

# Functions and Relations - Grade 11 University Preparation

## MCR 3UI

Course web page: <http://teachers.wrdsb.ca/reinhart/mcr3ui>

Ministry Guideline: The Ontario Curriculum, Grades 11 and 12 (Revised 2007)

### Course Description/Rationale

This course introduces some financial applications of mathematics, extends students' experiences with functions, and introduces the exponential function. Students will solve problems in personal finance involving applications of sequences and series including Fibonacci; investigate properties and applications of trigonometric functions; develop facility in operating with polynomial, rational, and exponential expressions; develop an understanding of inverses and transformations of functions; and develop facility in using function notation and in communicating mathematical reasoning.

### Overall Expectations of the Course

By the end of this course, students will:

- demonstrate an understanding of functions, their representations, and their inverses, and make connections between the algebraic and graphical representations of functions using transformations;
- determine the zeros and the maximum or minimum of a quadratic function, and solve problems involving quadratic functions, including problems arising from real-world applications;
- demonstrate an understanding of equivalence as it relates to simplifying polynomial, radical, and rational expressions;
- evaluate powers with rational exponents, simplify expressions containing exponents, and describe properties of exponential functions represented in a variety of ways;
- 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 recursive sequences, represent recursive sequences in a variety of ways, and make connections to Pascal's triangle;
- demonstrate an understanding of the relationships involved in arithmetic and geometric sequences and series, and solve related problems;
- make connections between sequences, series, and financial applications, and solve problems involving compound interest and ordinary annuities;
- determine the values of the trigonometric ratios for angles less than  $360^\circ$ ; prove simple trigonometric identities; and solve problems using the primary trigonometric ratios, the sine law, and the cosine law;
- demonstrate an understanding of periodic relationships and sinusoidal functions, and make connections between the numeric, graphical, and algebraic representations of sinusoidal functions;
- identify and represent sinusoidal functions, and solve problems involving sinusoidal functions, including problems arising from real-world applications.

Unit Number	Title	Approximate Number of Periods
1	Rational Expressions	10
2	Exponential Functions and Equations	10
3	Quadratic Functions and Equations	12
4	Applied Trigonometry	8
5	Transformations of Functions	11
6	Trigonometric Functions	15
7	Sequences and Series	7
8	Financial Mathematics	10
	Summative Assessment/Review	4

### Required Supplies

Please bring the following to class with you **EVERY DAY**: textbook, scientific calculator, pencil, eraser, lined paper, binder, and a ruler.

### Possible Assessment/Evaluation Techniques

- Quizzes and tests
- Assignments or written/oral reports
- Ongoing classroom observations of daily activities

### Mark Breakdown

According to the new curriculum initiatives, the breakdown of marks is to be as follows:

<b>Term Work</b> (8 Units*: 64% + Homework: 1% + Midterm: 5%)	<b>70%</b>
<b>Final Year-ending Summative Assessments</b>	<b><u>30%</u></b>
<b>Total</b>	<b>100%</b>

\*Each Unit → Tests 70%, Quizzes: 15%, Assignments: 15%

According to the curriculum guidelines, your child will be assessed and evaluated using the following categories:

- *Knowledge/Understanding* → understanding concepts and performing algorithms
- *Thinking/Inquiry/Problem Solving* → reasoning and applying the steps of an inquiry/problem solving process
- *Communication* → communicating reasoning both orally and in writing, as well as proper use of mathematical language and symbols
- *Application* → applying concepts and procedures relating to familiar and unfamiliar settings

### ECI Missed Work Policy:

**It is expected that students complete all assigned work in a timely manner. Students who are absent on the day of an assessment (e.g. test or presentation) or when an assignment is due, must speak with their teacher when they return to make arrangements to complete the required work. Whenever possible, students will inform their teacher in advance of their absence.**

**Each assessment will have a final date of submission after which it will no longer be graded. This date will be clearly communicated to students by the teacher. Work that has not been submitted by the final due date will be deemed "incomplete" for the purposes of grade reporting. Failure to complete all required work will negatively impact a student's final grade, and may prevent successful attainment of the credit.**

**In addition, students who do not submit work in a timely manner should expect to have this reflected in the Learning Skills and comments sections of the report card.**

**Functions and Relations - Grade 11 University Preparation**  
**MCR 3UI**

**Please sign and return this form by Tuesday, September 12, 2019.**

The following signatures indicate that I have read and understand the course outline.

Student Name (please print) \_\_\_\_\_

Student Signature \_\_\_\_\_ Date \_\_\_\_\_

Parent Name (please print) \_\_\_\_\_

Parent Signature \_\_\_\_\_ Date \_\_\_\_\_

Home Phone #: \_\_\_\_\_

Parent's e-mail address: \_\_\_\_\_