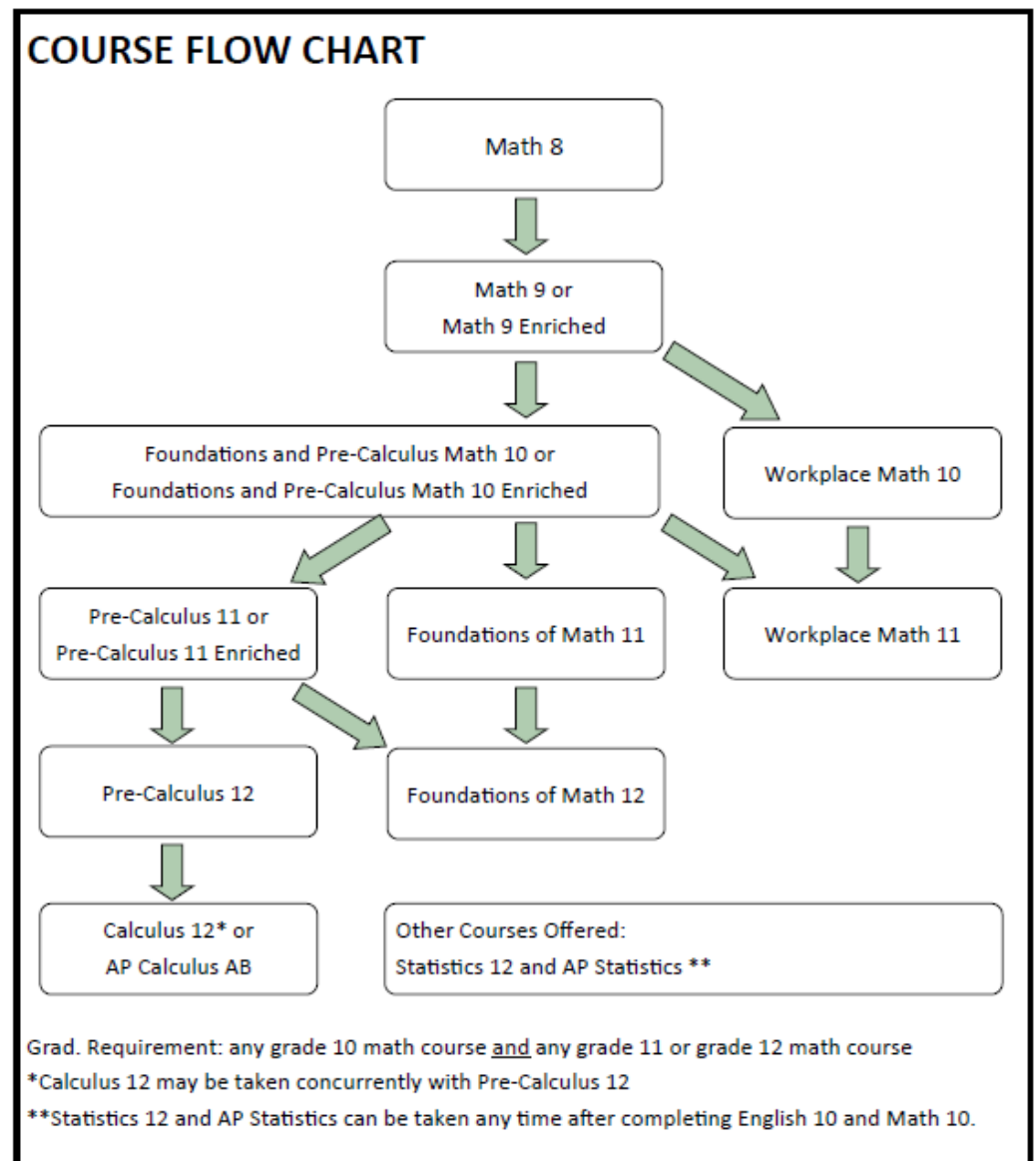# Introduction to the Mathematics Curriculum

Mathematics is integral to every aspect of daily life. Mathematical skills are essential for solving problems in most areas of life and are part of human history. All peoples have used and continue to use mathematical knowledge and competencies to make sense of the world around them.

Mathematical values and habits of mind go beyond numbers and symbols; they help us connect, create, communicate, visualize, and reason, as part of the complex process of problem solving. These habits of mind are valuable when analyzing both novel and complex problems from a variety of perspectives, considering possible solutions, and evaluating the effectiveness of the solutions. When developed early in life, mathematical habits of mind help us see the math in the world around us and help to generate confidence in our ability to solve everyday problems without doubt or fear of math.

Whether students choose to pursue a deeper or broader study in mathematics, the design of the Mathematics curriculum ensures that they are able to pursue their individual interests and passions while establishing a strong mathematical foundation. The Mathematics curriculum has the same format as all other areas of learning. Three curricular elements – the Big Ideas, Curricular Competencies, and Content – link the knowing, doing, and understanding of mathematics learning. Elaborations support each curricular area by providing suggestions, definitions, and clarifications to better support teaching and learning. More information on the curriculum model is available at https://www.curriculum.gov.bc.ca/curriculum/overview

COURSE FLOW CHART

Math 8

↓

Math 9 or
Math 9 Enriched

↓

Foundations and Pre-Calculus Math 10 or
Foundations and Pre-Calculus Math 10 Enriched

Workplace Math 10

↓

Pre-Calculus 11 or
Pre-Calculus 11 Enriched

Foundations of Math 11

Workplace Math 11

↓

Pre-Calculus 12

Foundations of Math 12

↓

Calculus 12* or
AP Calculus AB

Other Courses Offered:
Statistics 12 and AP Statistics **

Grad. Requirement: any grade 10 math course <u>and</u> any grade 11 or grade 12 math course
*Calculus 12 may be taken concurrently with Pre-Calculus 12
**Statistics 12 and AP Statistics can be taken any time after completing English 10 and Math 10.

