

2013

Math Camp Report



$$7H = 7KG - 7B/S$$

$$g = 9.8 \text{ m/s}^2$$

$$v = \frac{d}{t}$$

$$E = \frac{1}{2}mv^2$$

$$W = F \cdot d$$

$$P = \frac{W}{t}$$

$$U = mgh$$

$$K = \frac{1}{2}mv^2$$

$$U = \frac{1}{2}kx^2$$

$$W = mgh$$

$$P = \frac{W}{t}$$



20 13

contents

3	overview
4	regional camps
12	speciality camps
14	national camp
15	summary
16	sponsors



Each year, the Canadian Mathematical Society (CMS) collaborates with universities across Canada to organize and host a series of Math Camps. These camps are designed to help students develop their mathematical knowledge in an engaging, challenging, and - most importantly - fun atmosphere.

CMS Math Camps are a great way for students to hone their mathematical skills, meet new friends and to experience math in a way they never have in a classroom setting. Students who participate in CMS Math Camps often leave the camp with a new outlook of mathematics and new approaches to problem solving.

In 2013, a total of 24 camps were held in provinces across Canada with a total of 947 students in attendance. These camps ranged from day camps to week-long overnight camps.

This year, the CMS offered specialty camps which included the Queen's Math Camp for Girls and the Dalhousie Math Camp for Black Students. In addition, in partnership with the University of Toronto, the CMS staged the national Canada Math Camp.

As with previous years, both parent and student feedback was very positive. Many students noted their surprise that Math Camp was much more fun than expected and that they plan to attend future camps.

The 2013 CMS Math Camp Report contains information collected from each of the camp organizers at various host universities.

ALBERTA


CAMP NAME	Alberta/CMS Math Camp
LOCATION	Calgary, AB
DATE	July 12-21, 2013
HOST	University of Calgary
ORGANIZER	Joseph Ling
GRADE LEVEL	7-10
NUMBER OF STUDENTS	28
FEEDBACK	"I really like how I can be in an environment with many other like-minded students who are very passionate about mathematics as well. I also enjoy how professors who have great knowledge in a field can teach me."




BRITISH COLUMBIA

	PIMS/CMS Burnaby Math Camp
LOCATION	Burnaby, BC
DATE	June 24 - 28, 2013
HOST	Simon Fraser University
ORGANIZER	Malgorzata Dubiel
GRADE LEVEL	9-10
NUMBER OF STUDENTS	30
FEEDBACK	"Before I mostly thought of math as a bunch of numbers variables and charts, now I see how math is involved in nature, art, and everyday life. This camp helps kids like us become encouraged to learn more about math, to tell all our friends about math, and possibly create more jobs and research."



CAMP NAME	PIMS/CMS Surrey Math Camp	
LOCATION	Surrey, BC	
DATE	June 26 - 27, 2013	
HOST	Simon Fraser University	
ORGANIZER	Natalia Kouzniak	
GRADE LEVEL	9-10	
NUMBER OF STUDENTS	48	
FEEDBACK	<p>"I really, really enjoyed this experience. Math camp was interesting, fun and there were a lot of amazing things we learned (fractals, hexastix). Everyone was really helpful and nice, too!"</p>	

CAMP NAME	SFU Math Camp for Teachers	
LOCATION	Burnaby, BC	
DATE	July 2 - 5, 2013	
HOST	Simon Fraser University	
ORGANIZER	Malgorzata Dubiel	
GRADE LEVEL	Teachers of Grades 8-12	
PARTICIPANTS	28	
FEEDBACK	<p>" Our Summer Camps for Teachers have been very successful in giving teachers hands-on experience with problem solving, modelling, and finding interesting applications of mathematics suitable to discuss in a high school classroom. We hope that this will translate in better teaching and making mathematics more interesting and accessible to students."</p>	

CAMP NAME	Victoria/CMS Math Camp
LOCATION	Victoria, BC
DATE	July 3-6, 2013
HOST	University of Victoria
ORGANIZER	Kseniya Garaschuk
GRADE LEVEL	9-11
NUMBER OF STUDENTS	22
FEEDBACK:	<p>"Problems of the day were a huge success. As per usual, the Puzzle Hunt was a lot of work to set up, but was well worth it with. I've scheduled the most interactive sessions to take place on first and last day to ensure the breaking the ice."</p> <p>- Kseniya Garaschuk</p>



