

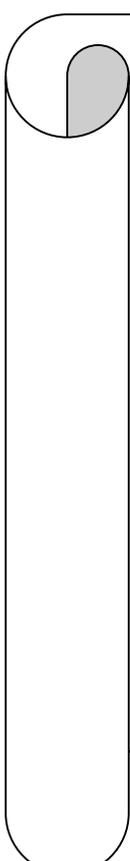
The CENTRE for EDUCATION  
in MATHEMATICS and COMPUTING  
Faculty of Mathematics  
University of Waterloo  
200 University Ave. W.  
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[www.cemc.uwaterloo.ca](http://www.cemc.uwaterloo.ca)

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## 2-DAY SUMMER CONFERENCE for GRADES 9 to 12 MATHEMATICS TEACHERS



The Centre for Education in Mathematics and Computing provides professional development opportunities for mathematics teachers. Our programs respond to the need for practical and enrichment information that can be implemented immediately in the classroom.

Problem solving forms the basis of effective mathematics programs. The sessions on curriculum will focus on problem solving. This conference will increase your tools and skills and enhance your teaching of mathematics. Teachers from any province or country will benefit. Teachers should have some previous teaching experience in an elementary or high school.

Whatever your personal, professional or mathematical goals, our conference can give you the edge you want.

**Wednesday, August 23 to Thursday August 24, 2017**

*(Registration Deadline: Monday, June 19, 2017)*

*Participant cost of **\$120** includes meals, conference fee materials, and harmonized sales tax (HST)*

*A limited number of rooms (double occupancy) are available in a nearby hotel with no additional cost*

**Registration Now Open!**

Follow the link <http://www.cemc.uwaterloo.ca/events/mathteachers-winnipeg.html> to register

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## Grades 9 to 12 Program

- Dates:** Starting Wednesday August 23 at 8:00 am, ending Thursday August 24, 2017 at 3:30
- Location:** St. John's Ravenscourt School, Winnipeg, MB
- Program:** The conference will help to supplement your teaching of mathematics on problem solving and provide some new resources and teaching strategies.

Wednesday, Aug. 23	Activity	
8:00 am – 9:00 am	Early Registration, coffee & networking (location?)	
9:00 am – 10:30 am	CEMC Presentation. <i>Ian VanderBurgh</i>	
10:30 am – 10:45 am	Break	
10:45 am – 12:15 pm	<b>Session 1a:</b> How much fun can we have with Paper? <i>Sherri Burroughs</i>	<b>Session 1b:</b> Computer Science. <i>Erwin Hildebrandt</i>
12:15 pm – 1:00 pm	Lunch	
1:00 pm – 2:30 pm	<b>Session 2:</b> Purposeful Problem Solving. <i>Lam Nguyen</i>	
2:30 pm – 2:45 pm	Break	
2:45 pm – 3:30 pm	<b>Plenary Session</b>	
Thursday, Aug. 24		
8:00 am – 9:00 am	Registration, coffee, networking	
9:00 am – 10:30 am	<b>Session 3a:</b> Number Theory and Problem Solving. <i>Bonnie McLoughlin</i>	<b>Session 3b:</b> Solving Harder Problems. <i>Ian VanderBurgh</i>
10:30 am – 10:45 am	Break	
10:45 am – 12:15 pm	<b>Session 4:</b> Number Theory – Modular Arithmetic. <i>Carole Bilyk</i>	
1:00 pm – 2:30 pm	<b>Session 5:</b> Fractals, Strange Attractors and Geometric Iteration. <i>Ian Donnelly</i>	
2:30 pm – 2:45 pm	Break	
2:45 pm – 3:30 pm	<b>Plenary Session</b> <i>Carole Bilyk &amp; Sherri Burroughs</i>	

Register, view program online, by visiting <http://www.cemc.uwaterloo.ca/events/mathteachers-winnipeg.html>

**Registration Fee:** \$120 per registrant



## Synopses of Sessions for Math Teachers' Conference – Grades 9 to 12 Teachers

### Session 1a:

How much fun can we have with Paper?

*Sherri Burroughs*

Description TBA

### Session 1b:

Computer Science

*Erwin Hildebrant*

Description TBA

### Session 2:

Purposeful Problem Solving

*Lam Nguyen*

The Manitoba curriculum describes problem solving as not just simple computations embedded in a story, but as rich open-ended questions that engage learners in demonstrating their knowledge and understanding of math concepts. Many teachers find it challenging to incorporate problem solving into their programming in authentic ways where learners can persevere and learn through problem solving. This session takes a close look at purposeful problem solving by designing rich tasks that are connected to curricular outcomes, planning for learning, and creating thinking environments. Content is targeted for grades 7 and 8.

### Session 3a:

Number Theory and Problem Solving

*Bonnie McLoughlin*

Description TBA

### Session 3b:

Solving Harder Problems

*Ian VanderBurgh*

For many teachers, it is a rare time to be able to sit down for 90 minutes to just solve some problems. It is also important to get the chance to stretch our brains by working on some problems that are harder, but still accessible. In this session, we will work through a handful of problems, aiming to talk through approaches to some harder, but still accessible, problems that could be interesting for use as enrichment and discussion in the classroom.



**Session 4:**

Number Theory – Modular Arithmetic.

*Carole Bilyk*

Finding remainders seems simple enough – but have you ever explored the power of a remainder?  
Come play with modular arithmetic and explore new ways to think about old problems.

**Session 5:**

Fractals, Strange Attractors and Geometric Iteration.

*Ian Donnelly*

Chaos Theory has influenced how we think about the world, rather than expecting to precisely determine system outcomes based on data, results can vary drastically depending on very slight changes to initial conditions. Alongside chaos theory, geometry has expanded from circles and polygons to include fractal shapes that can often be generated using simple rules and yet complex and infinitely detailed figures are the result. The focus of this session will be on applying senior years mathematics concepts to develop a basic understanding of Chaos Theory and to solve and analyze problems related to intriguing and often beautiful Fractal shapes.

**Plenary Session:**

*Carole Bilyk & Sherri Burroughs*

What role do games have in the mathematics classroom? How can games like SET, QUARTO!, TETRIS, LINK, Mancala and Ultimate Tic Tac Toe help students develop thinking skills? All these questions and more will be answered in this final session.