## Canada World Education Centre
## Course Outline

# Course: Principles of Mathematics

| Grade: 10 | Type: Applied | Credit Value: 1 | Course Code:MFM2P |
|---|---|---|---|
| Teacher: J.F. Michaud | | Development Date: 04/15/2019 | |
| Course Reviser:Vizarat Shaikh<br><br>Date: | | Prerequisite: MPM1D, MFM1P | |

**Ministry Curr. Doc:The Ontario Curriculum Grades 9 to 12, Course Descriptions and Prerequisites, 2018**

**Course Description**

**This course enables students to consolidate their understanding of linear relations and extend their problem-solving and algebraic skills through investigation, the effective use of technology, and hands-on activities. Students will develop and graph equations in analytic geometry; solve and apply linear systems, using real-life examples; and explore and interpret graphs of quadratic relations. Students will investigate similar triangles, the trigonometry of right triangles, and the measurement of three-dimensional figures. Students will consolidate their mathematical skills as they solve problems and communicate their thinking.**

**Overall Expectations for Student Learning**

By the end of the course, students will:

**MEASUREMENT AND TRIGONOMETRY**

1. Use their knowledge of ratio and proportion to investigate similar triangles and solve problems related to similarity.
2. Solve problems involving right triangles, using the primary trig ratios and the Pythagorean Theorem.
3. Solve problems involving the surface areas and volumes of three- dimensional figures, and use the imperial and metric systems of measurement.

**LINEAR RELATIONS**

1. Manipulate and solve algebraic equations, as needed to solve problems.
2. Graph a line and write the equation of a line from given information.
3. Solve systems of two linear equations, and solve related problems that arise from realistic solutions.

**QUADRATIC FUNCTIONS**

1. Manipulate algebraic expressions, as needed to understand quadratic relations.
2. Identify characteristics of quadratic relations.

3. Solve problems by interpreting graphs of quadratic relations.

| **Outline of Course Content**<br>**Unit:** | **Hours:** |
|---|---|
| **Unit 1. Similar Triangles: Pythagorean's theorem. Similar Triangle Ratios** | **10** |
| **Unit 2. Right-Angled Triangles and Trigonometry: Pythagorean Theorem** | **15** |
| **Unit 3. Lines: Slope, y-intercepts, standard form to slope intercept** | **15** |
| **Unit 4. Solving Systems of Linear Equations: Single variable equations** | **15** |
| **Unit 5.Quadratic Relations: Min. and Max values, axes of symmetry** | **20** |
| **Unit 6. Quadratic Equations: Multiplying binomials, finding intercepts** | **20** |
| **Unit 7. Surface Area and Volume: Calculating area/volume of prisms** | **15** |

**Teaching and Learning Strategies**

**Teachers use a variety of teaching strategies to maximize student learning. The following teaching strategies will be used in this course:**

**Helping students become self-directed.**

**In order to address the unique learning styles of students in this course, a variety of activities and learning experiences should be offered, including, but not restricted to: questioning, demonstrations, role-plays, simulations, co-operative group learning, brainstorming, discussion, peer coaching, interviewing, reflective writing, reflective thinking exercises, concept mapping, reading, tutoring, direct instruction, one-on-one teaching, and experimental learning.**

**Teachers will find ways throughout the course for students to make authentic learning connections with their other courses, the school, local community and the world at large.**

**Assessment & Evaluation of Student Performance**

**Assessment & Evaluation**

**The primary purpose of assessment and evaluation is to improve student learning and to help students assume responsibility for their learning.**

**Mid-semester and final marks are determined through evaluations or Assessments of Learning, which typically occur towards the end of a unit and end of semester. During the learning process, information about a student's learning is gathered and used by the teacher and student to inform decisions that affect goal setting and teaching in the classroom. The data gathered as Assessment as Learning and Assessment for Learning do not carry a mark weight, but do play a crucial role in student success as they help inform the teacher about each student's progress. All types of assessments allow teachers to provide descriptive feedback that is clear, specific,**

**meaningful, and timely to support improved learning and achievement.**

**Learning Skills and Work Habits (responsibility, organization, independent work, collaboration, initiative, self-regulation) will be reported by a letter (E = Excellent, G = Good, S = Satisfactory, N = Needs Improvement). These skills and habits support a high level of success in meeting the course expectations in addition to contributing to the development of positive life and work skills for the future.**

**Considerations for Program Planning**

**Program Planning Considerations •Individual Education Plan: Accommodations to meet the needs of exceptional students as set out in their Individual Education Plan will be implemented within the classroom program. Additional assistance is available through the Special Education program. • The Role of Technology in the Curriculum. Using information technology will assist students in the achievement of many of the expectations in the curriculum regarding research, written work, analysis of information, and visual presentations.**

- **English As a Second Language (ESL): Appropriate accommodations in teaching, learning, and evaluation strategies will be made to help ESL students gain proficiency in English, since students taking ESL at the secondary level have limited time in which to develop this proficiency.**

## Resources

## Technological Devices:

**CWEC supports the use of technology to enhance learning, but the use of such electronic technology in the classroom is at the discretion of the teacher. Working together we can ensure the appropriate use of technology by all members of our school community**