

## **MPM2D – Principles of Mathematics 10**

### **GENERAL INFORMATION**

**Name of School:** Rosedale Academy

**Department:** Mathematics

**Course Developer:** Asim Sayed

**Development Date:** May 1<sup>st</sup>, 2015

**Revision Date:** TBD

**Course Title:** Principles of Mathematics 10

**Grade:** 10

**Course Type:** Academics

**Course Code:** MPM2D

**Credit Value:** 1

**Curriculum Policy Document:** The Ontario Curriculum Grades 9 and 10 Mathematics, Ministry of Education 2005 (Revised)

**Prerequisite:** Principles of Mathematics, Grade 9, Academic, MPM1D

## **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.

## **PART OVERALL EXPECTATION / LEARNING OBJECTIVES**

### **Quadratic Relations**

**01** – Relate transformations of the graph of  $y = x^2$  to the algebraic representation

$$y = a(x - h)^2 + k;$$

**02** – Solve quadratic equations and interpret the solutions with respect to the corresponding relations;

**03** – Determine the basic properties of quadratic relations;

**04** – Solve problems involving quadratic relations.

### **Analytic Geometry**

**01** – Model and solve problems involving the intersection of two straight lines;

**02** – Solve problems involving the analytic geometry concepts of line segments;

**03** – Verify geometric properties of triangles and quadrilaterals, using analytic geometry.

### **Trigonometry**

**01** – Develop the primary trigonometric ratios, using the properties of similar triangles;

**02** – Solve trigonometric problems involving right triangles;

**03** – Solve trigonometric problems involving acute triangles.

## OUTLINE OF COURSE CONTENT

	Name of Unit	Time Allocated in Hours
Unit 1	Quadratic Relations	40 Hours
Unit 2A	Analytic Geometric Part A	10 Hours
Midterm report cards		
Unit 2B	Analytic Geometric Part B	20 Hours
Unit 3	Trigonometry	40 Hours
	Final Examination	
	TOTAL	110 Hours

## TEACHING / LEARNING STRATEGIES

The strategies used are varied to meet the needs and the range of learning styles encountered and they include the following:

Articulate Learning Module	Brainstorming
Computer Assisted Learning	Decision Making
Direct Instruction	Demonstration
Animated Games	Discussion
Group Discussion	Estimating
iSpring Presentation / Animation	Independent Study
Online Graphing Software	Memorization
Problem-Based Learning	Model Analysis
Work and Task Sheet	Note Taking
Interactive Online Activity	Oral Explanation
	Peer Assessment
	Problem Solving
	Reasoning and Proving
	Self-Assessment

## STRATEGIES FOR ASSESSMENT AND EVALUATION OF STUDENT PERFORMANCE

Evaluation in this course will be continuous throughout the year and will include a variety of evaluation methods. Assessment is embedded in the lessons throughout a unit under Check-Up Time.

Assessment as Learning	Assessment for Learning	Assessment of Learning
<b>Student Product</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Journals/Letters/Emails (checklist)</li> <li><input type="checkbox"/> Learning Logs (anecdotal)</li> <li><input type="checkbox"/> Peer Assessments</li> <li><input type="checkbox"/> Practice Worksheets</li> </ul>	<b>Student Product</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Check-up Time Assessments</li> <li><input type="checkbox"/> Journals/Letters/Emails (checklist)</li> <li><input type="checkbox"/> Pre-Skills Checks (scale)</li> <li><input type="checkbox"/> Quizzes (scale)</li> <li><input type="checkbox"/> Graphic organizers (scale)</li> <li><input type="checkbox"/> Peer feedback (anecdotal)</li> <li><input type="checkbox"/> Reports</li> <li><input type="checkbox"/> Practice Worksheets</li> </ul>	<b>Student Product</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Assignments</li> <li><input type="checkbox"/> Journals/Letters/Emails (checklist)</li> <li><input type="checkbox"/> Unit Tests (scale)</li> <li><input type="checkbox"/> Final Exam</li> <li><input type="checkbox"/> Case Studies</li> <li><input type="checkbox"/> Presentations</li> <li><input type="checkbox"/> Graphic organizers (scale)</li> </ul>
<b>Observation</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Whole class discussions (anecdotal)</li> <li><input type="checkbox"/> Self-proofreading (checklist)</li> </ul>	<b>Observation</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Class discussions (anecdotal)</li> <li><input type="checkbox"/> Problem Solving</li> </ul>	<b>Observation</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Presentations</li> </ul>
<b>Conversation</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Student teacher conferences</li> <li><input type="checkbox"/> Small Group Discussions (checklist)</li> <li><input type="checkbox"/> Pair work (checklist)</li> <li><input type="checkbox"/> Skype meetings</li> </ul>	<b>Conversation</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Student teacher conferences</li> <li><input type="checkbox"/> Small group discussions (checklist)</li> <li><input type="checkbox"/> Pair work (anecdotal)</li> <li><input type="checkbox"/> Peer-feedback (anecdotal)</li> <li><input type="checkbox"/> Peer-editing (anecdotal)</li> </ul>	<b>Conversation</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Question and Answer Session (checklist)</li> <li><input type="checkbox"/> Oral tests (scale)</li> <li><input type="checkbox"/> Oral Presentation with question and answer session</li> </ul>

## FINAL GRADE

The percentage grade represents the quality of the students' overall achievement of the expectations for the course and reflects the corresponding achievement as described in the achievement chart for mathematics.

