logic maze, and using series to build a Tower of Lire.

"Our girls had a great time. Math camp has inspired them to sign up for the Math Kangaroo, and they are interested in joining the Math Circles in the fall."

– Parent

"Both of my boys had a blast at Math Camp! They were both super excited about what they learned and eager to share this information."

- Parent

2018 Specialty CMS Math Camps

Math Camp for Black Students

Dalhousie University July 9-14, 2018

Participants: 13 girls and 18 boys, Grades 6-8

Camp Leader: Dr. Rajendra P. Gupta, Dalhousie University

Topics: Math problem-solving skills, mathematics and computers, career counselling, Fiobonacci sequence, group and independent work, and other activities such as math games. The students also visited the Black Cultural Centre and participated in other social activities.

"During closing ceremony, we heard many many positive comments. In fact, most campers would like to return next year.

– Camp Organizer

Math Quest Camp for Girls

Queen's University August 20-23, 2018

Participants: 20 girls, Grades 9-12

Camp Leader: Dr. Siobhain Broekhoven, Queen's University

Topics: Algebra anomalies, Cryptography, Combinatorics, Linear Modelling, Math games and sketching, Intro to Stats, Game theory and other social activities such as Escape Room.

"I loved everything and the volunteers were awesome!"

– Student

2018 National CMS Math Camps

Winter IMO Training Camp

York University January 3-8, 2018

Participants: 15 students from various high school grades

Camp Leader: Prof. James Rickards

Camp Program: The Winter Training camp is held over 5 days at York University, and 15 students are chosen based on results in the 2017 olympiads, and the 2017 COMC. There were lectures on different math contest subjects, as well as a buffet contest and a mock olympiad.

Summer IMO Training Camp

Banff International Research Station (BIRS) June 24-July 5, 2018

Participants: 6 boys, Grades 8-12

Camp Leader: Professor Jacob Tsimerman (Toronto), James Rickards (IMO Team Leader), Calvin Deng (Deputy Leader), and Vincent Chan (Observer)

Camp Program: This training camp is for the selected members of Math Team Canda 2018 prior to traveling to Cluj, Romania to compete in the 59th International Mathematical Olympiad (IMO).

National CMS Summer Camp

University of Toronto July 28-August 4, 2018

Participants: 5 girls and 17 boys, Grades 8-11

Camp Leader: Supreet Randhawa, Outreach and Special Projects Officer, Department of Mathematics at the University of Toronto

Camp Program: Campers took part in math contest preparations, research and other math exploration activities. The camp also included trips to Central Island, Planetarium and High Park in Toronto.

"I really enjoyed the camp and I feel I learned a lot from it! I also met lots of top math students from across the country; it was definitely an experience of a lifetime. Thank you for organizing this excellent opportunity for us math-contest lovers!"

– Student;

Sponsors

The CMS Math Camps program is made possible by the hard work of all organizers and volunteers. The CMS wishes to thank all sponsors, universities, teachers, camp organizers, volunteers, parents and students whose valuable contribution made the 2018 CMS Math Camps program a great success!

Le programme des camps mathématiques de la SMC est rendu possible grâce au travail acherné de tous les organisateurs et bénévoles. La SMC tient à remercier les commanditaires, universités, enseignants, organisateurs de camp, bénévoles, parents et étudiants don't la précieuse contribution a fait du programme des camps mathématiques 2018 de la SMC une grande réussite!

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For more information about CMS please contact / Pour plus d'information au propos des camps mathématiques de la SMC, veuillez communiquer avec :

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