MANITOBA

CAMP NAME	UManitoba/CMS Math Camp
LOCATION	Winnipeg, MB
DATE	May 10 - 12, 2013
HOST	University of Manitoba
ORGANIZER	Don Trim
GRADE LEVEL	9-10
NUMBER OF STUDENTS	20
FEEDBACK:	<p>"Although an overall success based on a rating of 8.2/10, our plans are to introduce new activities next year and perhaps extend the camp slightly (a few more ours or perhaps an extra day)." - Don Trim</p>



NEW BRUNSWICK

CAMP NAME	UNB/CMS Math Camp
LOCATION	Fredericton, NB
DATE	May 10 - 12, 2013
HOST	University of New Brunswick
ORGANIZER	Barry Monson
GRADE LEVEL	10-11
NUMBER OF STUDENTS	30
FEEDBACK	"This camp really got me interested in applications of math, as well as logical thinking. I believe it is important to improve these areas [for] students who have great math potential, as enrichment programs are not offered everywhere."



NEWFOUNDLAND AND LABRADOR

CAMP NAME	Blundon/CMS Math Camp
LOCATION	St. John's, NL
DATE	May 15 - 17, 2013
HOST	Memorial University
ORGANIZER	Margo Kondratieva and Shannon Sullivan
GRADE LEVEL	11-12
NUMBER OF STUDENTS	16
FEEDBACK	"Proctors were great, friendly and very helpful!"



NOVA SCOTIA

CAMP NAME	Dal/CMS Math Camp
LOCATION	Halifax, NS
DATE	July 7 - 12, 2013
HOST	Dalhousie University
ORGANIZER	Roman Smirnov
GRADE LEVEL	10-11
NUMBER OF STUDENTS	20
FEEDBACK	<p>“As a student who had only taken grade 10 math I found some of the lectures a little hard to follow, but I found all of them extremely interesting. All of the speakers were great and I definitely feel like I’ve learned a lot.”</p>



ONTARIO

CAMP NAME	UOttawa/CMS Math Camp
LOCATION	Ottawa, ON
DATE	June 23 - 28, 2013
HOST	University of Ottawa
ORGANIZER	Joseph Houry
GRADE LEVEL	10
NUMBER OF STUDENTS	48
FEEDBACK	<p>“This camp was so much more than what I have expected. It is amazing what you could accomplish with a good knowledge of Mathematics “</p> <p>“Merci beaucoup pour cette experience, j’ai appris beaucoup de chose.”</p>



CAMP NAME	York/CMS Math Camp
LOCATION	Toronto, ON
DATE	July 8 - 12, 2013
HOST	York University
ORGANIZER	Chris Wu
GRADE LEVEL	9
NUMBER OF STUDENTS	34
FEEDBACK	"I enjoyed the lectures, where math specialists would come in and teach us new concepts and methods to solve complex problems. My favourite part of camp was during the session with the professor from Waterloo who came to talk about functions, like Phi, divisor and sigma functions. I learned many things, but the functions (Phi, divisor, sigma) as well as modular arithmetic were most interesting and stuck in my memory the most."



CAMP NAME	CMS Math Camp @ Western
LOCATION	London, ON
DATE	July 23 - 25, 2013
HOST	Western University
ORGANIZER	Gord Sinnamon
GRADE LEVEL	9
NUMBER OF STUDENTS	32
FEEDBACK	"I feel like the things I learned will help me in my various math courses I am enrolled in next year. I liked the balance between team and individual work, plus the food was amazing. I loved the university setting."



PRINCE EDWARD ISLAND

CAMP NAME	UPEI/CMS Math Camp
LOCATION	Charlottetown, PE
DATE	May 3 - 5, 2013
HOST	University of Prince Edward Island
ORGANIZER	Ken Sulston
GRADE LEVEL	10-11
NUMBER OF STUDENTS	16
FEEDBACK	"I have been to many camps like these before and sometimes the material that is covered consists of very challenging ideas and concepts, but the topics discussed here I could fully grasp an understanding."



QUEBEC

CAMP NAME	Camp mathématique Collège Montmorency
LOCATION	Laval, QC
DATE	June 30 - July 5, 2013
HOST	Collège Montmorency
ORGANIZER	Ivan Constantineau
GRADE LEVEL	Collégial
NUMBER OF STUDENTS	25
FEEDBACK	"Les réussites: les sorties au CIEAU, la simultanée, le spectacle de Mentalo, les ateliers de Stats, sur la cryptographie, sur la théorie des jeux, le souper au restaurant: 10/10. Mais aussi beaucoup de 9/10!"



