

York Region District School Board
The Dr. G. W. Williams Secondary School
Personalized Alternative Education Department
Grade Nine Applied Mathematics (MFM1PA)
Subject Head: C. Cluff

Credit Value: 1 Credit **Prerequisite:** None **Course Fee:** None
Curriculum Policy Document: *Mathematics, The Ontario Curriculum, Grades 9 and 10, 2005, revised* **Department:** Mathematics

Course Description:

This course enables students to develop an understanding of mathematical concepts related to introductory algebra, proportional reasoning, and measurement and geometry through investigation, the effective use of technology, and hands-on activities. Students will investigate real-life examples to develop various representations of linear relations, and will determine the connections between the representations. They will also explore certain relationships that emerge from the measurement of three-dimensional figures and two-dimensional shapes. Students will consolidate their mathematical skills as they solve problems and communicate their thinking.

Units of Study:

1-Measurement and Geometric Properties

2- Algebraic Models

3- Graphical Relationships

Overall Expectations

- Solve problems involving proportional reasoning
- Simplify numerical and polynomial expressions in one variable and solve simple first-degree equations
- Apply data management techniques to investigate relationships between two variables
- Determine the characteristics of linear relationships
- Demonstrate an understanding of constant rate of change and its connection to linear relations
- Connect various representations of linear relation and solve problems using representations
- Determine through investigation the optimal values of various measurements of rectangles
- Solve problems involving the measurements of two-dimensional shapes and the volumes of three dimensional figures
- Determine through investigation facilitated by dynamic geometry software, geometric properties and relationships involving two dimensional shapes and apply the results to solving problems

Learning Skills: (abridged list from *Growing Success, 2010*)

Learning Skills will be assessed, modelled, and reflected upon throughout the course. Students will be required to address several critical questions regarding their own development of essential learning skills and how effective use of learning skills impacts their learning process.

Responsibility

- completes and submits class work, homework, and assignments according to agreed-upon timelines
- takes responsibility for and manages own behavior

Organization

- devises and follows a plan and process for completing work and tasks
- establishes priorities and manages time to complete tasks and achieve goals

Independent Work

- uses class time appropriately to complete tasks
- follows instructions with minimal supervision

Collaboration

- responds positively to the ideas, opinions, values, and traditions of others
- shares information, resources, and expertise and promotes critical thinking to solve problems and make decisions

Initiative

- demonstrates the capacity for innovation and a willingness to take risks
- demonstrates curiosity and interest in learning

Self-Regulation

- sets own individual goals and monitors progress towards achieving them
- seeks clarification or assistance when needed

Assessment

- *Diagnostic assessment* is used at the beginning of a unit to help determine a starting point for instruction.
- *Formative assessment* provides information to students, as they are learning and refining their skills.
- *Summative assessments* at the end of units and a course give students an opportunity to synthesize/apply/demonstrate their learning. Summative assessments are counted toward the student's final mark.

Evaluation Breakdown:		
Knowledge /		Final Activities 30%
Understanding 17.5%		
Thinking / Inquiry 17.5%	+	
Communication 17.5%		
Application 17.5%		
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Term Mark 70%		Final Mark 100%

Instructional Strategies:

Any course can offer traditional and creative approaches to learning. Current research indicates that students can learn more effectively if given time and opportunity (*Growing Success*, 2010)- teachers incorporate a wide variety of differentiated instructional methods to respond to the varied intelligences and needs of our school community. Students will, through a miscellany of activities, explore the various skills required in this course. As such, many instructional strategies, which include (but are not limited to):

- **socratic learning**
- **concept attainment**
- **collaborative learning**
- **peer learning and assessment**
- **written and verbal reflection**
- **performance**

When deemed appropriate, either through a student's IEP, or through in-class needs, alternate means of instruction and assessment will be used.