

Erindale College

Assessment Period:	2021 S2
Course:	ESSENTIAL MATHEMATICS
Unit:	Unit 4: Essential Mathematics (1.0)
Accreditation:	A
Year:	12

Unit Goals

- understand the concepts and techniques in calculations, measurement, algebra and graphs
- apply reasoning skills and solve practical problems in calculations, measurement, algebra and graphs
- communicate their arguments and strategies when solving problems using appropriate mathematical language
- interpret mathematical information and ascertain the reasonableness of their solutions to problems

Content Description

Topic 1: Probability and relative frequencies

- interpret commonly used probability statements, including 'possible', 'probable', 'likely', 'certain'
- describe ways of expressing probabilities formally using fractions, decimals, ratios, and percentages
- perform simulations of experiments using technology
- recognise that the repetition of chance events is likely to produce different results
- identify relative frequency as probability
- identify factors that could complicate the simulation of real-world events
- construct a sample space for an experiment
- use a sample space to determine the probability of outcomes for an experiment
- use arrays or tree diagrams to determine the outcomes and the probabilities for experiments
- determine the probabilities associated with simple games
- determine the probabilities of occurrence of simple traffic-light problems

Topic 2: Earth geometry and time zones

- locate positions on Earth's surface given latitude and longitude using GPS, a globe, an atlas, and digital technologies
- find distances between two places on Earth on the same longitude
- find distances between two places on Earth using appropriate technology
- understand the link between longitude and time
- solve problems involving time zones in Australia and in neighbouring nations, making any necessary allowances for daylight saving
- solve problems involving Greenwich Mean Time and the International Date Line
- find time differences between two places on Earth
- solve problems associated with time zones; for example, internet and phone usage
- solve problems relating to travelling east and west, incorporating time zone changes

Topic 3: Loans and compound interest

- review the principles of simple interest

- understand the concept of compound interest as a recurrence relation
- consider similar problems involving compounding; for example, population growth
- use technology to calculate the future value of a compound interest loan or investment and the total interest paid or earned
- use technology to compare, numerically and graphically, the growth of simple interest and compound interest loans and investments
- use technology to investigate the effect of the interest rate and the number of compounding periods on the future value of a loan or investment
- use technology and a recurrence relation to model a reducing balance loan
- investigate the effect of the interest rate and repayment amount on the time taken to repay a loan

Assessment Tasks

Name	Due Date	Weighting
Assignment 1	9 August - 13 August	25%
Exam 1	3 September - 8 September	25%
Assignment 1	25 October - 29 October	25%
Exam 1	17 November - 19 November	25%

School Assessment Information

For penalties for late and non-submission of work

See [BSSS Policy and Procedure Manual 4.3.10](#) for further information.

For academic integrity

See [BSSS Policy and Procedure Manual 4.3.12](#) for further information.

For appeals processes

See [BSSS Policy and Procedure Manual 7.2](#) for further information.

For moderation procedures (internal and external)

See [BSSS Policy and Procedure Manual 5](#) for further information.

Achievement Standards for ESSENTIAL MATHEMATICS A - Year 12

	<i>A student who achieves an A grade typically</i>	<i>A student who achieves a B grade typically</i>	<i>A student who achieves a C grade typically</i>	<i>A student who achieves a D grade typically</i>	<i>A student who achieves an E grade typically</i>
Reasoning and Communications	<ul style="list-style-type: none"> • represents complex mathematical concepts in numerical and graphical form in routine and non-routine problems in a variety of contexts • communicates mathematical information in oral, written and/or multimodal forms, which are logical and reasoned, using appropriate language • analyse the reasonableness of solutions to routine and non-routine problems in a variety of contexts • reflects with insight on their own thinking and that of others and evaluates planning, time management, use of appropriate strategies to work independently and collaboratively • evaluates the potential of Mathematics to generate knowledge in the public good 	<ul style="list-style-type: none"> • represents mathematical concepts in numerical and graphical form in routine and non-routine problems in a variety of contexts • communicates mathematical information in oral, written and/or multimodal forms, which are logical and clear, using appropriate language • explains the reasonableness of solutions to routine and non-routine problems • reflects on their own thinking and analyses planning, time management, use of appropriate strategies to work independently and collaboratively • analyses the potential of Mathematics to generate knowledge in the public good 	<ul style="list-style-type: none"> • represents mathematical concepts in numerical and graphical form to some routine and non-routine problems in some contexts • communicates mathematical judgements in oral, written and/or multimodal forms, using appropriate language • describes the reasonableness of solutions to some routine and non-routine problems • reflects on their own thinking and explains planning, time management, use of appropriate strategies to work independently and collaboratively • explains the potential of Mathematics to generate knowledge in the public good 	<ul style="list-style-type: none"> • represents simple mathematical concepts in numerical or graphical form in routine problems in structured contexts • communicates simple mathematical judgements in oral, written and/or multimodal forms, with some use of appropriate language • describes the appropriateness of solutions to routine problems • reflects on their own thinking with some reference to planning, time management, use of appropriate strategies to work independently and collaboratively • describes the potential of Mathematics to generate knowledge in the public good 	<ul style="list-style-type: none"> • represents simple mathematical concepts in numerical or graphical form in structured contexts • communicates simple mathematical information in oral, written and/or multimodal forms, with limited use of appropriate language • identifies solutions to routine problems • reflects on their own thinking with little or no reference to planning, time management, use of appropriate strategies to work independently and collaboratively • identifies some ways in which Mathematics is used to generate knowledge in the public good
Concepts and Techniques	<ul style="list-style-type: none"> • applies mathematical concepts in a variety of complex contexts to routine and non-routine problems • select and applies mathematical techniques to solve routine and non-routine problems in a variety of contexts • uses digital technologies effectively to solve routine and non-routine problems in a variety of contexts 	<ul style="list-style-type: none"> • applies mathematical concepts in a variety of contexts to routine and non-routine problems • applies mathematical techniques to solve routine and non-routine problems in a variety of contexts • uses digital technologies appropriately to solve routine and non-routine problems in a variety of contexts 	<ul style="list-style-type: none"> • applies mathematical concepts in some contexts to routine and non-routine problems • applies simple mathematical techniques to solve routine problems in some contexts • uses digital technologies appropriately to solve routine problems in some contexts 	<ul style="list-style-type: none"> • applies simple mathematical concepts in limited contexts to routine problems • uses simple mathematical techniques to solve routine problems in limited contexts • uses digital technologies to solve routine problems in limited contexts 	<ul style="list-style-type: none"> • applies simple mathematical concepts in structured contexts • uses simple mathematical techniques to solve routine problems in structured contexts • uses digital technologies to solve routine problems in structured contexts