CAMP NAME	Camp mathématique AMQ/SMC
LOCATION	Québec, QC
DATE	June 9 - 15, 2013
HOST	Université Laval
ORGANIZER	Frédéric Gourdeau
GRADE LEVEL	Collégial
NUMBER OF STUDENTS	23
FEEDBACK	<p>“La nouveauté de cette année a été la simultanée d’échecs et le succès fut tel qu’il est certain que nous voudrions reconduire cette activité l’année prochaine.”</p> <p>- Frédéric Gourdeau</p>



SASKATCHEWAN

CAMP NAME	URegina/CMS Math Camp
LOCATION	Regina, SK
DATE	October 5 - 5, 2013
HOST	University of Saskatchewan
ORGANIZER	Sadia Mwangangi
GRADE LEVEL	7-12
NUMBER OF STUDENTS	19
FEEDBACK	<p>“I am the teacher who attended with the students from Moose Jaw. My students enjoyed the Topology activity because it was new math for them and Pet Insurance because they got to handle money, and compete.”</p>



SPECIALTY CAMPS

CAMP NAME	Math Camp for Black Students
LOCATION	Halifax, NS
DATE	July 7-14
HOST	Dalhousie University
ORGANIZER	R.P. Gupta
GRADE LEVEL	6-8
NUMBER OF STUDENTS	28
FEEDBACK	"At the time of closing ceremony, we asked each camper to comment about the whole process of learning e.g. teachers, educational program, outdoor activities, discovery center etc. We have a very very good comments--really glowing." - R.P. Gupta



CAMP NAME	Math in Motion ... Girls in Gear!
LOCATION	Toronto, ON
DATE	November 2
HOST	University of Toronto Scarborough Campus
ORGANIZER	Sophie Chrysostomou
GRADE LEVEL	9
NUMBER OF STUDENTS	95
FEEDBACK	"Overall it was just a fun experience for all of us. We also enjoyed seeing/learning the many different ways math is used in life and the hands on activity we got to do."



CAMP NAME	Emerging Aboriginal Scholars Summer Camp
LOCATION	Eskasoni, NS
DATE	July 3- August 3
HOST	Simon Fraser University
ORGANIZER	Malgorzata Dubiel and Melania Alvarez
GRADE LEVEL	9-12
NUMBER OF STUDENTS	30
FEEDBACK	"It is always a pleasure to introduce young students to the wonderful world of synthetic chemistry. We relished the chance to extend this opportunity to excellent First Nations students."



CAMP NAME	Queen's Girls Math Problem Solving Camp
LOCATION	Kingston, ON
DATE	August 19-22
HOST	Queen's University
ORGANIZER	Maja-Lisa Thomson
GRADE LEVEL	9-10
NUMBER OF STUDENTS	10
FEEDBACK	"I came to camp to improve my skills beyond basic "number crunching," to learn tricks and skills of math in a fun and cooperative environment and to meet new people, all of which happened."



CAMP NAME Show Me Your Math
 LOCATION Eskasoni, NS
 DATE May 1 - 1, 2013
 HOST Mi'kmaw Kina'matnewey and Eskasoni School Board
 ORGANIZER Lisa Lunney Borden
 GRADE LEVEL P-12
 NUMBER OF STUDENTS 300
 FEEDBACK "We hope to encourage more participants to make videos of their projects so that these can be both shown at the event and posted on the website. We hope to continue developing inquiry projects that draw from the student projects so that they can be more widely used and shared in schools." - Lisa Lunney Borden



