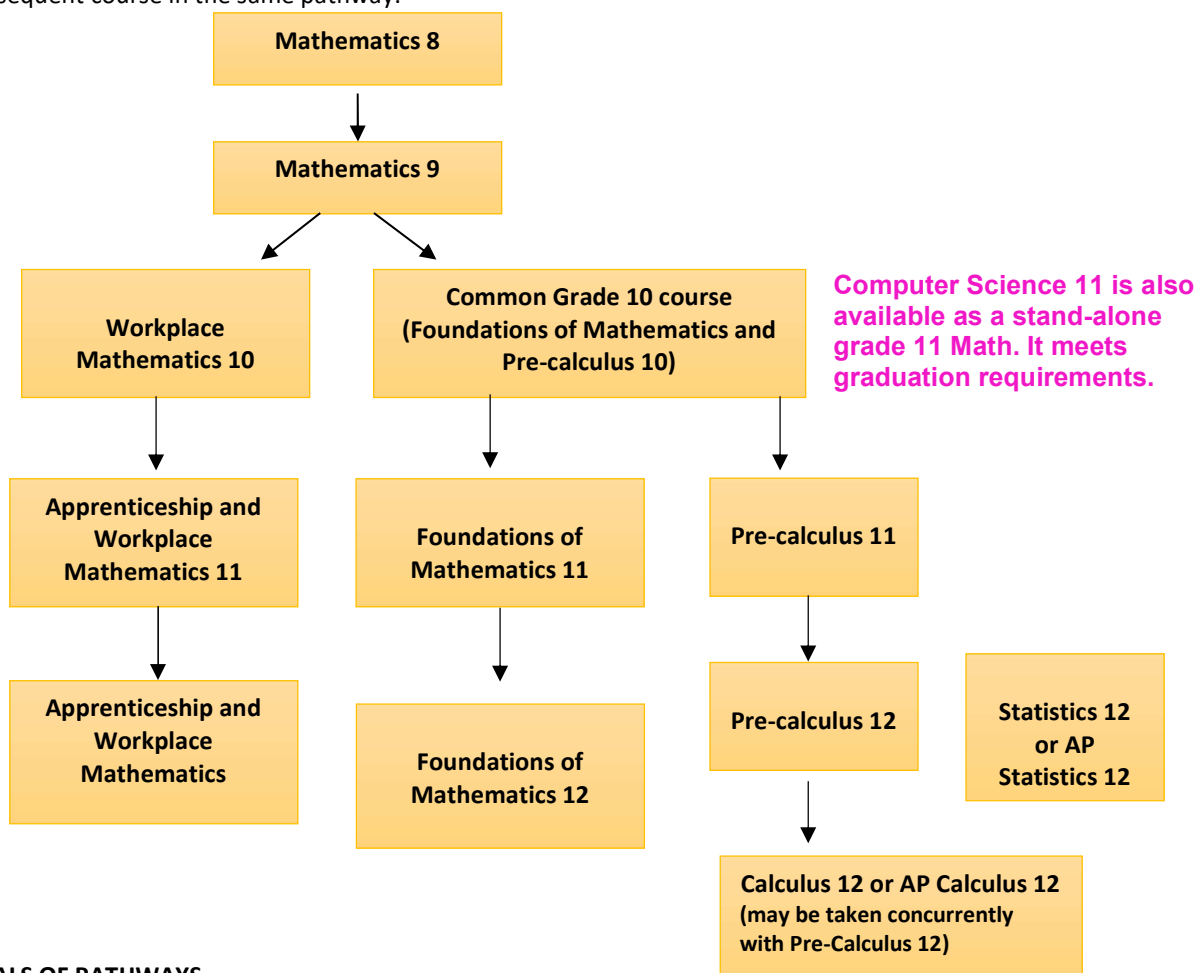


# MATHEMATICS

Students graduating in 2013 or later complete a common mathematics curriculum up to end of grade 9. In grade 10, they must choose between two different pathways and in grades 11 and 12 they must choose between three different pathways. The pathways are: Workplace Mathematics, Foundations of Mathematics, and Pre-calculus. A common Grade 10 course (Foundations of Mathematics and Pre-calculus, Grade 10) is the starting point for the Foundations of Mathematics pathway and the Pre-calculus pathway. Each topic area requires that students develop a conceptual knowledge base and skill set that will be useful to whatever pathway they have chosen. The topics covered within a pathway are meant to build upon previous knowledge and to progress from simple to more complex conceptual understandings. In general, a course in a particular pathway only provides suitable preparation for the subsequent course in the same pathway.



