

RICHVIEW COLLEGIATE INSTITUTE

PROGRAM AREA: Mathematics	COURSE NAME: Functions
COURSE CODE: MCR 3U1	GRADE/LEVEL: 11
PREREQUISITE: Principles of Mathematics, Grade 10, Academic (MPM 2D)	CREDIT VALUE: 1.0

Cost of Textbook/equipment replacement: \$90.00
(if lost or damaged)

Additional Course Costs: N/A

Textbooks(s)/Resources: Mathematics 11, McGraw-Hill Ryerson

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.

CURRICULUM STRANDS (UNITS) and OVERALL EXPECTATIONS:

1. Characteristics of Functions

- 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 the equivalence as it relates to simplifying polynomial, radical and rational expressions

2. Exponential Functions

- 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.

3. Discrete Functions

- 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

CURRICULUM STRANDS (UNITS) and OVERALL EXPECTATIONS: *(continued)*

4. Trigonometric Functions

- Determine the values of the trigonometric ratios for angles less than 360° , 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 numerical, 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

CURRICULUM STRANDS (UNITS) and OVERALL EXPECTATIONS: *(continued)*

Throughout this course, students will

- **Problem Solve**
- **Reason and Demonstrate**
- **Reflect, and apply**
- **Select Tools and Computational Strategies**
- **Connect (between mathematical concepts and procedures)**
- **Represent and determine through investigation**
- **Communicate**

Assessment and Evaluation

Assessment and Evaluation are based on the expectations and levels of achievement outlined in the provincial curriculum document for each subject. A wide range of assessment and evaluation opportunities allows students to demonstrate their learning in a variety of ways. This information provides the basis for reporting student grades on the Provincial Report Card. A final mark will be calculated using the following categories or strands.

Formative Evaluation: *(70% of the final mark will be based on evaluations conducted throughout the course)*

All four achievement categories/strands do not need to be evaluated in each evaluation task.

Communication (15%)	Knowledge/Understanding (35%)	Thinking and Inquiry (15%)	Application/Making Connections (35%)
Tests/quizzes Assignments Mathematical conventions	Tests/quizzes Assignments Mathematical conventions	Tests Assignments Mathematical conventions	Tests/quizzes Assignments Mathematical conventions

Summative Evaluation: *(30% of the final mark will be based on a final evaluation in the form of culminating activities).*

Components of Summative Evaluation: Examination (30%)

**** A detailed explanation of the culminating activity/activities will be distributed to students in the class.**

All four categories (knowledge, communication, application and TIPS) will be represented on the exam

No student is exempt from the final evaluation.

Summer school is available to any student who achieves between 35% and 49%, inclusive.

Learning Skills: *The report card provides a record of the learning skills, demonstrated by the student in every course in the following six categories: Responsibility, Independent Work, Initiative, Organization, Collaboration, Self-Regulation. The learning skills are evaluated using a four-point scale (E-Excellent, G-Good, S-Satisfactory, N-Needs Improvement).*

Please refer to the Student Agenda Planner for details regarding the Achievement Chart and Learning Skills.

We believe that homework completion is essential for student success.