Erindale College	MATHEMATICS, SCIENCE AND INFORMATION TECHNOLOGY ACADEMY UNIT OUTLINE

MATHEMATICS FACULTY
SEMESTER 1, 2021

Course Title	Year 10 Mathematics: Australian Curriculum
Topic 1	Algebra and Indices
Topic 2	Linear Relationships
Topic 3	Measurement
Topic 4	Trigonometry

Year 10 Level Description
The proficiency strands **understanding, fluency, problem-solving** and **reasoning** are an integral part of mathematics content across the three content strands: number and algebra, measurement and geometry, and statistics and probability. The proficiencies reinforce the significance of working mathematically within the content and describe how the content is explored or developed. They provide the language to build in the developmental aspects of the learning of mathematics. The achievement standards reflect the content and encompass the proficiencies.

At this year level:

- **understanding** includes applying the four operations to algebraic fractions, finding unknowns in formulas after substitution, making the connection between equations of relations and their graphs, comparing simple and compound interest in financial contexts and determining probabilities of two- and three-step experiments
- **fluency** includes factorising and expanding algebraic expressions, using a range of strategies to solve equations and using calculations to investigate the shape of data sets
- **problem-solving** includes calculating the surface area and volume of a diverse range of prisms to solve practical problems, finding unknown lengths and angles using applications of trigonometry, using algebraic and graphical techniques to find solutions to simultaneous equations and inequalities and investigating independence of events
- **reasoning** includes formulating geometric proofs involving congruence and similarity, interpreting and evaluating media statements and interpreting and comparing data sets.

Curriculum Content

Number and Algebra
Factorise algebraic expressions by taking out a common algebraic factor (ACMNA230)
Simplify algebraic products and quotients using index laws (ACMNA231)
Apply the four operations to simple algebraic fractions with numerical denominators (ACMNA232)
Solve problems involving linear equations, including those derived from formulas (ACMNA235)
Solve linear inequalities and graph their solutions on a number line (ACMNA236)
Solve linear simultaneous equations, using algebraic and graphical techniques, including using digital technology (ACMNA237)
Solve problems involving parallel and perpendicular lines (ACMNA238)
Solve linear equations involving simple algebraic fractions (ACMNA240)
Measurement and Geometry
Solve problems involving surface area and volume for a range of prisms, cylinders and composite solids (ACMMG242)
Solve right-angled triangle problems including those involving direction and angles of elevation and depression (ACMMG245)

Year 10 Achievement Standard

By the end of Year 10, students recognise the connection between simple and compound interest. They solve problems involving linear equations and inequalities. They make the connections between algebraic and graphical representations of relations. Students solve surface area and volume problems relating to composite solids. They recognise the relationships between parallel and perpendicular lines. Students apply deductive reasoning to proofs and numerical exercises involving plane shapes. They compare data sets by referring to the shapes of the various data displays. They describe bivariate data where the independent variable is time. Students describe statistical relationships between two continuous variables. They evaluate statistical reports.

Students expand binomial expressions and factorise monic quadratic expressions. They find unknown values after substitution into formulas. They perform the four operations with simple algebraic fractions. Students solve simple quadratic equations and pairs of simultaneous equations. They use triangle and angle properties to prove congruence and similarity. Students use trigonometry to calculate unknown angles in right-angled triangles. Students list outcomes for multi-step chance experiments and assign probabilities for these experiments. They calculate quartiles and inter-quartile ranges.

Assessment

TASK	DUE DATE
Test 1	Week 5
Test 2	Week 9
Assignment	Week 14
Test 3	Week 18

Assessment criteria and reporting of student achievement

The following assessment criteria are a focus for assessment and reporting in this unit. Criteria are the essential qualities that teachers look for in student work. These criteria must be used by teachers to assess student's performance, however not all of them need to be used on each task. Assessment criteria are to be used holistically on a given task and in determining the unit grade. Students will be assessed on the degree to which they demonstrate:

- **Knowledge** of mathematical facts, techniques and formulas presented in the unit;
- Appropriate selection and **application** of mathematical skills in mathematical modelling and problem solving;
- **Communication,** interpretation and presentation of mathematical ideas;
- The development of logical **arguments** to support solutions; and
- Appropriate use of **technology**.

Unit grades for Mathematics

The following A-E descriptors will appear on the report:
A demonstrating excellent achievement of what is expected
B demonstrating a high achievement of what is expected
C demonstrating satisfactory achievement of what is expected
D demonstrating partial achievement of what is expected
E demonstrating limited achievement of what is expected

Executive Teacher: Debbie O'Brien **Class Teacher:** Vicki Gwilliam & Ross Burdon
Date: 12/02/2021