GEORGE S. HENRY ACADEMY COURSE OUTLINE
MCF 3M

	MCF 3M	GRADE	11
TEACHER(S)	Mr. James	**CREDIT VALUE**	1.0
DEPARTMENT	Mathematics	**PREREQUISITE**	MFM 2P **or** MPM2D

COURSE DESCRIPTION:	This course introduces some financial applications of mathematics and extends students' experiences <u>with functions</u>. Students will solve problems in personal finance involving applications of sequences and series; investigate properties and applications of trigonometric functions; develop facility in operating with polynomials, rational expressions, and exponential expressions; develop an understanding of inverses and transformations of functions; and develop facility in using function notation and in communicating mathematical reasoning. *Additional information can be found at: http://www.edu.gov.on.ca/eng/curriculum/secondary/subjects.html*

COMMUNICATION

Please direct all questions or concerns regarding student progress or program of study to Mr. James. Please call the main office to leave a message at 416-395-3240, or dial extension 20080.

CONCRETE LEARNING RESOURCES	DIGITAL LEARNING RESOURCES
Functions & Applications 11 , Nelson ($120)	Geometer's Sketchpad, Google Classroom, DESMOS graphing-addon for smartphones and tablets.

GEORGE S. HENRY ACADEMY'S COURSE WORK POLICY

For each evaluation, the teacher will inform students of the **due date** and the **ultimate deadline**. The ultimate deadline is the last opportunity for students to submit an assignment for evaluation. Teachers may also use a variety of other methods for dealing with late and missed assignments at their discretion.

Strategies to assist students in meeting deadlines include:
- Peer tutoring
- Using the school app
- Using a personal agenda
- Seeking extra help from teachers
- Requesting for assistance with time management and organizational skills
- Getting help from parents/guardians
- Getting help from a caring adult in the school

ASSESSMENT AND EVALUATION OF STUDENT ACHIEVEMENT

Each course follows an achievement chart which enables teachers to make judgments about student work that are based on clear performance standards and on a body of evidence collected over time. These include varied types: quizzes, descriptive feedback, labs, assignments, group work, tests, presentations, and examinations.
Additional information can be found on the Ministry of Education website noted within the course description.

ACHIEVEMENT CHART CATEGORIES

Knowledge and Understanding (K & U): Math content acquired in each course (knowledge), and the comprehension of its meaning and significance (understanding)

Thinking (T): The use of critical and creative thinking skills and/or processes

Communication (C): The conveying of meaning through various forms

Application (A): The use of knowledge and skills to make connections within and between various contexts

COURSE WORK (70% of your overall grade)

Categories	%	Possible Assessments of Learning
K & U	20	**Knowledge of content** *Ex. facts, terms, procedural skills, use of tools* **Understanding of content** *Ex. Understanding of mathematical concepts, solve $x^2 = a$*
T	15	**Use of planning skills** *Ex. understanding the problem (e.g., formulating and interpreting the problem, making conjectures) – making a plan for solving the problem* **Use of processing skills** *Ex. carrying out a plan (e.g., collecting data, questioning, testing, revising, modelling, solving, inferring, forming conclusions) – looking back at the solution (e.g., evaluating reasonableness, making convincing arguments, reasoning, justifying, proving, reflecting)* **Use of critical/creative thinking processes** *Ex. problem solving, inquiry*
C	15	**Expression and organization of ideas and information** *Ex. clarity of expression, logical organization, using oral, visual, and written forms (e.g., pictorial, graphic, dynamic, numeric, algebraic forms; concrete materials)* **Communication for different audiences and purposes** *Ex. Present to peers, teachers; presenting data, justifying a solution, expressing a mathematical argument, in oral, visual, and written forms* **Use of conventions** *Ex. terms, symbols in oral, visual, and written forms*
A	20	**Application of knowledge and skills in familiar contexts** *Ex. Applying mathematical concepts to familiar settings* **Transfer of knowledge and skills to new contexts** *Ex. Applying mathematical concepts to unfamiliar settings such as word problems* **Making connections within and between various contexts** *Ex. connections between concepts, representations, and forms within mathematics; connections involving use of prior knowledge and experience; connections between mathematics, other disciplines, and the real world*

FINAL EVALUATION (30% of your overall grade)

Type	Description	%
Culminating Task(s)	tbd	10
Exam	Written exam during exam week	20

Unit 1 – Linear Systems and Geometric Properties

Chapter 1: Introduction to the Quadratic Function

Topic/Lesson	# of Periods	Suggested Homework
1.1 Characteristics of a Function	1	p.13 #1-7, 9ace, 10, 11, 12, 16
1.3 Function Notation	1	p.33 #3-7, 10, 11, 17
1.2 Rates of Change: Linear vs Quadratic	1	p.24 #3-4, 6, 8, 10
1.4 Transformations: Quadratic Function	1	Need DESMOS APP p.40 #1
1.5 Graphing Quadratic Functions	1	p. 47 #1-3, 6, 7, 9,12
1.6 Multiple transformations: Quad. Functions	1	p.56 #3,-6, 7acef
1.7 The Domain & Range: Quadratic Functions	1	p.64 #2 – 6, 10, 13
Review	1	
Test	1	

Chapter 2: The Algebra of Quadratic Expressions

Topic/Lesson	# of Periods	Suggested Homework
2.0 Getting Started: Necessary Skills	1	p.76 #1-4
2.1 Working with Quadratic Expressions	1	p.85 #2, 3cd,5adef,7ace, 10, 14
2.2 factoring Polynomials: Common Factoring	1	p.93 #2,3, 6, 8-13, 15bd, 16
2.3 Factoring $x^2 + bx + c$	1.5	p.99 #2, 3, 6, 11-15
2.4 Factoring $ax^2 + bx + c$	1.5	p.110 #(4,5)ace, 9ace, 10def, 13
2.5 Factoring Quadratic Expressions: Special Cases	1	p.115 #3, 4, 11
Review	1	
Test	1	

