

Course Outline

School Name:	KEEWAYTINOOK INTERNET HIGH SCHOOL
Department Name:	Mathematics
Ministry of Education Course Title:	Grade 9 Math, Locally Developed
Grade Level:	9
Ministry Course Code:	MAT1L

Teacher's Name: Lakhwinder Singh Kang

Developed by: Kori Ruff Date: September 2007

Revision Date: September 2018

Developed from: The Ontario Curriculum, Grades 9 and 10, Mathematics, 2005

Text: None

Prerequisite: None

Credits: One

Length: 110 hours

Principal's Name: Kevin Dempsey

Principal's Approval (signature)



Approval Date: September 11, 2018

Course Description/Rationale

This course emphasizes further development of mathematical knowledge and skills to prepare students for success in their everyday lives, in the workplace, and in future English courses. The course is organized by three strands related to money sense, measurement, and proportional reasoning. In all strands, the focus is on developing and consolidating key foundational mathematical concepts and skills by solving authentic, everyday problems. Students have opportunities to further develop their mathematical literacy and problem-solving skills and to continue developing their skills in reading, writing, and oral language through relevant and practical math activities.

Overall Curriculum Expectations

Developing and Consolidating Money Sense

- Interpret, write, and round decimal numbers with understanding in everyday money situations.
- Solve problems involving money, drawn from everyday situations;
- Communicate information about money concepts;
- Use literacy skills (reading, writing, listening, and speaking) to obtain and communicate information about money sense.

Developing and Consolidating Concepts in Measurement

- Estimate and measure length, capacity, and mass, in order to consolidate understanding of the metric system;
- Estimate and measure length, using the imperial system;
- Solve problems, carry out investigations, estimate, and measure, using metric units, to consolidate understanding of perimeter, area, and volume;
- Communicate information about measurement concepts;
- Use literacy skills (reading, writing, listening, and speaking) to obtain and communicate information about measurement concepts.

Developing Concepts in Proportional Reasoning

- Determine relationships among fractions, percentages, ratios, and rates by constructing diagrams, building models, and estimating measurements;
- Solve problems drawn from everyday situations involving percent, ratio, rate, and fractions;
- Communicate information about proportional reasoning;
- Use literacy skills (reading, writing, listening, and speaking) to obtain and communicate information about proportional reasoning.

Course Content

Unit	Length
1. Money Sense	33 hours
2. Measurement	33 hours
3. Proportional Reasoning	44 hours
Total	110 hours

Unit Descriptions

Unit 1 – Money Sense

In this unit, students will explore concepts related to money to solve real-life examples. Some of the topics covered include place values, addition, subtraction, rounding, making change, and estimation.

Unit 2 – Measurement

Student will estimate and measure length using both the metric system and imperial system. They will estimate and measure objects to solve real-life applications within and beyond the classroom involving perimeter, area, and volume.

Unit 3 – Proportional Reasoning

In this unit, students will work with fractions, percentages, ratios and rates. They will determine the relationships among these concepts by working with manipulative and building models. Students will solve problems from familiar situations that involve percent, ratio, rate and fractions.

Teaching/Learning Strategies

This course is organized into an eight-week series of lessons and activities that will be presented to students in remote northern communities via the internet. The eighth week will be used for course consolidation, review and the final examination. Teacher and students will communicate over the internet, while mentors in the classrooms will assume the role of liaison between the teacher and student.

A variety of strategies will be used in the online delivery of this course. Some instructional strategies include

- Review of content before new lessons to allow students to consolidate knowledge and make connections with new material;
- pre-teaching of key vocabulary;
- direct instruction;
- collaborative learning;
- opportunities for practice (e.g., interactive games);
- graphic organizers;
- hands-on learning opportunities/use of manipulatives;
- scaffolding mathematical processes;
- sequencing of steps; and
- teaching mathematical concepts/skills in many situations.

Learning goals will be discussed at the beginning of each assignment and success criteria will be provided to students. The success criteria are used to develop the assessment tools in this course, including rubrics and checklists.

