

# Course Outline

School Name: Keewaytinook Internet High School

Department Name: Mathematics

Ministry of Education Course Title: Locally Developed  
Mathematics

Grade Level: 9

Ministry Course Code: MAT1L

Teacher's Name: Tammy West

Developed by: Kori Ruff Date: September 2007

Revision Date: November 2009

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

Profile Name: Course Profile, Locally Developed Compulsory Credit  
Course, Mathematics, Grade 9 2005

Text: None

Prerequisite: None

Credits: 1.0

Length: 110 hours

Principal's Name: Darrin Potter

Principal's Approval (signature) \_\_\_\_\_

Approval Date:

## ***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, in the Grade 10 LDCC course, and in the Grade 11 and Grade 12 Mathematics Workplace Preparation 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

<i>Unit</i>	<i>Length</i>
Mathematics Around Us	7 hours
Math, Personally Speaking	23 hours
Measuring Up to Standards	23 hours
Meet You at the Mall	17 hours
Taking Care of Me	15 hours
Our Space	18 hours
Buy and Sell	7 hours
<b>Total</b>	<b>110 hours</b>

## Unit Descriptions

### Unit 1 - Mathematics Around Us

In this introductory unit, students explore mathematics in the world around them through print media to develop an awareness of its pervasiveness in their daily lives. Students view data from the National Longitudinal Study of Children and Youth and use *Fathom*<sup>TM</sup> technology to pose questions and dynamically interact with graphical representations of the survey.

### Unit 2- Math, Personally Speaking

Students explore measurement through personal referents, money sense through simple purchases, simulations, and proportional reasoning by sharing situations that can be modelled with manipulatives. The focus is on developing an initial understanding of concepts that will be consolidated and extended in subsequent units.

### Unit 3- Measuring Up to Standards

Students consolidate their skills reading metric and Imperial measurement tools and making accurate linear measurements using objects and areas within and beyond their classroom. Contexts requiring accurately measuring and estimating lengths provide the motivation for adding and subtracting fractions and calculating perimeter and area. The learning experiences focus on developing conceptual understanding of these measurement attributes so students can apply and consolidate their understanding through a design project. Proportional reasoning is introduced as a strategy to determine measurements, when measuring directly is not always practical. A Measurement Passport is introduced at the start of the unit as a model of an authentic document: Ontario Skills Passport (OSP). In the classroom, teachers use the Measurement Passport to track student achievement in five workplace skill categories: Measurement and Calculation Math, Money Math, Numerical Estimation, Use of Documents, and Work Habits. Because the Measurement Passport is an ongoing record of student performance, and these measurement skills will be revisited in Unit 6, the summative evaluation focuses on the concepts and skills that cannot be evaluated through teacher observation and interview.

#### **Unit 4- Meet You at the Mall**

Students consolidate the skills involved in everyday transactions that involve the exchange of money. They extend their understanding of fractions-to-percent equivalents in the context of sales tax and discounts drawn from everyday situations. Students explore simple rates to make purchase decisions involving the comparison of unit costs. In the culminating activity for the unit, students plan a trip for their class that involves evaluating choices and making decisions.

#### **Unit 5- Taking Care of Me**

Students investigate the health impact of food and beverage choices by applying their understanding of fractions, ratios and percent to adolescent nutrition issues. They read a variety of print forms: package labels, nutrition labels, and news articles and apply their mathematical understanding to make informed decisions about food purchases from a cost and a nutritional standpoint. Students use proportional reasoning and nutrition knowledge to assess current soft drink consumption trends among teens and the recent movement to replace soft drinks with fruit beverages in school soft drink vending machines.

#### **Unit 6 - Our Space**

Students consolidate their understanding of perimeter and area within a context larger than explored in Unit 3. Students develop a conceptual understanding of volume through the use of mathematical manipulatives and continue to estimate and measure using both Imperial and metric units.

#### **Unit 7: Buy and Sell**

In this summative unit, students demonstrate skill with handling monetary transactions during purchasing and selling simulations. Students make purchases in their classroom shopping mall based on specified criteria, calculate discounts and taxes, and make purchasing decisions. Understanding of perimeter and area are demonstrated through the planning of a floor space for a youth drop-in centre for the mall.

## ***Teaching/Learning Strategies***

Students will be provided with:

- Opportunity to experience frequent success;
- Experiences that involve tools to support thinking, such as: manipulatives, concrete materials, and technology;
- Authentic, relevant, and engaging activities;
- Teacher feedback that helps students fill the gaps in their learning;
- Opportunities to revisit and consolidate concepts;
- Tasks that convince them that they are capable of learning.

The teacher will facilitate student understanding by:

- Believing that students are capable of learning;
- Building conceptual understanding developmentally;
- Using a spiral approach to curriculum implementation so students revisit the expectations through different contexts;
- Scaffolding learning through guiding questions;
- Making learning an active “doing” process;
- Focusing on what is important to know and do;
- Designing tasks that are achievable;
- Providing multiple opportunities for students to demonstrate what they know,

- rather than what they do not know;
- Providing multiple entry points;
- Providing feedback about how to improve and opportunities to incorporate that feedback.

## ***Evaluation***

The student's final grade for the course will be determined as outlined in Program Planning and Assessment 2000 (p.15).

**Seventy per cent** (70%) of the grade will be based on evaluations conducted throughout this course. This portion of the grade should reflect the students' ***most consistent level of achievement*** throughout the course, although special consideration should be given to the more recent evidence of achievement.

