

## CEMC MATHEMATICS COURSEWARE PROJECT

The CEMC's free online courseware consists of video instruction, interactive and exploratory features providing immediate feedback, and student exercises with solutions.

**CEMC Courseware**

This site contains curricular resources developed through the Centre for Education in Mathematics and Computing (CEMC) by experienced teachers in partnership with faculty members and multimedia developers from the University of Waterloo. The materials contain lessons, interactive worksheets, and unlimited opportunity for practice and to receive feedback. The courseware is free to use and does not require registration to access. Start learning from a world-class group of math educators today!

### Courses currently offered online:

- Advanced Functions and Pre-Calculus
- Calculus and Vectors
- Grades 7 & 8 Mathematics
- Problem Solving and Mathematical Discovery
- Python from Scratch
- Language Independent Programming Lessons
- Web Basics
- Web Programming

## COMING SOON!

The CEMC is almost finished creating courseware for Grades 9, 10, and 11.

### Features of a Typical Lesson

| TRY THIS  | EXPLORE THIS  |
|---|---|
| <ul style="list-style-type: none"> <li>• Motivating questions at the beginning of a lesson</li> <li>• Solution provided later in <i>Try This Revisited</i></li> </ul> | <ul style="list-style-type: none"> <li>• Guided exploration to create or manipulate mathematical objects</li> <li>• <i>Explore This Summary</i> to consolidate observations</li> </ul>          |
| TAKE IT WITH YOU  | CHECK YOUR UNDERSTANDING  |
| <ul style="list-style-type: none"> <li>• Questions to motivate future learning</li> <li>• NO answer or solution provided</li> </ul>                                   | <ul style="list-style-type: none"> <li>• Questions to answer</li> <li>• <i>How Did I Do?</i>, answers checked &amp; feedback given</li> <li>• <i>Try Another</i>, unlimited practice</li> </ul> |

Materials will be available Fall 2019 at <https://courseware.cemc.uwaterloo.ca/>.

## Grade 9/10/11 Strands

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|---|---|
| <p><b>Number Sense and Algebraic Expressions (NS)</b><br/> <a href="https://www.geogebra.org/m/rqqjvrvy">https://www.geogebra.org/m/rqqjvrvy</a></p>    | <p>Unit 1: Exponents<br/>           Unit 2: Manipulating Algebraic Expressions<br/>           Unit 3: Radicals and Rational Functions<br/>           Unit 4: Prime Factorization</p>  |
| <p><b>Linear Relations and Analytic Geometry (LR)</b><br/> <a href="https://www.geogebra.org/m/bgwpjbhp">https://www.geogebra.org/m/bgwpjbhp</a></p>    | <p>Unit 1: Linear Equations<br/>           Unit 2: Characteristics of Linear Relations<br/>           Unit 3: Connecting Various Representations of Linear Relations<br/>           Unit 4: Properties of Slope<br/>           Unit 5: Equations of Linear Relations and Problem Solving<br/>           Unit 6: Solving Linear Systems of Equations<br/>           Unit 7: Properties of Line Segments and Using Analytic Geometry to Verify Geometric Properties<br/>           Unit 8: Data Management and Statistics</p> |
| <p><b>Measurement, Geometry, and Trigonometry (MT)</b><br/> <a href="https://www.geogebra.org/m/z6mh2nwr">https://www.geogebra.org/m/z6mh2nwr</a></p>   | <p>Unit 1: The Pythagorean Theorem, Measurement, and Optimization<br/>           Unit 2: Geometric Relationships<br/>           Unit 3: Trigonometry<br/>           Unit 4: Angles in Standard Position and Trigonometric Identities</p>  |
| <p><b>Quadratic Relations (QR)</b><br/> <a href="https://www.geogebra.org/m/jcrhecrw">https://www.geogebra.org/m/jcrhecrw</a></p>                       | <p>Unit 1: Basic Properties of Quadratic Relations<br/>           Unit 2: Algebraic Representations of Quadratic Relations<br/>           Unit 3: Algebraic Skills<br/>           Unit 4: Graphing Quadratic Relations<br/>           Unit 5: Solving Problems Involving Quadratic Relations</p>  |
| <p><b>Introduction to Functions (IF)</b><br/> <a href="https://www.geogebra.org/m/gcy6p39g">https://www.geogebra.org/m/gcy6p39g</a></p>                 | <p>Unit 1: Representing Functions<br/>           Unit 2: Transforming and Graphing Functions<br/>           Unit 3: Inverses of Functions<br/>           Unit 4: Inequalities, Absolute Values, and Reciprocals</p>   |
| <p><b>Sequences, Series, and Financial Literacy (SS)</b><br/> <a href="https://www.geogebra.org/m/jhxvtvw9">https://www.geogebra.org/m/jhxvtvw9</a></p> | <p>Unit 1: Representing Sequences<br/>           Unit 2: Arithmetic and Geometric Sequences and Series and Financial Applications</p>   |
| <p><b>Exponential and Trigonometric Functions (ET)</b><br/> <a href="https://www.geogebra.org/m/pukyksha">https://www.geogebra.org/m/pukyksha</a></p>   | <p>Unit 1: Exponential Functions<br/>           Unit 2: Sinusoidal Functions</p>  |