1. Term work will be 70% of the overall grade for the course;
2. The summative evaluations will be 30% of the overall grade, incorporating a final written examination.

## Achievement Categories

Application:	25%	Knowledge and Understanding:	25%
Communication:	25%	Thinking/Inquiry:	25%

## Achievement Chart

A Summary Description of Achievement in Each Percentage Grade Range and Corresponding Level of Achievement

Percentage Grade Range	Achievement Level	Summary Description
80–100%	Level 4	A very high to outstanding level of achievement. Achievement is above the provincial standard.
70–79%	Level 3	A high level of achievement. Achievement is at the provincial standard.
60–69%	Level 2	Moderate level of achievement. Achievement is below, but approaching the provincial standard.
50–59%	Level 1	A passable level of achievement. Achievement is below the provincial standard.
Below 50%	Level R	Insufficient achievement of curriculum expectations. A credit will not be granted.

## RESOURCES REQUIRED BY THE STUDENT

MDM2D Online Course of Study  
Calculator is recommended

## PROGRAM PLANNING CONSIDERATION

### Role of Technology in the Curriculum

Rosedale Academy courses leverage the power of information and communication technologies to provide rich, dynamic learning experiences. Students explore, evaluate and create concepts and works using a wide array of digital tools. They demonstrate their learning through text, video, voice and visual assignments that teach multi-literacy and media skills. Students also enhance their computer and technology skills in ways that are useful for their future academic and personal pursuits.

Teachers at Rosedale Academy get to know their learners, provide rich, descriptive feedback and assess student contributions and products AS, FOR and OF learning through digital technologies. They enable rapid feedback and communication at any time without borders in our global community.

Tool	Use	Benefit
<b>Discussion forums</b>	Whole class discussion (written)	Creates a record of each student's contributions
<b>Group activities</b>	Small group collaboration and discussion (written)	Encourages student participation; creates a record
<b>Live Skype sessions</b>	Teacher leads the lesson with students as a class	Observations of whole class and individual students
<b>Workshop</b>	Students submit work for peer assessment to Moodle.	Peers assess each other's work based on rubrics, etc. Promotes assessment as learning
<b>Peer Teaching</b>	Students research a given topic and share their findings and opinions with other students.	Fosters discussion between students and allows for content to be learned and expressed from a student perspective
<b>Journals</b>	Small group discussions using problem solving	Improves students' critical inquiry, and reflective thinking skills about the concepts learned within the course
<b>Learning Modules</b>	Students explore content in an interactive manner with built-in assessments as they progress.	Students can navigate content at their own pace and assess their own learning along the way.
<b>Computer Simulations</b>	Individual or class exploration and visualization of concepts relating to the curriculum.	Allows hands-on exploration and investigation as an alternative learning strategy.

**English as a Second Language**

Rosedale Academy provides students with comprehensive ESL support to enhance their proficiency with the English language.

- All Rosedale Academy instructional materials and resources are designed with English Language Learners in mind. Online and face-to-face instructional resources make use of differentiated learning methods and carefully structured language. These resources support English language development as students are taking credit courses in all academic fields.
- Teachers at Rosedale Academy provide a variety of accommodations for English Language Learners. These accommodations include: extended time for tests and exams; chunking of assignments and tests; a safe space for asking questions; formative feedback; mini-lessons in spelling, sentence structure and grammar; and access to ESL resources and expert discussion.
- The self-paced delivery method of this course allows students to take the time that they require to engage in meaningful participation while still enjoying the enriching experience of working in an online global classroom.
- All teachers at Rosedale Academy are responsible for helping students to develop their ability to use English in academic courses.

**Career Education**

This course promotes skills effective for a variety of careers and informs students of some of the career opportunities where oral and written communication is considerable assets. Students will learn how to use English to inform audiences about ideas, persuade audiences to change their opinion or buy a product, and to formulate ideas. Students will also understand the importance of social media in their search for future education and career opportunities. Finally, this course also helps to prepare students for university application by providing a unit that helps them write a persuasive application essay. Beyond the immediate needs of the student, this also course focuses on demonstrating the value of English in jobs like business where clear communication is highly valued.

**Academic Integrity**

Students are expected to maintain high standards of honesty and academic integrity throughout their participation in all courses. This includes avoiding any instance of fraud, plagiarism and cheating. Rosedale Academy takes the following steps to ensure academic integrity:

- Students provide photo identification
- Course assignments include audio and video components
- Teachers Skype weekly with their classes
- Students are encouraged and supported to develop original work
- Exams are proctored by adults in trusted positions

When a teacher has reasonable grounds to believe that a student has violated these standards, the school principal will review the incident and, if needed, enforce disciplinary procedures. More information about *Academic Honesty* may be found in section 5.3 of the school calendar.

**Late and Missed Assignment**

Independent students have up to 12 months to complete a course. There are no set deadlines for course assignments. Students can proceed through each course at their own pace, but all course requirements must be completed prior to writing their final exam.

Cohort students follow a schedule in each course. This schedule specifies the due dates for all assignments. Students may request an extension if they are unable to meet a specific due date. Rosedale Academy reserves the right to deny any request. Late or missed assignments are not accepted without a valid reason.