

Summer Conference for Mathematics Educators in Waterloo

Educators teaching Grades 7 and 8

The [Centre for Education in Mathematics and Computing](#) (CEMC) at the University of Waterloo provides professional development opportunities for mathematics educators. Our programs respond to the need for practical and enrichment information that can be implemented immediately in the classroom. This August, we offer a three-day conference, with focus on curriculum, extensions and enrichment aimed at university preparation.

Problem solving forms the basis of effective mathematics programs. The sessions on curriculum will focus on problem solving at any academic level. This conference will increase your tools and skills and enhance your teaching of mathematics.

While the curriculum sessions are directed specifically at educators from Ontario, educators from any province or country will benefit. This conference attracts educators from all over the world and offers an excellent opportunity to meet and exchange ideas. Educators 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.

Conference dates: Tuesday, August 13 to Thursday, August 15, 2024

(Limited enrolment so it is better to register early)

*Participant cost of **\$250** includes accommodation, meals, conference materials, and taxes.*

Participation is restricted to two teachers per school.

Accommodation in a dormitory room is provided at no additional cost, if needed.

Register online, by visiting <https://www.cemc.uwaterloo.ca/events/mathteachers.html>

For more information, please contact cemc.events@uwaterloo.ca



Program Schedule

- Dates:** Starting Tuesday, August 13 at 8:45 a.m., ending Thursday August 15, 2024, at 1:00 p.m.
Location: St. Jerome’s University (SJU) and Mathematics and Computing Building (MC), University of Waterloo
Program: The focus is on presentations as well as attendee participation in mathematical activities and problem solving. These resources are intended to supplement your teaching program.

Date and Time	Activity
Monday, August 12	
3:00 p.m. - 8:00 p.m.	Early registration in St. Jerome’s University (SJU)
5:00 p.m. - 6:00 p.m.	Dinner in St. Jerome’s University (SJU)
9:00 p.m. - 10:30 p.m.	Pizza and refreshments in St. Jerome’s University (SJU)
Tuesday, August 13	
7:30 a.m. - 8:30 a.m.	Registration and breakfast in St. Jerome’s University (SJU)
9:00 a.m. - 10:45 a.m.	Welcome
10:45 a.m. - 12:15 p.m.	Session 1: Practices for Orchestrating Productive Mathematics Discussions <i>Marcel te Bokkel</i>
12:15 p.m. - 1:15 p.m.	Lunch in MC
1:15 p.m. - 2:45 p.m.	Session 2: Games in the 7/8 Math Classroom <i>Rebecca Channer</i>
3:00 p.m. - 4:30 p.m.	Session 3: Shifting Classroom Practices to put Student Thinking at the Centre <i>Carolyn Gingerich</i>
5:15 p.m. - 6:30 p.m.	Dinner in St. Jerome’s University (SJU)
6:30 p.m. - 7:30 p.m.	Campus tour beginning from the front foyer of St. Jerome’s University (SJU)
7:30 p.m. - 10:00 p.m.	Social
Wednesday, August 14	
7:30 a.m. - 8:30 a.m.	Breakfast in St. Jerome’s University (SJU)
9:00 a.m. - 10:30 a.m.	Session 4: Out of this World: NASA/CSA Resources for Math Educators <i>Carly Ziniuk</i>
10:45 a.m. - 12:15 p.m.	Session 5: Let’s Solve Some Problems <i>Ashley Sorensen</i>
12:25 p.m. - 1:15 p.m.	Lunch in MC
1:15 p.m. - 2:45 p.m.	Session 6: Situational Problems: Creating/Scaffolding/Marking Open-ended Real-World Problems <i>Kiera Pannell</i>
3:00 p.m. - 4:30 p.m.	Session 7: Introducing Desmos Classroom for Grade 7 and 8 Math Classes <i>David Petro</i>
6:00 p.m. - 9:00 p.m.	Social
Thursday, August 15	
7:30 a.m. - 8:30 a.m.	Breakfast in St. Jerome’s University (SJU)
9:00 a.m. - 10:45 a.m.	Session 8: Using Virtual Manipulatives to Visualize Student Thinking <i>Gerry Lewis</i>
10:45 a.m. - 12:15 p.m.	Session 9: Algorithmic Adventures: Using Python Programming to Elevate Student Engagement <i>Kevin Watt</i>
12:15 p.m.	Lunch in MC

Synopses of Sessions

Session 1: 5 Practices for Orchestrating Productive Mathematics Discussions

Marcel te Bokkel

The 5 Practices are a framework for creating and implementing lessons that use student work as the focal point for engaging in mathematical discussions that leads to deeper understanding. By identifying and naming the practices, teachers can take control of a problem-solving session to ensure that student thinking builds towards the learning goal. Using VNPS/VRG model to get a class going, the 5 practices will enhance any mathematical discussion and provide opportunities for all students to think, discuss and learn.