## GOALS OF PATHWAYS

The goals of all three pathways are to provide prerequisite attitudes, knowledge, skills and understandings for specific post-secondary programs or direct entry into the work force. All three pathways provide students with mathematical understandings and critical-thinking skills. It is the choice of topics through which those understandings and skills are developed that varies among pathways. When choosing a pathway, students should consider their interests, both current and future. Students, parents and educators are encouraged to research the admission requirements for post-secondary programs of study as they vary by institution and by year.

\*Partially replicated from WNCPC Common Curriculum Framework document 2008:  
<http://www.wncpc.ca/media/38771/math10to12.pdf>

## GRADES 8 and 9

### Mathematics 8

MMA--08

Students will study rational operations, equation solving, graphing, exponents and roots, scientific notation, measurement, financial literacy, probability, and data analysis.

### Mathematics 9

MMA--09

Students will study exponents, operations, factoring, equations, inequalities, similarity, transformations, trigonometry, financial literacy, and probability.

## GRADE 10

### Workplace Mathematics 10

MWPM-10

Workplace mathematics 10 is designed to provide students with the mathematical understanding and critical thinking skills identified for entry into the majority of trades and for direct entry into the work force. Topics include understanding and apply the metric and imperial systems to the measurement of 2-D and 3-D objects, geometry, trigonometry, and the fundamentals of income, spending, and debt. At the end of this course, students are prepared to take Apprenticeship and Workplace Mathematics 11.

### Foundations of Mathematics and Pre-Calculus 10

MFMP-10

Foundations and Pre-Calculus 10 is intended to provide students with mathematical understanding and critical thinking skills identified as beneficial for post-secondary studies in both the arts and the sciences. Topics include surface area and volume of 3-D objects, applying trigonometric ratios to right triangles, irrational numbers, powers involving integral and rational exponents, polynomials, co-ordinate geometry with linear relations, system of linear equations, and function notation. At the end of this course, students are prepared for Apprenticeship and Workplace 11, Foundations of Mathematics 11, and/or Pre-Calculus 11.

## GRADE 11

### Workplace Mathematics 11

MWPM-11

This course is designed to provide students with the mathematical understanding and critical-thinking skills identified for entry into the majority of trades, via a technical college or a trade school, and for direct entry into the workforce. Topics to be studied include measurement, financial concepts, geometry, and trigonometry. This course provides students with the graduation requirement in mathematics.

### Foundations of Mathematics 11

MFOM-11

This course is designed to provide students with the mathematical understanding and critical-thinking skills identified for post-secondary studies in programs that do not require the study of theoretical calculus. Typically, a student would be planning to enter a college or university in a social sciences, humanities, or fine arts program. Topics to be studied include logic, geometry proofs, linear systems, quadratic functions, and statistics. This course gives students the graduation requirement in mathematics. (There is not a large overlap between this course and Pre-calculus 11; some students may wish to take both courses).

## Pre-Calculus 11

MPREC11

This course is designed to provide students with the mathematical understanding and critical-thinking skills identified for entry into post-secondary studies in programs that require the study of theoretical calculus. Typically, a student would be planning to enter a college or university in a mathematics, science, engineering, computer science, medicine, or commerce program. The main areas of study are mathematical functions and sequences and trigonometry. This course gives students the graduation requirement in mathematics. (There is not a large overlap between this course and Foundation of Mathematics 11, some students may wish to take both courses).

## Computer Science 11

MMACS11

Computer Science is the study of how computers solve problems. Students will learn to break down complex problems, construct algorithms and program solutions. Students will use computational thinking to solve problems.

## GRADE 12

### Apprenticeship and Workplace Mathematics 12

MAPPR12

This extends the topics covered in *Apprenticeship and Workplace Mathematics 11* and is designed to provide students with the mathematical understanding and critical-thinking skills identified for entry into various trades, via a technical college or a trade school, and for direct entry into the workforce. Topics to be studied include measurement, financial concepts, geometry, and trigonometry. Concepts related to the study of probability and statistics are also introduced.