NATIONAL CAMPS

Canada Math Camp
 July 27- August 3

IMO Training Camp
 July 7-21

Olympiad Winter Camp
 January 2-7



947

participants

16

regional camps

5

specialty camps

3

national camps

48 %

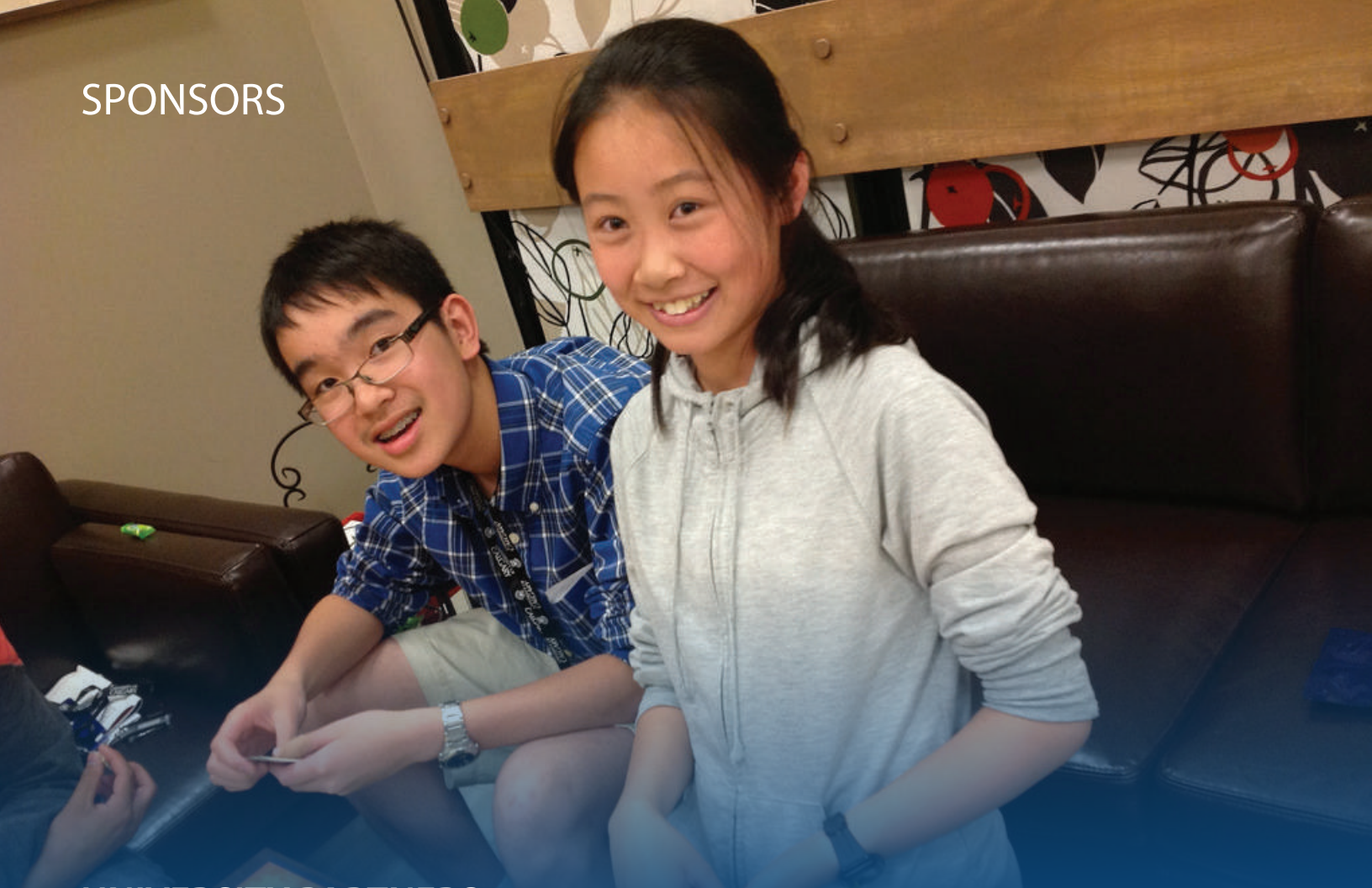
specialty camp

students

21%

female participants

SPONSORS



UNIVERSITY PARTNERS

University of Alberta
Dalhousie University
University of Manitoba
Collège Montmorency
University of Ottawa
Queen's University
Simon Fraser University
University of Victoria

University of British Columbia
Université Laval
Memorial University
University of New Brunswick
University of Prince Edward Island
University of Regina
University of Toronto
York University

MATH CAMP SPONSORS

Government of Alberta
Government of Newfoundland and Labrador
Government of Nova Scotia
Government of Ontario
Government of Quebec
Government of Yukon

Government of Manitoba
Government of the Northwest Territories
Government of Nunavut
Government of Prince Edward Island
Government of Saskatchewan

NSERC PromoScience
TD Financial Group
Harold Crabtree Foundation
The Actuarial Foundation of Canada

Canadian Mathematical Society



Société mathématique du Canada

$$4 \text{ m/s}^2$$

$$g r \sin \theta$$

$$50 \text{ kg}$$

$$m^2/k$$

$$m_1 (\vec{v}_1 - \vec{v}_2)^2 = m_1 (\vec{v}_1 - \vec{v}_2) \cdot (\vec{v}_1 - \vec{v}_2)$$
$$= m_1 (v_1^2 - 2\vec{v}_1 \cdot \vec{v}_2 + v_2^2)$$
$$= m_1 (v_1^2 + v_2^2 - 2v_1 v_2 \cos \theta)$$



$$\frac{F_x}{2F_y}$$

$$\frac{\partial F}{\partial x} < 0$$

