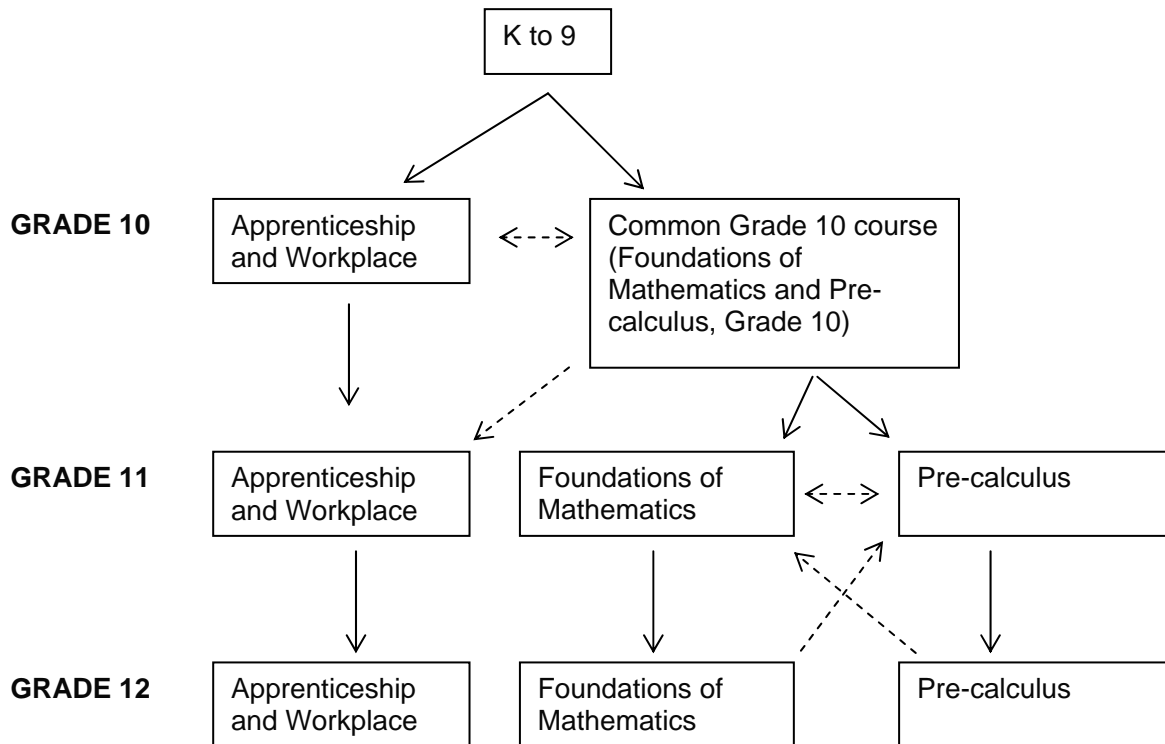**Western and Northern Canadian Protocol (WNCP)**
Common Curriculum Framework (CCF) for 10-12 Mathematics
Frequently Asked Questions

This document attempts to respond to some of the questions which are frequently asked by British Columbians about the WNCP CCF for 10-12 Mathematics. The questions below are not exhaustive and will be updated as the need arises. If you have additional questions related to the WNCP CCF please contact the Education Standards Unit at the Ministry of Education by email at: EDUC.LearningInitiativesBranch@gov.bc.ca

1. What is the WNCP CCF for 10-12 Mathematics?
   - *Western and Northern Canadian Protocol (WNCP)* Common *Curriculum Framework (CCF) for Grades 10–12 Mathematics:* was developed by the seven ministries of education (AB, BC, MB, NU, NT, SK and YT) in collaboration with teachers, administrators, parents, business representatives, post-secondary educators and others. The framework identifies beliefs about mathematics learning and teaching, general and specific outcomes, and achievement indicators agreed upon by the seven jurisdictions. Each of the provinces and territories will determine when and how the framework will be implemented within its own jurisdiction.

2. Where can I find out more information on the WNCP?
   - Information on the WNCP can be found on the WNCP web site at www.wncp.ca.

