

HAMILTON-WENTWORTH CATHOLIC DISTRICT SCHOOL BOARD

GRADE 9 Academic Mathematics – MPM 1D1

This course enables students to develop an understanding of mathematical concepts related to algebra, analytic geometry, and measurement and geometry through investigation, the effective use of technology, and abstract reasoning. Students will investigate relationships, which they will then generalize as equations of lines, and will determine the connections between different representations of a linear relation. They will also explore relationships that emerge from the measurement of three-dimensional figures and two-dimensional shapes. Students will reason mathematically and communicate their thinking as they solve multi-step problems.

How This Course Supports The Ontario Catholic School Graduate Expectations

This course enables students to develop a confident and positive sense of self. Within the setting of a supportive and caring classroom community, the dignity and value of each student is respected and affirmed. Through their personal growth in reason, critical thinking and communication, students come to appreciate their mathematical ability as a God given gift. By sharing their abilities, students contribute to the good of others, in service to the classroom and school community.

Prerequisite: Completion of Grade 8 Mathematics

COURSE CONTENT

The following strands will be covered:

Strand 1: Number Sense and Algebra

Strand 2: Linear Relations

Strand 3: Analytic Geometry

Strand 3: Measurement and Geometry

EVALUATION AND ASSESSMENT:

A) MARK CALCULATION

Knowledge/Understanding	25%
Application	25%
Communication	10%
Thinking	10%
Final Exam/EQAO	30%

B) LEARNING SKILLS

The following items will also be rated on the Provincial Report Card according to the codes listed below:

- Independent Work E= excellent
- Collaboration G = good
- Organization S = satisfactory
- Responsibility N = needs improvement
- Initiative
- Self-Regulation

TEXTBOOK

McGraw-Hill Ryerson Principles of Mathematics 9
Replacement Cost: \$100.00

MATHEMATICAL PROCESS EXPECTATIONS

Problem Solving

- develop, select, apply, and compare a variety of problem-solving strategies as they pose and solve problems and conduct investigations, to help deepen their mathematical understanding;

Reasoning and Proving

- develop and apply reasoning skills to make mathematical conjectures, assess conjectures and justify conclusions, and plan and construct organized mathematical arguments;

Reflecting

- demonstrate that they are reflecting on and monitoring their thinking to help clarify their understanding as they complete an investigation or solve a problem

Selecting Tools and Computational Strategies

- select and use a variety of concrete, visual, and electronic learning tools and appropriate computational strategies to investigate mathematical ideas and to solve problems;

Connecting

- make connections among mathematical concepts and procedures and relate mathematical ideas to situations or phenomena drawn from other contexts

Representing

- create a variety of representations of mathematical ideas connect and compare them, and select and apply the appropriate representations to solve problems;

Communicating

- communicate mathematical thinking orally, visually, and in writing, using mathematical vocabulary and a variety of appropriate representations, and observing mathematical conventions.

OVERALL EXPECTATIONS:

Number Sense and Algebra

- demonstrate an understanding of the exponent rules of multiplication and division, and apply them to simplify expressions;
- manipulate numerical and polynomial expressions, and solve first-degree equations.

Linear Relations

- apply data-management techniques to investigate relationships between two variables;
- demonstrate an understanding of the characteristics of a linear relation;
- connect various representations of a linear relation

Analytic Geometry

- determine the relationship between the form of an equation and the shape of its graph with respect to linearity and non-linearity;
- determine, through investigation, the properties of slope and y-intercept of a linear relation;
- solve problems involving linear relations.

Measurement and Geometry

- determine, through investigation, the optimal values of various measurements;
- solve problems involving the measurements of two-dimensional shapes and the surface areas and 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.