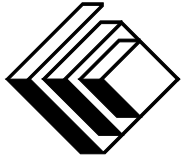


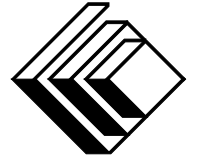
The Canadian Mathematical Society



La Société mathématique du Canada



The CENTRE for EDUCATION  
in MATHEMATICS and COMPUTING



# Sun Life Financial Canadian Open Mathematics Challenge

(Wednesday, November 25, 2009)



A Canadian Mathematical Society Competition,  
in co-operation with the Centre for Education in Mathematics and Computing

## *Fast Facts*

<b>First Written</b>	1996
<b>Audience</b>	Senior level students and motivated younger students
<b>Length</b>	2½ hours
<b>Format</b>	Short answer and full solution
<b>Calculators</b>	Calculators are <b>not</b> permitted
<b>Early Bird Registration Deadline</b>	October 23, 2009
<b>Final Registration Deadline</b>	November 12, 2009

## *Detailed Information*

### **INTRODUCTION**

It is with pleasure that the Canadian Mathematical Society, together with the Centre for Education in Mathematics and Computing, announces the 14th annual Sun Life Financial Canadian Open Mathematics Challenge (COMC), and extends to you an invitation to enter the students from your school. The COMC is designed for two reasons:

1. To provide an extra-curricular mathematics activity during the fall term. It is aimed at senior level students and motivated younger students.
2. To act as a qualifying paper for the Canadian Mathematics Olympiad (CMO). Invitations to write the CMO are based on performance in the COMC.

It should be stressed that, while the COMC is a required step in qualifying to write the CMO, this is not its only goal. Several of the problems are designed specifically to be within the reach of any student with a good knowledge of Grade 10 mathematics.

### **THE PAPER**

The paper is  $2\frac{1}{2}$  hours in length, and is to be written on the morning of Wednesday, November 25, 2009. The paper is in two parts, and is marked out of a total of 80. Part A consists of eight problems worth 5 each. A correct answer for any problem will receive full marks, but partial credit may be earned for any correct written work supplied. Part B consists of four problems worth 10 each. In these problems, presentation will be graded; a poorly presented correct answer will not necessarily receive full credit.

### **TOPICS**

See the fourth page of this brochure. It is recommended that this list be posted in the classroom and that a copy be made available to every competitor.

### **PREPARATION**

Materials, including past COMC papers, that can be used for preparation are available through the websites and Publications Catalogues of:

- The Canadian Mathematical Society – [www.cms.math.ca/Competitions](http://www.cms.math.ca/Competitions)
- The Centre for Education in Mathematics and Computing – [www.cemc.uwaterloo.ca](http://www.cemc.uwaterloo.ca)

### **ELIGIBILITY**

The competition is open to all interested students. Students who do not meet the requirements below are welcome to write the COMC as unofficial competitors. Since the competition also serves to identify those students who will write the CMO, students will be classified as **official contestants** and are eligible to win awards only if they satisfy both of the following:

- (a) they were less than 19 years old as of June 30, 2009;
- (b) they are registered in full-time attendance, in Canada or elsewhere, at an elementary or secondary school or CÉGEP, and have been so registered since January 1, 2009.

#### **NOTE:**

These are the only two criteria to be an official contestant for the COMC. For students who are invited to write the CMO, there are three *additional* criteria that must be satisfied to be considered as an official contestant for the CMO.

## AWARDS

1. At least fifty students, plus a few others selected on a regional basis, will be invited to write the 2010 Canadian Mathematical Olympiad, to be held in March 2010. Subscriptions to the Canadian Mathematical Society's problem solving journal *CRUX with MAYHEM* are awarded to the schools of students invited to write the Canadian Mathematical Olympiad.
2. At the discretion of the COMC Committee, the top-ranked student in each province or provincial region may be designated a Provincial Plaque Winner. Also, their school may receive a Plaque recognizing their achievement.
3. At the discretion of the COMC Committee, a maximum of nine Medals may be awarded to the next top students in each province or provincial region.
4. Students who are official competitors and who rank in the top 25% will receive a Certificate of Distinction.
5. At the discretion of the COMC Committee, the names of some of the top scoring students will be listed in the Results Book on the CEMC website.

## DEADLINE FOR ENTRIES

**Registrations can be done via the CEMC website: [www.cemc.uwaterloo.ca](http://www.cemc.uwaterloo.ca)**

We *strongly* urge that registration be done as early as possible. To ensure timely receipt of materials, entries must be made on or before our Early Bird Deadline, October 23, 2009.

**No registrations will be accepted after November 12, 2009.**

You can check if your order has been processed, the details of your order, and if your payment has been processed by logging onto our Contest Registration system at [www.cemc.uwaterloo.ca](http://www.cemc.uwaterloo.ca) with your school number and password.

## RECEIPT OF CONTEST MATERIALS

If you have not received your 2009 contest materials **by November 18, 2009**, contact the CEMC office (Phone: 519-888-4808; Fax: 519-746-6592; email: [cmc@math.uwaterloo.ca](mailto:cmc@math.uwaterloo.ca)).

## FRENCH LANGUAGE CONTESTS / CONCOURS EN FRANÇAIS

Those schools who wish to receive contest materials in French should indicate this on the registration form. *Les écoles qui souhaitent recevoir les documents du concours en français doivent l'indiquer sur leur formulaire d'inscription.*

## DISCLAIMER

The COMC Committee reserves the right to administer a supplemental test or to delete scores from published results at its discretion.

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CANADIAN OPEN MATHEMATICS CHALLENGE



Wednesday, November 25, 2009

**INFORMATION FOR STUDENTS: TOPICS**

Most of the problems will be based on the mathematics curriculum taught in secondary schools and CÉGEPs. Later questions require understanding beyond the curriculum. Potential topics include:

- Euclidean and analytic geometry
- trigonometry, including functions, graphs, identities, sine and cosine laws
- exponential and logarithmic functions
- functional notation
- systems of equations
- polynomials, including relationships involving the roots of quadratic and cubic equations, the remainder theorem
- sequences and series
- simple counting problems
- the binomial theorem
- elementary number theory, including tests for divisibility, number of divisors, simple Diophantine equations

Visit [www.cemc.uwaterloo.ca](http://www.cemc.uwaterloo.ca) for copies of previous Contests.

**It is recommended that this list be posted in the classroom and that a copy be made available to every competitor.**