Session 2: Games in the 7/8 Math Classroom

Rebecca Channer

Want to give students opportunities to use strategic thinking, practice mental math, build communication skills, and have a blast? Games are a great way to engage students in a low stake setting while deliberately practicing math. See why games are a high impact instructional practice that work in our intermediate classrooms and beyond. Everyone should come prepared to play and have fun!

Session 3: Shifting Classroom Practices to put Student Thinking at the Centre

Carolyn Gingerich

In this session, you will experience the routines and structures of a thinking classroom. We will unpack the ways in which these classroom practices can increase access to mathematical concepts for all students and the subtle teacher moves that make them most effective. Our focus will be on strategies that teachers can implement to build their students' capacity for thinking, problem solving, collaborating, and communicating in math class. This session will draw on the work of Peter Liljedahl, Zaretta Hammond, Ilana Horn and others. There will be something for everyone, both those who have experience with Thinking Classrooms and those for whom it is new!

Session 4: Out of this World: NASA/CSA Resources for Math Educators

Carly Ziniuk

With our theme "Building an Inclusive Global Space Community," the NASA Space Apps Collective is using open data to spark innovations. As a Collective member and classroom teacher, I will share free, easily accessible NASA/CSA astronomy, space, and climate resources. Learn how to apply open datasets, use beautiful satellite images, stream video content, incorporate local "Astroindigenous" knowledge, download posters, find ready-to-use lesson plans with solutions, make Canadian connections, and illustrate math concepts with astronomy facts.

Session 5: Let's Solve Some Problems

Ashley Sorensen

Let's take this opportunity to just solve some problems together. We'll work on a handful of interesting problems that are harder, but still accessible. Along the way, we will talk about different approaches to solving these problems as well as some general problem-solving strategies.

Session 6: Situational Problems: Creating/Scaffolding/Marking Open-ended Real-World Problems

Kiera Pannell

Situational problems present students with obstacles and ask them to formulate a solution which meets the criteria of the problem. They require that students employ creativity when problem-solving and encourage resiliency, for a first idea might not be the best idea. This workshop will introduce the requirements for a situational problem, present examples of past problems, and identify key considerations for teachers who want to create their own problems. Participants will have the opportunity to solve problems themselves and/or correct examples of student work.

Session 7: Introducing Desmos Classroom for Grade 7 and 8 Math Classes*David Petro*

Desmos Classroom (formerly Desmos Activity Builder) is a powerful and free tool that lets you run activities from all areas of math in such a way that fosters communication with and between students, allows you to see what they are doing on their computers from yours, and helps you probe student work for good and interesting thinking at the click of a mouse (among other things). In this session you will be introduced to several ready-made lessons for grades 7 and 8 math students, shown how to navigate the teacher dashboard, and more. Bring a laptop, Chromebook or tablet to make the best of this session.

Session 8: Using Virtual Manipulatives to Visualize Student Thinking*Gerry Lewis*

In this hands-on session, participants will explore a variety of free virtual manipulatives connected to a variety of topics in the grade 7-8 classroom. We will take time to explore Amplify Polypad, Geogebra Geometry, and Pearson Interactive Tools. Some of the topics that we will look at include prime factorization, area of shapes, angle properties, nets, fraction operations, and algebraic expressions. Access to a computer would be essential for participation in this workshop.

Session 9: Algorithmic Adventures: Using Python Programming to Elevate Student Engagement*Kevin Watt*

In this session, we will explore the use of text-based coding to both hook the interest of middle school math students and explore ways to solve math problems using code. Get students excited by using conditional statements to make a "choose your own adventure" text-based adventure game! Energize your students' learning by using loops and random number generators to create games of chance. Interest your students in different aspects of the curriculum while learning core coding concepts such as: using conditionals to create a Pythagorean theorem calculator, building functions to make a provincial tax assessor, and exploring loops to calculate the mean, median and mode of their recent tests. We will use the Python programming language with the CodeHS online coding platform to build these programs and gain capacity to teach math through coding.