## 

## NB High School Mathematics Curriculum Summary November 2011

## PATHWAYS AND TOPICS

*The Common Curriculum Framework for Grades 10–12* Mathematics on which the New Brunswick Grades 10-12 Mathematics curriculum is based,includes pathways and topics rather than strands as in *The Common Curriculum Framework for K–9 Mathematics*. In New Brunswick all Grade 10 students share a common curriculum covered in two courses: *Geometry, Measurement and Finance 10* and *Number, Relations and Functions 10*. Starting in Grade 11, three pathways are available: *Finance and Workplace*, *Foundations of Mathematics*, and *Pre-Calculus*.

Each topic area requires that students develop a conceptual knowledge base and skill set that will be useful to whatever pathway they have chosen. Students are encouraged to cross pathways to follow their interests and to keep their options open. The topics covered within a pathway are meant to build upon previous knowledge and to progress from simple to more complex conceptual understandings.

### *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.

### *Design of Pathways*

Each pathway is designed to provide students with the mathematical understandings, rigour and critical-thinking skills that have been identified for specific post-secondary programs of study and for direct entry into the work force.

The content of each pathway has been based on the *Western and Northern Canadian Protocol (WNCP) Consultation with Post-Secondary Institutions, Business and Industry Regarding Their Requirements for High School Mathematics: Final Report on Findings* and on consultations with mathematics teachers.

Financial and Workplace Mathematics

This pathway is designed to provide students with the mathematical understandings and critical-thinking skills identified for entry into the majority of trades and for direct entry into the work force. Topics include geometry, financial mathematics, number, algebra, measurement, statistics and probability.

Foundations of Mathematics

This pathway is designed to provide students with the mathematical understandings and critical-thinking skills identified for post-secondary studies in programs that do not require the study of theoretical calculus. Topics include proportional reasoning, logical reasoning, geometry, relations and functions, financial mathematics, statistics, and probability.

Pre-calculus

This pathway is designed to provide students with the mathematical understandings and critical-thinking skills identified for entry into post-secondary programs that require the study of theoretical calculus. Topics include algebra and number, trigonometry, relations and functions, function toolkit, limits and derivatives.

*Pathways and Courses*

The graphic below summarizes courses offered in three pathways

( *= required for graduation*)

**Mathematics K-9**

***Grade 10***

* *2 x 90 hr courses; required to pass both*
* *May be taken in any order or in the same semester*

**Number, Relations and Functions 10** (1069527)

**Geometry, Measurement**

**and Finance 10** (1069027)

***Grade 11***

* *3 x 90 hr courses offered in 3 pathways*
  + *Students are required to pass at least one of “Financial and Workplace Mathematics 11”*

***or*** *“Foundations of Mathematics 11”.*

* *Pre-requisite Grade 10 course(s) must be passed before taking Grade 11 courses.*

**Pre-Calculus 11**

**Foundations of Mathematics 11**

**Financial and Workplace Mathematics 11**

*Pre-requisites:*

*Geometry, Measurement and Finance 10*

*AND Number, Relations and Functions 10*

*Pre-requisite:*

*Geometry, Measurement and Finance 10*

*Pre-requisite or Co-requisite:*

*Foundations of*

*Mathematics 11*

**OR**

***Grade 12***

* *5 x 90 hr courses offered in 3 pathways*
* *Pre-requisite Grade 11 or Grade 12 course must be passed before taking Grade 12 courses.*

**Foundations of Mathematics 12**

*Pre-requisite: Foundations of Mathematics 11*

**Pre-Calculus 12A**

**Financial and Workplace Mathematics 12**

*Pre-requisite: Pre-Calculus 11*

*Pre-requisite: Financial and Workplace Mathematics 11*

**Pre-Calculus 12B**

*Pre-requisite: Pre-Calculus 12A*

*Pre-requisite: Pre-Calculus 12B*

**Calculus 12**

## SUMMARY

The Conceptual Framework for Grades 10–12 Mathematics describes the nature of mathematics, the mathematical processes, the pathways and topics, and the role of outcomes and achievement indicators in grades 10–12 mathematics. Activities that take place in the mathematics classroom should be based on a problem-solving approach that incorporates the mathematical processes and leads students to an understanding of the nature of mathematics.