

Canterbury High School

Ottawa-Carleton District School Board

Mathematics Department

Semester I – 2010 / 11 – Course Outline

Course Title: Foundation for College Mathematics	Grade Level: 12
Course Code: MAP4C	Credit Value: 1.0
Prerequisite: MBF3C, MCF3M	

Teachers: L. Lithwick

Course Overview 110 hours

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 to annuities, budgets, renting and owning accommodation; 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.

Strands:

A. Mathematical Models

By the end of this course, students will:

1. evaluate powers with rational exponents, simplify algebraic expressions involving exponents, and solve problems involving exponential equations graphically and using common bases;
2. describe trends based on the interpretation of graphs, compare graphs using initial conditions and rates of change, and solve problems by modelling relationships graphically and algebraically;
3. make connections between formulas and linear, quadratic, and exponential relations, solve problems using formulas arising from real-world applications, and describe applications of mathematical modelling in various occupations.

B. Personal Finance

By the end of this course, students will:

1. demonstrate an understanding of annuities, including mortgages, and solve related problems using technology;
2. gather, interpret, and compare information about owning or renting accommodation, and solve problems involving the associated costs;
3. design, justify, and adjust budgets for individuals and families described in case studies, and describe applications of the mathematics of personal finance.

C. Geometry and Trigonometry

By the end of this course, students will:

1. solve problems involving measurement and geometry and arising from real-world applications;
2. explain the significance of optimal dimensions in real-world applications, and determine optimal dimensions of two-dimensional shapes and three-dimensional figures;
3. solve problems using primary trigonometric ratios of acute and obtuse angles, the sine law, and the cosine law, including problems arising from real-world applications, and describe applications of trigonometry in various occupations.

D. Data Management

By the end of this course, students will:

1. collect, analyse, and summarize two-variable data using a variety of tools and strategies, and interpret and draw conclusions from the data;
2. demonstrate an understanding of the applications of data management used by the media and the advertising industry and in various occupations.

Units of Study

1. Statistics (~ 6 weeks)
One and two variable data, bias, standard deviations, and real-world applications including exponential growth rates
2. Trigonometry (~ 4 weeks
Primary ratios, sine and cosine law and applications.)
3. Measurement (~3 weeks)
Measurement of 2 and 3-dimensional objects, their real-world applications and optimizing dimensions.
4. Finance (~6 weeks)
Negative and fractional exponents; solve exponential equations, exponential growth and financial formulas; application to compound interest, annuities and mortgages; budgeting and real-world costs.

Teaching Strategies

Students will have the opportunity to learn in a variety of ways; individually, cooperatively, investigative, teacher directed class discussion and notes, visual aids and with graphing calculators.

Assessment and Evaluation Strategies

Student achievement will be monitored through the use of formative assessments in the form of quizzes, assignments, observations. Feedback on these assessments will provide the student with information to determine their level of understanding of the concepts. Student achievement will be recorded through the use of quizzes, tests, assignments/tasks. The percentage grade will represent the quality of the student's overall achievement of the expectations for the course and reflect the corresponding level of achievement as described in the achievement chart.

Evaluation Summary

Term Evaluation (70%) comprised of:

- | | | |
|----|--|--------|
| a) | <u>Knowledge and Understanding</u>
(understand the concepts and computational skills of specific expectations) | 24.5 % |
| b) | <u>Application</u>
(knowing when and how to use appropriate tools and concepts to solve problems) | 24.5% |
| c) | <u>Thinking/Problem Solving</u>
(being able to use critical and creative thinking skills to solve problems, connect ideas from other strands) | 14 % |
| d) | <u>Communication</u>
(reflect and express through writing a mathematical solution or concept) | 7 % |

Summative Evaluation (30%) comprised of:

- | | | |
|----|--|-----|
| a) | Summative Evaluation: Data management: | 14% |
| b) | Final Exam: Trigonometry, Exponents and Finance: | 16% |

References

www.edu.gov.on.ca/eng/curriculum/secondary/math1112currb.pdf

Student Resources / Texts

1. Foundations for College Mathematics 12, Pearson
2. Making Financial Decisions 11, McGraw-Hill Ryerson.
3. College and Apprenticeship Mathematics 12, Addison- Wesley
4. Various other resources (e.g., www.oame.on.ca)