

# MATHEMATICS

## **Principles of Mathematics, Grade 9 (Academic) MPM1D**

This course enables students to develop 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 relationship. They will also explore relationships that emerge from the measurement of three-dimensional objects and two-dimensional shapes. Students will reason mathematically and communicate their thinking as they solve multistep problems. Successful completion of this course prepares students for Principles of Mathematics, Grade 10, Academic (MPM2D) or Foundations of Mathematics, Grade 10, Applied (MFM2P).

## **Foundations of Mathematics, Grade 9 (Applied) MFM1P**

This course enables students to develop 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 relationships, and will determine the connections between the representations. They will also explore certain relationships that emerge from the measurement of three-dimensional objects and two-dimensional shapes. Students will consolidate their mathematical skills as they solve problems and communicate their thinking. Successful completion of this course prepares students for Foundations of Mathematics, Grade 10, Applied (MFM2P). (*Note: Students who wish to take Principles of Mathematics, Grade 10, Academic [MPM2D] after completing this course will need to take a transfer course.*)

Learning through hands-on activities and the use of concrete examples is an important aspect of this course

## **Mathematics Grade 9 (Locally Developed) MAT1L**

This course emphasizes further development of mathematical knowledge and skills to prepare students for success in their everyday lives, in the workplace, in the Grade 10 LDCC course, and in the Mathematics Grade 11 and Grade 12 Workplace Preparation courses. The course is organized by three strands related to money sense, measurement, and proportional reasoning. In all strands, the focus is on developing and consolidating key foundational mathematical concepts and skills by solving authentic, everyday problems. Students have opportunities to further develop their mathematical literacy and problem-solving skills and to continue developing their skills in reading, writing, and oral language through relevant and practical math activities.

## **Principles of Mathematics, Grade 10 (Academic) MPM2D**

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 relationships 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 as they solve multistep problems and communicate their thinking.

**Prerequisite: MPM1D (MPM1D with minimum 70% achievement strongly recommended.)**

# MATHEMATICS

## **Foundations of Mathematics, Grade 10**

**(Applied)**

**MF2P**

This course enables students to consolidate their understanding of relationships 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 relationships. Students will investigate similar triangles, the trigonometry of right-angled triangles, and the measurement of three-dimensional objects. Students will consolidate their mathematical skills as they solve problems and communicate their thinking.

**Prerequisite: MPM1D or MF1P**

## **Mathematics Grade 10**

**(Locally Developed)**

**MA2L**

This course emphasizes the extension of mathematical knowledge and skills to prepare students for success in their everyday lives, in the workplace, and in the Mathematics Grade 11 and Grade 12 Workplace Preparation courses. The course is organized by three strands related to money sense, measurement, and proportional reasoning. In all strands, the focus is on strengthening and extending key foundational mathematical concepts and skills by solving authentic, everyday problems. Students have opportunities to extend their mathematical literacy and problem-solving skills and to continue developing their skills in reading, writing, and oral language through relevant and practical math activities.

**Prerequisite: MF1P or MA1L**

## **Functions, Grade 11**

**(University Preparation)**

**MC3U**

This course introduces the mathematical concept of the function by extending students' experiences with linear and quadratic relations. Students will investigate properties of discrete and continuous functions, including trigonometric and exponential functions; represent functions numerically, algebraically, and graphically; solve problems involving applications of functions; and develop facility in simplifying polynomial and rational expressions. Students will reason mathematically and communicate their thinking as they solve multi-step problems.

**Prerequisite: MPM2D (*MPM2D with minimum 75% achievement strongly recommended.*)**

## **Functions and Applications, Grade 11**

**(University/College Preparation)**

**MC3M**

This course introduces basic features of the function by extending students' experiences with quadratic relations. It focuses on quadratic, trigonometric, and exponential functions and their use in modelling real-world situations. Students will represent functions numerically, graphically, and algebraically; simplify expressions; solve equations; and solve problems relating to financial and trigonometric applications. Students will reason mathematically and communicate their thinking as they solve multi-step problems.