### Foundations of Mathematics 12

MFOM-12

This course extends *Foundations of Mathematics 11* and is designed to provide students with the mathematical understanding and critical-thinking skills identified for post-secondary studies in programs that do not require the study of theoretical calculus. Typically, a student would be planning to enter a college or university in a social sciences, humanities, or fine arts program. Topics to be studied include logic, geometry proofs, linear systems, quadratic functions, and statistics. Because there is not a large overlap between this course and *Pre-calculus 12*, some students may wish to take both courses.

### Pre-Calculus 12

MPREC12

This course extends *Pre-calculus 11* and is designed to provide students with the mathematical understanding and critical-thinking skills identified for entry into post-secondary studies in programs that require the study of theoretical calculus. Typically, a student would be planning to enter a college or university in a mathematics, science, engineering, medicine, or commerce program. The main areas of study are mathematical functions and sequences and trigonometry. This course gives students the graduation requirement in mathematics. Because there is not a large overlap between this course and *Foundations of Mathematics 12*, some students may wish to take both courses.

### Calculus 12

MCALC12

This course prepares students for university calculus. Most of the year will be devoted to differential calculus. Topics include: Functions, Graphs, and Limits, Concept of Derivatives, Derivatives at a Point, Derivative as a function, Second Derivatives, Applications of Derivatives, Computation of Derivatives, and Antiderivatives. Note: Compared to AP Calculus 12, this course is slower paced to allow students more time to master concepts. This course has four fewer chapters of content compared to AP Calculus 12.

## AP Calculus 12

ACAL-12

This course prepares students for university calculus. Most of the year will be devoted to differential and integral calculus. Topics include: Functions, Graphs, and Limits, Concept of Derivatives, Derivatives at a Point, Derivative as a function, Second Derivatives, Applications of Derivatives, Computation of Derivatives, Interpretations and Properties of Definite Integrals, Application of Integrals, Fundamental Theorem of Calculus, Techniques of Antidifferentiation, Applications of Antidifferentiation, and Numerical Approximations to Definite Integrals. A graphing calculator is required. Students have the option of taking the College Board administered AP exam in May. Achievement on the exam provides students with the option of obtaining credit or standing in first year courses at most North American universities. There is a fee for this exam. Note: Compared to Calculus 12, this course is faster paced and has four additional chapters of content.

## Statistics 12

MSTAT12

Recommended Pre-requisite: Math 11 Foundations or Math 11 Pre-Calculus

Statistics 12 is a non-calculus introductory course in university level statistics. The course introduces students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. Please note this is considered a math elective course and cannot be directly used for university admission. A graphing calculator is required.

Note: Compared to AP Statistics 12, this course is slower paced to allow students more time to master concepts. This course has less content compared to AP Statistics 12.

## AP Statistics 12

ASTA-12

Recommended Pre-requisite: Math 11 Foundations or Math 11 Pre-Calculus

AP Statistics 12 is a non-calculus introductory course in university level statistics. The course introduces students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. Students have the option of taking the College Board administered AP exam in May. Achievement on the exam provides students with the option of obtaining credit or standing in first year courses at most North American universities. (i.e. UBC and SFU give credit towards Stats 200 and Stats 101 respectively). There is a fee for this exam. Please note this is considered a math elective course and cannot be directly used for university admission. A graphing calculator is required.

## Computer Science 12

MMACS12

Computer Science is the study of how computers solve problems. Students will learn algorithms to solve common problems and analyze their efficiency. Students will examine ways of modeling complex problems.

## SUMMIT

### SUMMIT Mathematics 8, 9 and 10

MMA--09DC2/MFMP-10DC2/MPREC11DC2

These courses are only available to students in the Summit program. Over the three years, students will cover the topics in Math 8, Math 9, Foundations and Pre-Calculus 10 and Pre-Calculus 11. In addition, students will have opportunities to take part in math contests, group work and enrichment material.

### SUMMIT Pre-Calculus 12

MPREC12DC2

This course is offered to Summit students during their Grade 11 year to complete the same requirements of Pre-Calculus 12 at an enriched level.