GENERAL AND SPECIFIC LEARNING OUTCOMES WITH ACHIEVEMENT INDICATORS BY COURSE

This section presents specific learning outcomes with corresponding achievement indicators for each of the nine courses in Grades 9 to 12 Mathematics. Achievement indicators describe the depth and scope of each specific learning outcome. The list of indicators contained in this document is not intended to be exhaustive but rather to provide teachers with examples of evidence of understanding that may be used in determining whether or not students understand a given learning outcome. They are not presented in any particular order and need not be explicitly addressed in the classroom. Teachers may use any number of these indicators, or they may choose to use other indicators as evidence that the desired learning has been achieved. However, students need to understand the learning outcomes at least to the depth indicated by the indicators. Therefore the achievement indicators are sufficient as a basis for instructional design and assessment, and will form the basis for provincial assessment as appropriate.

Grade 9 Mathematics (10F)

Grade 9 Mathematics (10F) is a foundation course to prepare students for multiple possible pathways in Grades 10 to 12. The course builds on the understandings from Kindergarten to Grade 8 Mathematics (for details, please see *Kindergarten to Grade 8 Mathematics: Manitoba Curriculum Framework of Outcomes*).

The activities that take place in the Grade 9 Mathematics classroom should stem from a problem-solving approach and be based on the seven mathematical processes. Students should develop an understanding of the nature of mathematics through specific knowledge, skills, and connections among and between strands.

The general focus in most units should be to allow time for hands-on activities that promote concrete understanding of concepts.

A focus on developing problem-solving skills will enable students to move on with a deeper understanding of mathematics. The emphasis should be on "why" and not just "how."

The learning outcomes are divided into four strands: Number; Patterns and Relations; Shape and Space; Statistics and Probability. For instructional purposes, the outcomes could be arranged into units. Learning outcomes from different strands could be taught in the same unit. Some learning outcomes may fit into multiple units and parts of the learning outcome could be taught in one unit while the remaining parts can be taught later. Two possible sequences of the learning outcomes into units with suggested time allotments follow. These are not the only possibilities but will provide some direction for those who are teaching this course for the first time. The time for each unit includes instructional and assessment time.