



# GEORGE S. HENRY ACADEMY COURSE OUTLINE



## MAP4C

<b>COURSE NAME</b>	Foundations for College Mathematics	<b>GRADE</b>	12
<b>COURSE CODE</b>	MAP4C	<b>CREDIT VALUE</b>	1.0
<b>TEACHER</b>	Ms. Herbst	<b>DEPARTMENT</b>	Mathematics
<b>PREREQUISITE</b>	Foundations for College Mathematics, Grade 11, College Preparation OR Functions and Applications, Grade 11, University/College Preparation		

<b>COURSE DESCRIPTION:</b>	This course enables students to broaden their understanding of real-world applications of mathematics. Students will analyze data using statistical methods; solve problems involving applications of geometry and trigonometry; solve financial problems connected with annuities, budgets, and renting or owning accommodations; simplify expressions; and solve equations. Students will reason mathematically and communicate their thinking as they solve multi-step problems. This course prepares students for college programs in areas such as business, health sciences, and human services, and for certain skilled trades.
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<b>OVERALL EXPECTATIONS:</b>	<b>Mathematical Models</b>	<ul style="list-style-type: none"> <li>- Evaluate powers with rational exponents, simplify algebraic expressions involving exponents</li> <li>- Describe trends based on the interpretation of graphs</li> <li>- Make connections between formulas and linear, quadratic and exponential relations</li> </ul>
	<b>Personal Finance</b>	<ul style="list-style-type: none"> <li>- Demonstrate an understanding of annuities, including mortgages</li> <li>- Gather, interpret and compare information about owning or renting accommodation</li> <li>- Design, justify, and adjust budgets for individuals and families</li> </ul>
	<b>Geometry and Trigonometry</b>	<ul style="list-style-type: none"> <li>- Solve problems involving measurement and geometry</li> <li>- Explain the significance of, and determine, optimal dimensions</li> <li>- Solve problems using primary trigonometric ratios, the sine law and the cosine law</li> </ul>
	<b>Data Management</b>	<ul style="list-style-type: none"> <li>- Collect, analyze, and summarize two-variable data using a variety of tools and strategies</li> <li>- Demonstrate an understanding of the applications of data management used by the medical and advertising industry</li> </ul>

<b>TEXTBOOK</b>	<b>REPLACEMENT COST</b>
<i>Foundations for College Mathematics 12 (Pearson)</i>	<b>\$80</b>

## COMMUNICATION

Please direct all questions or concerns regarding student progress or program of study to the classroom teacher. The department number is 416-395-3240, Ext. 20080.

## ASSESSMENT *AS, FOR, and OF* STRATEGIES

These include varied types: Quizzes, Descriptive Feedback, Assignments, Group Work, Tests, Presentations, and Examinations.

## EVALUATION OF STUDENT ACHIEVEMENT:

Evaluation of student achievement is based on the following categories:

COURSE WORK 70%	PERCENTAGE	FINAL EVALUATION 30%	PERCENTAGE
• Knowledge	25%	• Culminating Task	15%
• Thinking	10%	• Final Exam	15%
• Communication	10%		
• Application	25%		

## UNITS OF STUDY & EVALUATION TASKS



### Unit of Study

#### Unit 1 – Trigonometry & Geometry

1.11 Right Triangles
1.12 Investigating Sine, Cosine and Tangent
1.13 Sine, Cosine and Tangent of Obtuse Angles
1.14 The Sine Law
1.15 The Cosine Law
1.16 Trigonometry Test
1.21 Area Applications
1.22 Working with Composite Objects
1.23 Optimizing Areas and Perimeters
1.24 Optimizing Areas and Perimeters 2
1.25 Optimizing Surface Area and Volume
1.26 Geometry Test

#### Unit 2 – Data Management

2.31 One and Two Variable Data
2.32 Using Scatter Plots to Identify Relationships
2.33 Line of best Fit
2.34 Analyzing Data with Graphing Calculators & Spreadsheets
2.35 Analyzing Data with Graphing Calculators & Spreadsheets
2.41 Interpreting Statistics
2.42 Surveys and Questionnaires
2.43 The Use and Misuse of Statistics
2.44 Understanding Indices
2.45 Statistics Test
2.51 Trends in Graphs
2.52 Rate of Change

2.53 Linear Models
2.54 Exponential models
2.55 Selecting Regression Models for Data
2.56 Graphical Models Test

**Unit 3 – Algebraic Models**

3.61 Using Formulas to Solve Problems
3.62 Rearranging Formulas
3.63 Laws of Exponents
3.64 Rational Exponents
3.65 Exponential Equations
3.66 Applications of Exponential Equations
3.67 Techniques for Solving Exponential Equations
3.68 Algebraic Models Test