**Thirty per cent** (30%) of the grade will be based on a final evaluation in the form of an examination, performance, essay and /or other method of evaluation suitable to the course content and administered towards the end of the course.

Type of Assessment	Category	Details		Weighting (%)
<b>Formative (70%)</b>	Knowledge/ Understanding	<ul style="list-style-type: none"> <li>● interpret, write, and round decimal numbers with understanding in everyday money situations;</li> <li>● estimate and measure length, using the imperial system;</li> <li>● estimate and measure length, capacity, and mass, in order to consolidate understanding of the metric system;</li> </ul>		13%
	Thinking/ Inquiry	<ul style="list-style-type: none"> <li>● solve problems, carry out investigations, estimate, and measure, using metric units, to consolidate understanding of perimeter, area, and volume;</li> <li>● determine relationships among fractions, percentages, ratios, and rates by constructing diagrams, building models, and estimating measurements;</li> </ul>		19%
	Communication	<ul style="list-style-type: none"> <li>● communicate information about money concepts;</li> <li>● use literacy skills (reading, writing, listening, and speaking) to obtain and communicate information about money sense.</li> <li>● communicate information about measurement concepts;</li> <li>● use literacy skills (reading, writing, listening, and speaking) to obtain and communicate information about measurement concepts</li> <li>● communicate information about proportional reasoning;</li> <li>● use literacy skills (reading, writing, listening, and speaking) to obtain and communicate information about proportional reasoning.</li> </ul>		19%
	Application	<ul style="list-style-type: none"> <li>● solve problems involving money, drawn from everyday situations;</li> <li>● solve problems drawn from everyday situations involving percent, ratio, rate, and fractions;</li> </ul>		19%
<b>Summative (30%)</b>	Culminating Activity (20%)	Knowledge/ Understanding		3%
		Thinking/ Inquiry		4%
		Communication		4%

			Application	4%
	Final Exam (10%)		Knowledge/ Understanding	3%
			Thinking/ Inquiry	4%
			Communication	4%
			Application	4%
<b>TOTAL</b>				100

## *Assessment/Evaluation Strategies*

The four major categories of assessment/evaluation will be incorporated into the design of the various assessment strategies used in the course, as illustrated in the following table.

<b>Knowledge/ Understanding</b>	<b>Thinking/Inquiry</b>	<b>Communication</b>	<b>Application/Making Connections</b>
<ul style="list-style-type: none"> <li>• Quizzes</li> <li>• Paper and Pencil</li> <li>• Tests</li> <li>• Matching Columns</li> <li>• Short Answer</li> <li>• Essays</li> <li>• Written Examinations (open-ended questioning)</li> <li>• Organizers (tables, graphs, charts)</li> <li>• Communication</li> <li>• Technology Journals</li> <li>• Question and Answer by Discussion Board</li> </ul>	<ul style="list-style-type: none"> <li>• Tests</li> <li>• Examinations (open-ended questioning)</li> <li>• Essays</li> <li>• Research</li> <li>• Creation of Communication Products and Displays</li> <li>• Self Evaluation.</li> </ul>	<ul style="list-style-type: none"> <li>• Open Ended Questions</li> <li>• Tests</li> <li>• Exams</li> <li>• Essays</li> <li>• Organizers (webs)</li> <li>• Creation of Communication Products and Displays</li> <li>• Interviews</li> <li>• Portfolios</li> <li>• Journals</li> </ul>	<ul style="list-style-type: none"> <li>• Open Ended Questions Allowing for Knowledge to be Applied to a New Situation/Problem</li> <li>• Essays</li> <li>• Design Projects</li> <li>• Portfolio</li> <li>• Rubrics</li> <li>• Computer Programs</li> <li>• Creation of Communication Products and Displays</li> </ul>

Assessment and Evaluation tools that can be used to guide the assessment strategy and/or track, monitor, or record assessment data include:

- rubrics
- checklists
- rating scales
- marking schemes
- anecdotal comments

## ***Resources***

### Books:

Math Essentials 9 (Student Resource) / authors, Steve Etienne, Jodi Clarke, Lilsa Suurtamm; McGraw-Hill Ryerson, 2005

### Websites:

Essential Skills – [www15.hrdc-drhc.gc.ca/English/general/UpdateApp1\\_e.asp](http://www15.hrdc-drhc.gc.ca/English/general/UpdateApp1_e.asp)

Study Skills Online – [www.jcu.edu.au/studying/services/studyskills/online.html](http://www.jcu.edu.au/studying/services/studyskills/online.html)

### Software:

Quattro Pro

The Geometer's Sketchpad

## ***Program Planning***

A description of how the course incorporates consideration for program planning as appropriate and as described in the curriculum policy documents (e.g. planning related to education for exceptional students, the role of computer technology in the curriculum, career education, etc.)

This course is offered to students living in isolated 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 uses a student centered semi-virtual classroom which capitalizes on the strengths of the internet program delivery to minimize the disadvantages of geographic remoteness.

Students are presented with 800 minutes of instruction/activity via the internet over a 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. The student and instructor communicate via the internet, and there are regular, interactive, internet-based lessons during which the instructor presents key information to the class, and students have an opportunity to interact verbally with their instructor. A classroom mentor (a fully qualified teacher) assists students in completing tasks in a timely manner and provides tutoring as required.