3. Will BC be implementing the WNCP CCF for 10-12 Mathematics?
   - Yes

4. Will BC be making changes to the WNCP CCF for 10-12 Mathematics?
   - No

5. Will BC create a Mathematics 10-12 Integrated Resource Package (IRP)?
   - No. BC will implement the WNCP CCF for 10-12 Mathematics as it exists on the WNCP web site.

6. When will the WNCP CCF for 10-12 Mathematics be implemented in BC?
   - Two Grade 10 courses – September 2010
   - Three Grade 11courses – September 2011
   - Three Grade 12 courses – September 2012

7. How does this affect grades K-9 mathematics?
   - The WNCP developed the CCF for K to 9 Mathematics prior to the CCF for 10-12 Mathematics. Implementation of the K to 9 CCF started in 2007 to ease transitions to grade 10 starting in 2010.

8. What were the guiding principles behind these revisions?
   - WNCP partner jurisdictions agreed that the CCF should:
     - Address issue of too much content for allotted instructional time
     - Integrate research in teaching and learning of mathematics since the original CCF was published in 1996
     - Ease transitions between grades
     - Address post-secondary acceptance of secondary courses

9. What is the structure of the WNCP CCF for 10-12 Mathematics?
   - The diagram below illustrates the structure of the WNCP CCF for 10-12 Mathematics. The solid lines represent the recommended sequence and the dashed lines represent the alternate sequence.

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                            ┌──────────┐
                            │  K to 9  │
                            └──────────┘
                            ╱          ╲
                           ╱            ╲
GRADE 10   ┌──────────────┐   ┌─────────────────────┐
           │ Apprenticeship│<-->│ Common Grade 10 course│
           │ and Workplace │   │ (Foundations of       │
           └──────────────┘   │ Mathematics and Pre-  │
                              │ calculus, Grade 10)    │
                              └─────────────────────┘
                   │              ╱        ╲    ╲
                   │             ╱          ╲    ╲
GRADE 11   ┌──────────────┐ ┌──────────────┐   ┌──────────────┐
           │ Apprenticeship│ │ Foundations of│<-->│ Pre-calculus │
           │ and Workplace │ │ Mathematics   │   │              │
           └──────────────┘ └──────────────┘   └──────────────┘
                   │              │      ╲    ╱      │
                   │              │       ╲  ╱       │
GRADE 12   ┌──────────────┐ ┌──────────────┐   ┌──────────────┐
           │ Apprenticeship│ │ Foundations of│   │ Pre-calculus │
           │ and Workplace │ │ Mathematics   │   │              │
           └──────────────┘ └──────────────┘   └──────────────┘
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10. What is the purpose of the three options?
   - *Apprenticeship 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 algebra, geometry, measurement, number, 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 financial mathematics, geometry, measurement, number, logical reasoning, relations and functions, 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, measurement, relations and functions, trigonometry, and permutations, combinations and binomial theorem.

11. What does the term "pathway" mean?
- The pathways represent a "typical" path students may take in high school. Students may consider taking more than one pathway. Students may also want to consider up grading courses once they enter post-secondary programs of study.
- Three pathways are available: Apprenticeship and 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.

12. How are the three pathways different?
- All three pathways are designed to provide students with mathematical understandings and critical thinking skills. It is the choice of topics through which those skills are developed that varies among the pathways. The goal of all pathways is to provide prerequisite skills, knowledge and attitudes for specific career choices while still proving mathematically rigorous courses required by BC graduates.

13. How are the three pathways the same?
- All three pathways incorporate seven mathematical processes which are critical aspects of learning, doing and understanding mathematics. It is the context through which these processes are addressed that differs.

14. What are the seven mathematical processes within the WNCP?
- Students are expected to:
  - use *communication* in order to learn and express their understanding
  - make *connections* among mathematical ideas, other concepts in mathematics, everyday experiences and other disciplines
  - demonstrate fluency with *mental mathematics and estimation*
  - develop and apply new mathematical knowledge through *problem solving*
  - develop mathematical *reasoning*
  - select and use *technology* as a tool for learning and solving problems
  - develop *visualization* skills to assist in processing information, making connections and solving problems.