Evaluation

The final grade will be determined as follows (Ontario Ministry of Education, 2010):

- Seventy per cent of the grade will be based on evaluation conducted throughout the course. This portion of the grade should reflect the student's most consistent level of achievement throughout the course, although special consideration should be given to more recent evidence of achievement.
- Thirty per cent of the grade will be based on a final evaluation administered at or towards the end of the course. This evaluation will be based on evidence from one or a combination of the following: an examination, a performance, an essay, and/or another method of evaluation suitable to the course content. The final evaluation allows the student an opportunity to demonstrate comprehensive achievement of the overall expectations for the course (p. 47).

Ontario Ministry of Education. (2010). *Growing success: Assessment, evaluation and reporting in Ontario schools*. Toronto ON: Queen's Printer for Ontario.

Type of Assessment	Category	Details	Weighting (%)
Term Work (70%)	Knowledge/Understanding	Write money values, using correct units Calculate the volume of various shapes	13
	Thinking	Estimate the change of a transaction Explain their reasoning used in problem-solving and in judging reasonableness	19
	Communication	Communicate the solution to money problems using appropriate terminology, symbols, and form Verbalize their observations and reflections regarding measurement	19
	Application	Apply knowledge of measurement to build a model of an aquarium Apply knowledge of fractions to solve real-life problems	19
Final Evaluation (30%)	Culminating Activity (15%)	Knowledge/Understanding	3
		Thinking	4
		Communication	4
		Application	4
	Final Examination (15%)	Knowledge/Understanding	3
		Thinking	4
		Communication	4
		Application	4
TOTAL		100	

Assessment/Evaluation Strategies

A variety of assessment and evaluation methods, strategies and tools are required as appropriate to the expectation being assessed. These include diagnostic, formative and summative within the course and within each unit.

Assessment *for* learning and assessment *as* learning is obtained through a variety of means, including the following:

- Ongoing descriptive feedback
- Self-assessment (e.g., interactive online games)
- Conversations with student on a regular basis to verbalize observations, ask questions, and clarify understanding (synchronous and asynchronous)

Evidence of student achievement (assessment *of* learning) is collected from various sources, including the following:

- Ongoing observations of most consistent work, with consideration given to most recent work
- Observation of students ability to carry out mathematical processes, such as accurately measuring objects
- Conversations with students to communicate solutions to problems and results of their investigations
- Culminating activity
- Final exam

Resources

Ontario Ministry of Education. (2007). *First Nation, Métis, and Inuit education policy framework*. Retrieved from <http://www.edu.gov.on.ca/eng/aboriginal/fnmiFramework.pdf>

Ontario Ministry of Education. (2010). *Growing success: Assessment, evaluation and reporting in Ontario schools*. Toronto, ON: Queen's Printer for Ontario.

Ontario Ministry of Education. (2016). *Ontario Schools, Kindergarten to Grade 12: Policy and Program Requirements*. Retrieved from <http://edu.gov.on.ca/eng/document/policy/os/index.html>

Ontario Ministry of Education. (2005). *The Ontario curriculum grades 9 and 10, Mathematics*. Toronto, ON: Queen's Printer for Ontario.

Program Planning

This course is offered to Indigenous students living in northern Ontario communities which do not have access to regular high school facilities, equipment or teachers associated with secondary education. This course uses the internet for instruction, demonstration and research. It utilizes a student-centered semi-virtual classroom which capitalizes on the strengths of internet program delivery to minimize the disadvantages of geographic remoteness.

Students are presented with 1320 minutes of instruction/activity via the internet over the period of one week. All lessons, assignments, questions and course material is presented in this manner, with approved print materials available as a student resource in each classroom. The student and instructor communicate via the internet, while a classroom mentor (a fully qualified teacher) assists students in completing tasks in a timely manner and provides tutoring as required. Students may

also receive support from various programs at KiHS, including the First Nation Student Success Program and the Special Education Program.

Indigenous and local content is used throughout the course to meet students' learning needs. Considerations are made to the learning preferences of the student population and lessons can be adjusted for individual students as required.