



MCR3U(G) – Functions, Grade 11 University Mathematics

Prerequisite: MPM2D(G)

Text: Functions 11 (Nelson)

Replacement Value: \$70.00

Assigned Text #: _____

COURSE DESCRIPTION:

This course introduces the mathematical concept of the function by extending students' experiences with linear and quadratic relations. Students will investigate properties of discrete and continuous functions, including trigonometric and exponential functions; represent functions numerically, algebraically, and graphically; solve problems involving applications of functions; investigate inverse functions; and develop facility in determining equivalent algebraic expressions. Students will reason mathematically and communicate their thinking as they solve multi-step problems.

The curriculum document is available from: <http://www.edu.gov.on.ca/eng/curriculum/secondary/math.html>

TOPICS OF STUDY AND ESSENTIAL OUTCOMES:

Throughout these units of study, by the end of the course, students will be able to:

Characteristics of Functions: Unit 1: Algebra (Chapter 2)

Unit 2: Intro to Functions - Notation, Inverses, Transformations (Ch 1)

Unit 3: Quadratic Functions (Chapter 3)

- Understand that a function is a special relation
- Represent functions in multiple ways (mapping diagrams, graphing, input/output diagrams, table of values, function notation, sets).
- Combine functions by adding/ subtracting, multiplying, dividing.
- Determine the inverse of a function algebraically and graphically.
- Understand the domain and range as they apply to functions and their inverses.
- Identify the following functions: linear, quadratic, radical, reciprocal, absolute value.
- Apply transformations to non-quadratic functions (ie absolute value, radical, reciprocal).
- Simplify polynomial and rational expressions and identify any restrictions.
- Solve problems involving optimal values of quadratics under restricted and unrestricted domains.

Trigonometric Functions: Unit 4: Trigonometry – Solving Triangles and Identities (Chapter 5)

Unit 5: Sinusoidal Functions (Chapter 6)

- Solving trigonometric problems in 2D and 3D.
- Know the exact values for the primary trigonometric ratios of special angles.
- Sketch Sine and Cosine functions (degrees) and describe characteristics of each.
- Apply transformations to Sine and Cosine functions (degrees).
- Investigate sinusoidal functions that model periodic phenomena.
- Understand the relationship between the reciprocal and primary trigonometric ratios.
- Prove simple trigonometric identities using the reciprocal, quotient, and Pythagorean identities.

Exponential Functions: Unit 6: Exponential Functions (Chapter 4)

- Simplify algebraic expressions containing integer and rational exponents.
- Sketch exponential functions and describe their characteristics.
- Apply transformations exponential functions.
- Understand the connection between radicals and exponents.



Discrete Functions: Unit 7: Discrete Functions – Sequences and Series and Finance (Chapters 7 & 8)

- Recognize and apply arithmetic and geometric sequences and series.
- Represent sequences using a recursion formula, function notation, and the formula for the n th term.
- Apply Pascal's triangle to binomial expansions.
- Solve problems involving simple interest, compound interest, and annuities.

ASSESSMENT AND EVALUATION:

Category	Weight
Knowledge & Understanding – <i>Subject-specific content acquired in each course (knowledge) and the comprehension of its meaning and significance (understanding)</i> <ul style="list-style-type: none"> • Evaluation in this category may include but is not limited to quizzes, tests, in-class question and answer, group work, presentation, problem assignment etc. 	25%
Application – <i>The use of knowledge and skills to make connections within and between various contexts</i> <ul style="list-style-type: none"> • Evaluation in this category may include but is not limited to tests, in-class problems, take-home project, etc. 	25%
Thinking – <i>The use of critical and creative thinking skills and/or processes</i> <ul style="list-style-type: none"> • Evaluation in this category will derive primarily from in-class "TIPS" assignments but may include, critical analysis questions, extended answer problems etc. which may or may not be part of a test. 	10%
Communication – <i>The conveying of meaning through various forms</i> <ul style="list-style-type: none"> • Evaluation in this category may include but is not limited to the proper use of mathematical symbols and terminology, the presentation format of solutions on tests etc., oral and/or written presentations and explanations of mathematical theorems, problem solutions and concepts etc. 	10%
Summative <ul style="list-style-type: none"> • Summative Task(s) (10%) • Final Examination (20%) 	30%

STUDENT EXPECTATIONS:

- Regular attendance is an integral part of learning and assessment; irregular attendance will hinder a student's ability to earn a credit.
- Students are responsible for all material studied in class including work missed due to illness, field trips and other excused absences.
- Missed tests: If a test is missed while you are absent for an acceptable reason, you must be prepared to write the missed test on the day you return to school. Consult with your teacher before the test is missed (if possible) or as soon as possible in other circumstances.
- Late assignments: All students are expected to submit work by the designated due date. Unless there are extenuating circumstances (accepted at the teacher's discretion), any late assignments may receive a mark of zero. There may be a short window of opportunity during which you may be permitted to submit late assignments – this will be at the teacher's discretion. You must present an acceptable reason for the late assignment on the missed due date if a zero is to be avoided and a contract for an alternative assignment/due date may be drawn up. Where possible, present reasons to the teacher prior to the due date. (Late work will not be accepted in the final week of each semester)



MERIVALE HIGH SCHOOL
Mathematics Department

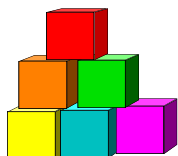
- Group work and oral presentations: These are time and/or team sensitive. A zero may be recorded if you do not participate at the specified times. If there are extenuating circumstances (subject to teacher's discretion), alternate arrangements may be made.
- Summative Tasks - A student who has an excused absence during a summative evaluation and cannot arrange to complete the summative will have the percent missed added to the weighting of the final examination. Students will receive a mark of "0" in the event of an unexcused absence. Doctors notes are required to be able to make alternative summative arrangements.
- Exams - All students must write the exam at the scheduled time. In the case of an unexcused absence, the student will receive a mark of "0" for the exam and receipt of the credit may be in jeopardy. In order to be excused, absences must be cleared through the Administration, and should be supported by a Doctor's note or proper documentation for any extenuating circumstance or emergency.
- Academic honesty: The following five items constitute academic dishonesty: plagiarism, self-plagiarism, fabrication, deception, and cheating. **It is the responsibility of every student to ensure that all assignments which are to be evaluated are original work and accurately documented as outlined by the teacher.**

Consequences for academic dishonesty:

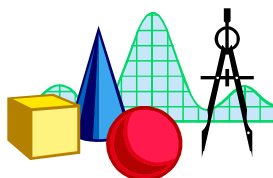
1. Parents/guardians will be contacted to inform them that fraudulent work has been submitted
2. A mark of zero will be assigned to a piece of work if a student has used dishonest or fraudulent means in completing any assignment.
3. The incident will be documented with the school principal and kept on record for one academic year.
4. The student will not be considered for academic awards and/or included in the Honour Roll if applicable in the year in which the academic dishonesty occurs.
5. Merivale High School will not nominate or sign applications for scholarships or awards for students who are confirmed as committing academic dishonesty in the year the academic dishonesty occurs.
6. The student will be required to complete an Academic Honesty seminar. These seminars are held two times each semester outside the school day.
7. Junior (grade 9 & 10) students may be given an alternate assignment to allow them to demonstrate achievement of the curriculum expectations. Parents will be involved in signing an academic honesty contract to ensure the work is completed fairly and honestly and that it is unlikely the student will repeat the behaviour.

I, _____, *have read and understand the Mathematics Department Policies.*
PRINT STUDENT NAME NEATLY

Student Signature



Parent/Guardian Signature



Date