15. How can a student decide which pathway to take?
- Students should consider future career interests when selecting a pathway. Each pathway is designed to meet the pre-requisite mathematics competencies necessary for continuing in post-secondary programs of study and the workforce. Students may consider taking more than one pathway if there are mathematical topics which interest them or they are not sure about their future career choices.

16. How did the WNCP determine which mathematical competencies?
- In 2004 and 2005, at the request of Western and Northern Canadian Protocol (WNCP) Assistant Deputy Ministers, WNCP jurisdictions collaborated to consult with executives and faculty representatives of post-secondary institutions as well as with representatives from business and industry.

- The consultation was to determine the desired student mathematical skills and competencies necessary for students to make a smooth transition from secondary mathematics studies to post-secondary programs and the world of work.
- Detailed information from the consultation can be found in: *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*. This document can be found on-line at: http://www.wncp.ca/math/report_2006.pdf

17. Will post-secondary institutions accept all three of the grade 12 courses as suitable for admission?
    - Ministry staff are meeting and working with post-secondary institutions to ensure understanding of the new curriculum and the impact on students.
    - However, admission requirements are set by individual post-secondary institutions. While the courses were developed to address the requests of post-secondary institutions in terms of mathematical content this does not mean that individual post- secondary institutions will accept the courses for admission.
    - Students, teachers, parents and guidance counsellors are encouraged to check with individual post-secondary institutions to determine the admission requirements for general admission and for specific program admission requirements.
    - Students are encouraged to consider course selection choices and resulting implications as part of Planning 10 – a required course with the BC Graduation Program.

18. What is the difference between general admission and specific program admission requirements?
    - General admission requirements outline the necessary requirements to apply to a post-secondary institution.
    - Specific individual programs (or faculties) within the institution may have additional requirements.

19. Where do students and parents learn more about post-secondary information? Is there a good place to start?
    - Guidance councillors and teachers are a good source of information to help you get started.
    - The British Columbia Council for Admissions and Transfers (BCCAT) has provided a tool called Education Planner for to assist students in planning post-secondary transitions. Education Planner can be accessed at http://educationplanner.ca Education planner also provides a FAQ to assist users in using the site.
    - The World Wide Web also provides information directly from post-secondary institutions.

20. Which mathematics courses can be used to meet graduation requirements?
- Students are required to take a Mathematics 10 course
  i. either Apprenticeship and Workplace Mathematics 10 or Foundations of Mathematics and Pre-calculus 10 satisfy this requirement
- PLUS a grade 11 OR 12 Mathematics course
  i. Any of the new grade 11 and 12 courses, Apprenticeship and Workplace Mathematics 11 or 12, Foundations of Mathematics 11 or 12 or Pre-calculus 11 or12, satisfy this requirement.

21. Can a student take more than one mathematics course in a particular grade?
- Yes. Students could take all the courses in the three mathematics pathways if their timetable allows.
- Student choice on which mathematics courses to take will depend on their time schedules, areas of interest and future educational goals.

22. Can students switch pathways?
- Yes, however, the recommended course sequence is show on the diagram above and students are encouraged to follow the sequence as much as possible due to the sequential nature of mathematics.
- There are no prerequisites in BC and students may wish to take a sequence not indicated on the diagram. If this is the case the decision should be made only after the student, parents, teacher and principal have thoroughly discussed the options.

23. When will the first exam for the Apprenticeship and Workplace Mathematics 10 and Foundations of Mathematics and Pre-calculus 10 be held?
- The first exam will held in October 2010. There will be other exam sittings later in the same school year.

24. When is the last opportunity to write the Applications of Mathematics 10, Essentials of Mathematics 10 and Principles of Mathematics 10 exams?
- Students will have one year to re-write the exams for Applications of Mathematics 10, Essentials of Mathematics 10 or Principles of Mathematics 10. Since these courses end in August 2010, students will be allowed to re-write until August 2011.