



Ottawa Carleton District School Board
Gloucester High School
Mathematics Department
Department Head: Stephen Pritchard



Functions and Applications, Grade 10, MCF3M

The Ontario Curriculum, Grades 9 and 10:

Mathematics, 2005, (revised)

Credit Value 1.0

Teacher: Paul Kennedy

Date of Last Course Revision: January 2011

Prerequisite course: MPM2D or MFM2P with recommendation

Course Description

This course introduces basic features of the function by extending students' experiences with quadratic relations. It focuses on quadratic, trigonometric, and exponential functions and their use in modelling real-world situations. Students will represent functions numerically, graphically, and algebraically; simplify expressions; solve equations; and solve problems relating to applications. Students will reason mathematically and communicate their thinking as they solve multi-step problems.

Course Overall Expectations

By the end of this course, students will:

QUADRATIC FUNCTIONS

- expand and simplify quadratic expressions, solve quadratic equations, and relate the roots of a quadratic equation to the corresponding graph;
- demonstrate an understanding of functions, and make connections between the numeric, graphical, and algebraic representations of quadratic functions;
- solve problems involving quadratic functions, including problems arising from real-world applications

EXPONENTIAL FUNCTIONS

- simplify and evaluate numerical expressions involving exponents, and make connections between the numeric, graphical, and algebraic representations of exponential functions;
- identify and represent exponential functions, and solve problems involving exponential functions, including problems arising from real-world applications;
- demonstrate an understanding of compound interest and annuities, and solve related problems

TRIGONOMETRIC FUNCTIONS

- solve problems involving trigonometry in acute triangles using the sine law and the cosine law, including problems arising from real-world applications;
- demonstrate an understanding of periodic relationships and the sine function, and make connections between the numeric, graphical, and algebraic representations of sine functions;
- identify and represent sine functions, and solve problems involving sine functions, including problems arising from real-world applications.

Course Content

Unit	Unit	Allocation (Approximate)
1	Introduction to Quadratic Functions	12.5 hours
2	Factoring Quadratic Expressions	11.25 hours
3	Working with Quadratic Functions	11.25 hours
4	Working with Quadratic Models	12.5 hours
5	Trigonometry of Acute Angles	11.25 hours
6	Sinusoidal Functions	12.5 hours
7	Exponential Functions	12.5 hours
8	Financial Applications	12.5 hours
9	Summative Activities	

Assessment and Evaluation Strategies

Assessment and Evaluation strategies will be based on the Ontario Ministry of Education document, *Growing Success: Assessment, Evaluation, and Reporting in Ontario Schools, 2010*. Assessment is a continuous process of gathering information about student learning and performance, using a variety of sources over time (*assessment for learning*, e.g., early drafts, first tries and practice assignments). Evaluation is the process of judging the quality of student work on the basis of established criteria, and the assigning of a value to represent that quality (*assessment of learning*). Through the Achievement Chart Criteria based on Knowledge & Understanding, Thinking, Communication, and Application, students' academic skills are assessed on a continuous basis by means of a grid that reflects the Achievement Levels (1 - 4). The primary purpose of assessment is to improve learning. Assessment will be ongoing and varied. Some assessments will be used to determine initial understanding which will not necessarily be marked, while others may well be. Grades are communicated within a week of assessment. The final grade will consider the students' most consistent level of achievement throughout the course, with attention given to the more recent evidence of achievement based on the instructors professional judgment.

Learning Skills and Work Habits (Responsibility, Independent Work, Collaboration, Organization, Initiative, Self-Regulation) will be assessed throughout the course and they are evaluated and reported separately. Each Learning Skill is reported using E, G, S or N (Excellent, Good, Satisfactory, or Needs Improvement). Even though Learning Skills and Work Habits are not part of the final grade, they are critical to achieving success in this course.

Teaching and Learning Strategies

Teaching strategies will reflect the appropriate balance of theoretical components and practical applications appropriate to the range of students' learning needs. This course will differentiate learning throughout the course relying on learning strategies as outlined in the *Ontario Curriculum Unit Planner*.

The course will further incorporate Ottawa Carleton District School Board and Ontario Ministry of Education initiatives such as relating to students with special education needs, English language learners, environmental education, equity and inclusive education, anti-bullying, financial literacy education, the Ontario First Nation, Métis, and Inuit education policy framework, the role of information and communications technology, career education, cooperative education, and health and safety concerns.

Assessment and Evaluation Distribution

	CATEGORY	Weighting out of 100
Term Assessments 70%	Knowledge /Understanding	25%
	Application	25%
	Thinking and Inquiry	10%
	Communication	10%
Final Assessment 30%	Final Exam	30%

Resource Materials

The only calculator approved for use on evaluations is the SHARP EL-510.

Textbook: Nelson: Functions and Applications 11 (Replacement value: \$100)

Website: mrkennedy.pbworks.com