Chapter 3: Working with Quadratic functions - Standard and Factored Forms

Topic/Lesson	# of Periods	Suggested Homework
3.2 Relating Standard and Factored forms	1	p.139 #1-8 (ace), 10-12,18
3.3 Solving Quadratic Equations by Graphing	1	p.149 #3, 4ace, 5cd, 8, 11, 12
3.4 Solving Quadratic Equations by Factoring	1	p.161 #2, 3- 7 (acef), 10, 12, 14, 15
3.5 Solving problems involving Quadratic Functions	1	p.168 #2, 5, 8-14
3.6 Creating a Quadratic Model from Data	1	p.177 #2-4, 7, 10
Review	1	

Chapter 4: Working with Quadratic models: Standard and Vertex Forms

Topic/Lesson	# of Periods	Suggested Homework
4.1 Vertex form of a Quadratic Function	1	p.203 #1-4, 8-12
4.2 Completing the Square	1	p. 214 #2ac, 3, 5ace, 6ace, 7abcef, 11, 17
4.3 The Quadratic Formula	1	p.222 #3, 5ace, 9, 12-14
4.4 Nature of the Roots of a Quadratic Equation	1.5	p.232 #1-10
4.5 Using Quadratic models to solve problems	1.5	p.240 #6-15
Review	1	

Test	1	

Chapter 5: Trigonometry: Acute Triangles

Topic/Lesson	# of Periods	Suggested Homework
5.0 Getting Started: Necessary Skills	1	p.261 #2-10
5.1 The Primary Trigonometric Ratios	1	p.271 #1-8, 10, 14, 17
5.2 Problem Solving: Right Triangle Models	1	p.280 #1-6, 713, 14
5.3 Sine Law: Acute Triangles	1	p.288 #1-4, 6ac, 8, 9acf, 10, 11
5.4 Cosine Law: Acute Triangles	1.5	p.299 #1-3 (b), 4ab, 7, 10, 11
5.5 Problem Solving: Acute Triangle Models	1.5	p.309 #1, 3, 5,6, 9, 11, 17
Review	1	
Test	1	

Chapter 6: Sinusoidal Functions

Topic/Lesson	# of Periods	Suggested Homework
6.0 Getting Started: Necessary Skills	1	p.320 #1-2
6.2 Periodic Behaviour	1	p.330 #1,4-6, 9, 10
6.3 The sine Function	1	p. 339 #1-7, 11, 12
6.4Comparing Sinusoidal Functions	1	p.348 #3-5,7, 11, 14
6.5 Transformations of the sine Function I	1.5	p.365 #1-8, 11, 15
6.6 Transformations of the sine Function II	1.5	p.373 #1, 4, 5ace, 8, 10, 11, 13,
Review	1	
Test	1	

Chapter 7: Exponential Functions

Topic/Lesson	# of Periods	Suggested Homework
7.0 Getting Started: Necessary Skills Review all exponent laws	1	p.388 #1-11;
7.1 Exponential Data	0.5	p.394 #1-3
7.2 The Laws of Exponents	1.5	p. 399 #1-18 (ad)
7.3 Integer Exponents	1	p.404 # 1-9 (acef), 11, 12, 15
7.4 Rational Exponents	1	p.415 #1-12 (ace), 13, 14-18(ace)
7.5 Properties of Exponential Functions	1	p.423 #2-4
7.6 Problem Solving: Exponential growth	1	p.429 #1-3, 6, 8, 9
7.7 Problem Solving: Exponential Decay	1	p.437 #2-4, 6, 9, 10

Chapter 8: Solving Financial Problems involving Exponential Functions

Topic/Lesson	# of Periods	Suggested Homework
8.1 Interest and Rates of Change	1	p. 459 #1-3, 3acd, 5, 6, 13
8.2 Compound Interest: Future Value(Amount)	1	p.468 #1-12, 14
8.3 Compound Interest: Present Value	1	p. 476 #1-4, 8, 10, 13, 14
8.4 Compound Interest: Financial Problems	1	p.487 #2-8, 10

8.5 Regular Annuities (Ordinary): Future Value	1		p.499 #4-11
8.6 Regular Annuities (Ordinary): Present Value	1		p.507 # 4-11, 16,
8.7 Amortization Tables	1		p.518 #2-12 TVM
Review	1		
Test	1		

GEORGE S. HENRY ACADEMY'S LATE & MISSED EVALUATION POLICY

It is the responsibility of the student to make arrangements with their teacher for any missed course material and/or assignments. Extenuating circumstances will be considered on a case-by-case basis.

GEORGE S. HENRY ACADEMY'S ACADEMIC DISHONESTY POLICY

Cheating and plagiarism will not be condoned. For more information, refer to the Academic Honesty Policy found in the Student Handbook. The Student Handbook can be found in the George S. Henry Academy app.

SPECIALIST HIGH SKILLS MAJOR (SHSM) REQUIREMENTS

GRADE 11 AND 12 CREDITS	ENVIRONMENT	HEALTH & WELLNESS	HOSPITALITY &TOURISM
Major Credits	4	4	4
English *(including a CLA*)*	2	1	1
Mathematics *(including a CLA)*	1	1	1
Science or Social Sciences and Humanities *(including a CLA) (May be substituted with 1 coop credit)*	-	1	-
Business Studies or Science *(including a CLA) (May be substituted with 1 coop credit)*			1
Cooperative Education	2	2	2
TOTAL	**9**	**9**	**9**

*Contextualized Learning Activity