**Prerequisite: MPM2D (*MPM2D with minimum 60% achievement strongly recommended.*) or MF2P (*MF2P with minimum 75% achievement strongly recommended*)**

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## **Foundations for College Mathematics, Grade 11 (College) MBF3C**

This course enables students to broaden their understanding of mathematics as a problem-solving tool in the real world. Students will extend their understanding of quadratic relations, as well as of measurement and geometry; investigate situations involving exponential growth; solve problems involving compound interest; solve financial problems connected with vehicle ownership; and develop their ability to reason by collecting, analysing, and evaluating data involving one and two variables. Students will consolidate their mathematical skills as they solve problems and communicate their thinking.

**Prerequisite: MPM2D or MFM2P**

## **Mathematics for Work and Everyday Life, Grade 11 (Workplace) MEL3E**

This course enables students to broaden their understanding of mathematics as it is applied in the workplace and daily life. Students will solve problems associated with earning money, paying taxes, and making purchases; apply calculations of simple and compound interest in saving, investing, and borrowing; and calculate the costs of transportation and travel in a variety of situations. Students will consolidate their mathematical skills as they solve problems and communicate their thinking.

**Prerequisite: MPM1D or MFM1P or MAT2L**

## **Calculus and Vectors, Grade 12 (University Preparation) MCV4U**

This course builds on students' previous experience with functions and their developing understanding of rates of change. Students will solve problems involving geometric and algebraic representations of vectors, and representations of lines and planes in three-dimensional space; broaden their understanding of rates of change to include the derivatives of polynomial, rational, exponential, and sinusoidal functions; and apply these concepts and skills to the modelling of real-world relationships. Students will also refine their use of the mathematical processes necessary for success in senior mathematics. This course is intended for students who plan to study mathematics in university and who may choose to pursue careers in fields such as physics and engineering.

**Prerequisite: MHF4U (MHF4U can be taken concurrently with or can precede Calculus and Vectors)**

## **Advanced Functions, Grade 12 (University Preparation) MHF4U**

This course extends students' experience with functions. Students will investigate the properties of polynomial, rational, logarithmic, and trigonometric functions; broaden their understanding of rates of change; and develop facility in applying these concepts and skills. Students will also refine their use of the mathematical processes necessary for success in senior mathematics. This course is intended both for students who plan to study mathematics in university and for those wishing to consolidate their understanding of mathematics before proceeding to any one of a variety of university programs.

**Prerequisite: MCR3U (MCR3U with minimum 70% achievement strongly recommended)**

## **Mathematics of Data Management, Grade 12 (University Preparation) MDM4U**

This course broadens students' understanding of mathematics as it relates to managing data. Students will apply methods for organizing large amounts of information; solve problems involving probability and statistics; and carry out a culminating project that integrates statistical concepts and skills. Students will also refine their use of the mathematical processes necessary for success in senior mathematics. Students planning to enter university programs in business, the social sciences, and the humanities will find this course of particular interest.

**Prerequisite: MCR3U (MCR3U with minimum 65% achievement strongly recommended) or MCF3M (MCF3M with minimum 70% achievement strongly recommended)**

# MATHEMATICS

## **Mathematics for College Technology, Grade 12 (College Preparation) MCT4C**

This course enables students to extend their knowledge of functions. Students will investigate and apply properties of polynomial, exponential, and trigonometric functions; continue to represent functions numerically, graphically, and algebraically; develop facility in simplifying expressions and solving equations; and solve problems that address applications of algebra, trigonometry, vectors, and geometry. Students will reason mathematically and communicate their thinking as they solve multi-step problems. This course prepares students for a variety of college technology programs.

**Prerequisite: MCF3M**

## **Foundations for College Mathematics, Grade 12 (College Preparation) MAP 4C**

This course enables students to broaden their understanding of real-world applications of mathematics. Students will analyze data using statistical methods; solve problems involving applications of geometry and trigonometry; simplify expressions; and solve equations. Students will reason mathematically and communicate their thinking as they solve multi-step problems. This course prepares students for college programs in areas such as business, health sciences, and human services, and for certain skilled trades.

**Prerequisite: MBF3C**

## **Mathematics for Work and Everyday Life, Grade 12 (Workplace Preparation) MEL4E**

This course enables students to broaden their understanding of mathematics as it is applied in the workplace and daily life. Students will investigate questions involving the use of statistics; apply the concept of probability to solve problems involving familiar situations; investigate accommodation costs and create household budgets; use proportional reasoning; estimate and measure; and apply geometric concepts to create designs. Students will consolidate their mathematical skills as they solve problems and communicate their thinking.

**Prerequisite: MEL3E**

