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Grade 11 Mathematics Support Materials

Grade 11 U/C (MCF3M) Summative Unit

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OAME/OMCA Joint Project

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Overview

Rationale

This summative unit includes both instructional and assessment activities. It is important for students to have the opportunity to make connections between the ideas and concepts of the course before they are expected to apply them on an assessment task. This unit serves the purpose of providing activities to help students make those connections and to review important concepts of the course. It also provides assessment activities that focus on such concepts.

The initial phases of putting this summative unit together included examining the grade 11 U/C (MCF3M) curriculum as well as looking ahead to the skills and competencies that would be required to handle the grade 12 courses that follow this course. These would include Advanced Functions and Introductory Calculus (MCB4U), Mathematics of Data Management (MDM4U), and Mathematics for College Technology (MCT4C). A thorough examination of these grade 12 courses shows that there are recurring “big ideas” that include making connections, modelling with multiple representations, and analysis. The theme of modelling occurs throughout the secondary school mathematics curriculum. However, students move from the use of simple models and a “wondering” position in grade 9, to the use of varied and complex models and a position of “analysis” by the time they are in grade 12 courses. Grade 11 is an important bridge as students move toward complexity and sophistication. This summative unit helps students with those “big ideas” of making connections, modelling with multiple representations, and analysis, within the context of the course’s curriculum expectations.

Format

This unit includes review instructional activities, assessment activities, and sample questions for a paper and pencil exam. The activities in this unit address the Overall Curriculum Expectations of the course and together provide a culmination to the course. However, teachers may decide to select certain activities to use for review or assessment along with their own activities.

The examination questions provided serve as samples and are tied to Specific Curriculum Expectations and Achievement Chart Categories. Teachers may choose to combine some of these questions with their own in making up an exam. The collection of questions is not meant to be used as an exam in itself.

The unit at a glance

The following chart shows an overview of the unit:

Day	Activity	Description	Purpose
1	Eric's Extreme Ballooning	This is a group instructional activity	Instructional
2	Eric's Extreme Ballooning	Students are presented with a variety of data within the context of Hot Air Ballooning. They are required to choose from the mathematical functions presented in this course to model this data in order to solve problems.	Instructional and assessment of communication
3	Financial Decision Making	Students will explore a variety of options in making investments and determining mortgage options. Financial Applications of Sequences and Series	Assessment activity to be done in pairs
4	Review stations	Students work through 5 stations to review important concepts and make connections between various parts of the course.	Instructional
5	Review stations		Instructional
6	SAD	Students examine data relating to hours of daylight over a period of time. They determine a model for applying light therapy that would ensure total hours of daylight to be constant over a period of time. Trigonometry Strand	Assessment
7	Spindles and Spaces	Students explore calculations needed to determine equal spaces between the spindles of a railing. An algebraic model is required that describes the amount of space based on the number of spindles. Tools for Operating and Communicating with Functions	Assessment
	Examination questions	A "test bank" of sample examination questions. Each questions is linked to curriculum expectations and Achievement Chart Categories	Assessment

Part I – Instructional/Assessment Activities (Days 1 to 7)

What's included

Each activity includes:

- A lesson plan stating:
 - Purpose of activity
 - Curriculum expectations
 - Activity description
 - Management suggestions
 - Assessment suggestions (including assessment tools as required)
- Student Activity Sheets
- Guidelines for the solution to the problem/ activity
- Assessment Tools (if an assessment activity)

Note: The 3 Performance Assessment Tasks: Financial Planning, SAD, and Spindles and Spaces cover the 3 strands of the Curriculum. Teachers may choose to collect all 3 written submissions and rather than use 3 individual rubrics, use the rubric that is provided to assess the collection of the 3. This can be found at the end of the “Spindles and Spaces” activity. However, rubrics have also been provided for each individual task if teachers are using 1 or 2 of these tasks.

Part II – Sample Examination Questions

The bank of examination questions clearly links each question to Curriculum Expectations and Achievement Chart categories.