**Unit 4 – Personal Finance**

4.71 Annuities
4.72 Present Value of Annuities
4.73 Regular Payment of Annuities
4.74 Saving for Education and Retirement
4.75 Mortgages
4.76 Annuities and Mortgages Unit Task
4.81 The Cost of Renting or Owning
4.82 Living Costs
4.83 Designing a Budget
4.84 Making Financial Decisions
4.85 Budget Project

**Final Evaluation**

Culminating Activity
Examination



**Blended Learning Strategies, Tools, and Resources**

Students will take part in face-to-face lessons and communicate with their teacher and classmates using a suite of secure online tools like Google Classroom or Brightspace. These tools help students learn or review key concepts, stay organized, show what they have learned, submit assignments, track their achievement, and communicate with others.

Unlike e-learning classes where students are physically separate from their teacher and classmates, blended learning occurs within a face-to-face class that happens at a specific place and time. Blended learning combines the support of classroom learning with the flexibility of e-learning.

The following chart shows some examples to clarify how different types of learning and teaching might occur.

	<b>Strategies, tools and resources</b>		
<b>Goal</b>	<b>Classroom Learning</b>	<b>Blended Learning</b>	<b>E-Learning</b>
Communication between teacher and students	<ul style="list-style-type: none"> <li>• Full group lessons</li> <li>• Small group lessons or tutorials</li> <li>• Individual conferences</li> <li>• Marked assignments and rubrics</li> </ul>	<ul style="list-style-type: none"> <li>• Full group lessons</li> <li>• Small group lessons or tutorials</li> <li>• Individual conferences</li> <li>• Marked assignments and rubrics</li> <li>• Digital course materials</li> <li>• Online discussions</li> <li>• E-mail</li> </ul>	<ul style="list-style-type: none"> <li>• Digital course materials</li> <li>• Online discussions</li> <li>• E-mail</li> <li>• Instant messages</li> <li>• News announcements</li> <li>• Online calendar</li> <li>• Dropboxes</li> <li>• Online grade tool</li> <li>• Rubrics</li> </ul>

		<ul style="list-style-type: none"> <li>• Instant messages</li> <li>• News announcements</li> <li>• Online calendar</li> <li>• Dropboxes</li> <li>• Online grade tool</li> <li>• Rubrics</li> </ul>	<ul style="list-style-type: none"> <li>• Web conferences</li> </ul>
Collaboration among students	<ul style="list-style-type: none"> <li>• Learning centres or other room arrangements</li> <li>• Class discussions</li> <li>• Face-to-face group work</li> </ul>	<ul style="list-style-type: none"> <li>• Learning centres or other room arrangements</li> <li>• Class discussions</li> <li>• Face-to-face group work</li> <li>• Online group work</li> <li>• Online discussions</li> <li>• E-mail</li> <li>• Instant messages</li> <li>• Blogs</li> <li>• Electronic portfolios</li> </ul>	<ul style="list-style-type: none"> <li>• Online group work</li> <li>• Online discussions</li> <li>• Chat sessions</li> <li>• E-mail</li> <li>• Instant messages</li> <li>• Blogs</li> <li>• Electronic portfolios</li> <li>• Web conferences</li> </ul>
Demonstration of learning	<ul style="list-style-type: none"> <li>• Paper-and-pencil tests and assignments submitted in person</li> <li>• Live presentations, labs, performances, or exhibits of skill</li> <li>• Models, works of art, posters, and other physical artefacts submitted in person</li> </ul>	<ul style="list-style-type: none"> <li>• Paper-and-pencil tests and assignments submitted in person</li> <li>• Live presentations, labs, performances, or exhibits of skill</li> <li>• Models, works of art, posters, and other physical artefacts submitted in person</li> <li>• Blogs</li> <li>• Electronic portfolios</li> <li>• Online discussions</li> <li>• Online surveys and quizzes</li> <li>• Assignments, such as essays, worksheets, slide shows, photographs, and videos submitted to electronic dropboxes</li> </ul>	<ul style="list-style-type: none"> <li>• Blogs</li> <li>• Electronic portfolios</li> <li>• Online discussions</li> <li>• Online surveys and quizzes</li> <li>• Assignments, such as essays, worksheets, slide shows, photographs, and videos submitted to electronic dropboxes</li> <li>• Web conferences</li> </ul>

Adapted from: <http://www.edu.gov.on.ca/elearning/blend.html>