Course Descriptions by Grade Level:

Grades 8—9

Mathematics 8

This is the first course in secondary school Mathematics, and it incorporates processes such communication, visualization, estimation, problem solving and justifying thoughts. Topics include proportion, fractions, the Pythagorean theorem, algebra, and surface area and volume.

Mathematics 9

This course is designed to consolidate and extend topics introduced in Mathematics 8. Topics include operations with rational numbers, exponents, polynomials and algebra, linear relations, shape and space, financial literacy, and statistics. At the end of this course, students are prepared for either Workplace Mathematics 10 or Foundations of Mathematics and Pre-Calculus 10.

Grade 10

Workplace Mathematics 10

This pathway is designed to prepare students for entry into many of the trades, some fine arts programs, and for direct entry into the work force. Topics include the metric and imperial systems, measurement, geometry, trigonometry, and the fundamentals of income. At the end of this course, students are prepared to take Workplace Mathematics 11.

Foundations of Mathematics and Pre-Calculus 10

This course is designed to provide students with the mathematical understandings and critical thinking skills identified for post-secondary studies in both the arts and sciences. Topics include applying trigonometric ratios to right triangles, operations with polynomial expressions and powers, functions and relations, systems of linear equations, arithmetic sequences, and financial literacy. Upon completion of this course, students are prepared to take Workplace Mathematics 11, Foundations of Mathematics 11, or Pre-Calculus 11.

Foundations of Mathematics and Pre-Calculus 10 Enriched

The purpose of our enriched courses is to provide enrichment for students who excel and have a passion for learning Mathematics. The intent of this course is to develop concepts at a deeper level to enrich student learning. Applicants for enriched courses are selected based on teacher recommendation, academic achievement, work habits, interest in enrichment activities, and participation in extra-curricular activities such as math contests and math challengers.

Grade 11

Workplace Mathematics 11

This pathway is designed to prepare students for entry into many of the trades, some fine arts programs, and for direct entry into the work force. Topics include measurement, geometry, data analysis, probability and statistics, formulae, and budgeting. At the end of this course, students have completed their high school graduation requirement for mathematics.

Foundations of Mathematics 11

This course is designed to provide students with mathematical understandings and critical thinking skills identified for post-secondary studies in the arts or the humanities. Topics include logic and reasoning, functions, geometry, and statistics. Although the course explores many abstract concepts including algebra, it will not prepare you for university calculus. Students who successfully master the learning outcomes of this course may continue to Foundations of Mathematics 12.

Pre-Calculus 11

This course is designed to provide students with developing the mathematical understandings and competencies identified for entry into post-secondary programs that require the study of theoretical calculus. Curricular content includes radicals, polynomials, quadratic functions, and trigonometry. It is recommended that students earn an A or B in Foundations and Pre-Calculus Math 10 before taking Pre-Calculus 11 as this course can be academically challenging.

Pre-Calculus 11 Enriched

The purpose of our enriched courses is to provide enrichment for students who excel and have a passion for learning Mathematics. The intent of this course is to develop concepts at a deeper level to enrich student learning. Applicants for enriched courses are selected based on teacher recommendation, academic achievement, work habits, interest in enrichment activities, and participation in extra-curricular activities such as math contests and math challengers.

Foundations of Mathematics 12

The practical focus of the Foundations of Mathematics 12 pathway is designed to enable students to develop their mathematical knowledge, skills, and attitudes in the context of their lives and possible careers. There is increased emphasis on concrete activities and modelling, and decreased emphasis on symbol manipulation (algebra). To take this course, students must have taken either Foundations of Mathematics 11 or Pre-Calculus 11.

Pre-Calculus 12

This is an academic Mathematics course which is required for entrance into many university-level programs and prepares students for the study of Calculus. Students will build on concepts learned in Pre-Calculus 11 by deepening their knowledge of algebra and graphing. Topics include transformations, logarithms, exponential functions and equations, trigonometry, geometric sequences and series, polynomial functions, and rational functions.

Calculus 12

This course is designed to provide students with developing the mathematical understandings and competencies as a preview to post-secondary Calculus. Curricular content includes limits, derivatives, and integration. Curricular Competencies (reasoning, problem solving, communication, connecting and reflecting) are experienced through the content of this course. It is recommended that Pre-Calculus 12 precede this course, however if students are in grade 12, they can take the two courses concurrently.

AP Calculus AB

This course is more rigorous than Calculus 12 and students will have the option to write an exam in May for first year university credit. Entry into this course can be competitive and applicants are chosen based on teacher recommendation and their performance in Pre-Calculus.

Statistics 12

In Statistics, we learn to examine raw data, graphs, charts, rates, percentages, probabilities, averages, forecasts, and trend liens to see if a true experiment was conducted. This course is open to any senior student who has completed Foundations of Mathematics and Pre-Calculus 10.

AP Statistics

This course is more rigorous than Statistics 12 and an exam can be written in May for first year university credit. This course is open to senior students who have demonstrated an aptitude for math and have completed Foundations of Mathematics and Pre-Calculus 10 and English 10.