



201 Yorkland Street, Richmond Hill, Ontario, Canada – L4S 1A2 – 905 - 884 - 2131

### Principles of Mathematics, Grade 10, Academic (MPM2DG2)

**Value:** 1.0 Credits

**Prerequisite:** MPM1D

**Text:** MHR Principles of Mathematics 10

MPM2D Course Outline revised: Spring, 2018      Mathematics Department Head: Ms. C. Sinatra

**Course Description:**

"This course enables students to broaden their understanding of relationships and extend their problem-solving and algebraic skills through investigation, the effective use of technology, and abstract reasoning. Students will explore quadratic relations and their applications; solve and apply linear systems; verify properties of geometric figures using analytic geometry; and investigate the trigonometry of right and acute triangles. Students will reason mathematically and communicate their thinking as they solve multi-step problems." (Ontario Curriculum, Mathematics, 2005)

**Overall Expectations:** By the end of the course, students will:

- AG1. Model and solve problems involving the intersection of two straight lines.
- AG2. Solve problems using analytic geometry involving properties of lines and segments.
- AG3. Verify geometric properties of triangles and quadrilaterals.
- QR1. Determine the basic properties of quadratic relations.
- QR2. Relate transformations of the graph of  $y = x^2$  to the algebraic representation  $y = a(x - h)^2 + q$ .
- QR3. Solve quadratic equations and interpret the solutions with respect to the corresponding relations.
- QR4. Solve problems involving quadratic relations.
- TR1. Use knowledge of ratio/proportion to investigate similar triangles, solve problems related to similarity.
- TR2. Solve problems involving right triangles, using the primary trigonometric ratios and the Pythagorean Theorem.
- TR3. Solve problems involving acute triangles, using the sine law and the cosine law.

**Mathematical Process Expectations:**

The mathematical processes of Problem Solving, Reasoning and Proving, Reflecting, Selecting Tools/Strategies, Connecting, Representing and Communicating will be integrated throughout the course.

**Course Basic Content:**

UNIT	TOPIC
1	<b>Using Linear Systems to Solve Problems</b> Modelling real-world problems using a pair of linear equations to solve graphically and algebraically.
2	<b>Analytic Geometry</b> Solving problems involving Properties of line segments; verify geometric properties.
3	<b>Analyzing and Applying Quadratic Models</b> Factoring; Solving quadratic equations; Solving problems involving quadratic equations;
4	<b>Graphing Quadratic Relations</b> Relating the graph of $y = x^2$ and its transformations; Expressing quadratic relations in Vertex form; Solving problems involving quadratic relations; optimization problems.
5	<b>Trigonometric Ratios</b> Investigating similarity and solving problems involving similar triangles; solving problems involving the trigonometry of right triangles.
6	<b>Investigating Non-Right Triangles</b> Using the sine law and the cosine law to solve problems involving the trigonometry of acute triangles.

**Course Enrichment Content:** Students will study additional topics and will experience extensions of the basic topics throughout the course.

**Assessment and Evaluation:**

Assessment and evaluation is designed with the goal of improving student learning. The Achievement Chart for Mathematics will guide the assessment and evaluation.

Assessment and evaluation is divided into two parts. The grade the student receives on a mid-term or final report indicates achievement/proficiency in Curriculum Expectations (see box), based on a variety of products, including tests, quizzes and/or assignments.

Learning Skills and Work Habits will be also assessed: Independent Work, Collaboration, Responsibility, Initiative, Self-Regulation and Organization (and recorded as *Needs Improvement, Satisfactory, Good or Excellent*)

The **final grade** is determined as follows:

Term work (70%) based on Achievement Chart categories:	
Knowledge	25%
Application	25%
Communication	5%
Thinking	15%
Final Exam	30%

**Program Considerations:**

Assessment, instructional and environmental accommodations are provided when needed to students as per their learning needs. Similarly, adaptations for English Language Learners will be provided if needed.

**Homework and Attendance:**

Grade 10 Enriched/Gifted course is a challenging course requiring a high level of commitment from students. Students must be prepared to devote regular daily time on home study and review.

Homework must be completed before the next class. Your chances of succeeding increase by completing assigned homework on time! Assigned homework is the minimum amount required; doing above the minimum amount will contribute to advancing your math capabilities. Homework may be checked for completion and this will form part of your learning skills report card evaluation.

It is the student's responsibility to catch up on lessons and homework that they missed. Students should ask classmates for lessons and homework and the teacher can provide any handouts. Students should also consult the math department's website at [www.rhsmath.ca](http://www.rhsmath.ca) and follow the appropriate links.

**Punctuality**

You are expected to arrive to class on time. Immediately open your binder/notebook and be ready to learn.

**Tests and Quizzes:**

Tests and Quizzes are based on a unit of work and are always announced in advance. A student who will be missing a quiz or test must make arrangements with the teacher prior to the day of the absence. Failure to do so may result in a mark of zero. Any student who is away due to unforeseen illness must bring a note, signed by a parent or guardian, indicating that they are aware that the student has missed a math assessment, and the reason for the absence. Failure to do so may result in a mark of zero.

**Extra Help Room 2026:**

**Getting extra help when needed is fundamental to studying math.**

The first place to get help is during class, when possible. Try to get help regularly, rather than procrastinating. For extra help outside of class, let your teacher know if you would like to come in for help.

In addition to help from the teacher, students are invited to drop in to the extra help room. Extra Help room (2026) is open Mon.-Thu. 3:40pm to 4:20pm, and is supervised each day by a math teacher.

**Contact information:**

Teacher: **Mr. Karo**

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