

**Teacher(s):** Colin Montgomery, Brandon Steele, Trevor Horrell

**Faculty:** Mathematics

**Unit Duration:** Semester 2, 2021

The **Australian Curriculum Achievement Standards in Mathematics** is organised around the interaction of three content strands and four proficiency strands.

The content strands are *number and algebra*, *measurement and geometry*, and *statistics and probability*. They describe what is to be taught and learnt.

The proficiency strands are *understanding*, *fluency*, *problem-solving* and *reasoning*. They describe how content is explored or developed; that is, the thinking and doing of mathematics.

The strands provide a meaningful basis for the development of concepts in the learning of mathematics and have been incorporated into the content descriptions of the three content strands. This approach has been adopted to ensure students' proficiency in mathematical skills develops throughout the curriculum and becomes increasingly sophisticated over the years of schooling.

**Australian Curriculum Achievement Standard:** By the end of Year 9, students solve problems involving simple interest. They interpret ratio and scale factors in similar figures. Students explain similarity of triangles. They recognise the connections between similarity and the trigonometric ratios. Students compare techniques for collecting data from primary and secondary sources. They make sense of the position of the mean and median in skewed, symmetric and bi-modal displays to describe and interpret data.

Students apply the index laws to numbers and express numbers in scientific notation. They expand binomial expressions. They find the distance between two points on the Cartesian plane and the gradient and midpoint of a line segment. They sketch linear and non-linear relations. Students calculate areas of shapes and the volume and surface area of right prisms and cylinders. They use Pythagoras' Theorem and trigonometry to find unknown sides of right-angled triangles. Students calculate relative frequencies to estimate probabilities, list outcomes for two-step experiments and assign probabilities for those outcomes. They construct histograms and back-to-back stem-and-leaf plots.

**Unit 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.

These proficiencies are developed through the study of the following topics: Linear & Non-Linear Relations, gradient, mid-point, distance between two points, measurement, financial maths, probability and algebra.

**Essential Learning Outcomes developed from the Achievement Standards of the Australian Curriculum:**

1. **9.306** - Solves problems involving simple interest
2. **9.310** - Compares techniques for collecting data from primary and secondary sources.
3. **9.311** - Makes sense of the position of the mean and median in skewed, symmetric and bi-modal displays to describe and interpret data.
4. **9.314** - Finds the distance between two points on the Cartesian plane and the gradient and midpoint of a line segment
5. **9.315** – Sketches Linear and non-linear relations
6. **9.316** - Calculates areas of shapes and the volume and surface area of right prisms and cylinders
7. **9.318** - Calculates relative frequencies to estimate probabilities, lists outcomes for two-step experiments and assigns probabilities for those outcomes
8. **9.319** - Constructs histograms and back-to-back stem-and-leaf plots.

**Materials and Equipment Required:** Students are expected to arrive at every class with a class book/folder to write notes for that subject, a writing instrument and a Chromebook or similar, appropriate electronic device. Students may also be required to provide the following additional materials and equipment: *Scientific Calculator*

**Absences from Class:** Students who miss classes due to absence or excursions must negotiate with the class teacher to catch up missed work.

**Use of IT in Class:** A Google Classroom has been set up for this class. Students will be required to log into this Google Classroom regularly to access course material. Students must bring their Chromebook to all lessons, however, the use of these devices in class will be at the discretion of the teacher.

**Homework:** Any homework will be directly related to instruction and course requirements, will be assessed appropriately and may impact upon student grades. Examples of homework may include; catch up on missed classwork, revision of classwork, study for tests, assignment work, or preparation for a class presentation.

**Late Work:** Extensions may be negotiated with individual teachers before the due date

**Plagiarism:** Plagiarism is copying or using another's work and claiming it as your own. This includes copying, cutting and pasting text or using ideas directly from a text, the internet or some other source without appropriate referencing. If this happens, work may not be graded and students will be asked to discuss the assessment with the classroom teacher and Executive Teacher for that subject. Parents may be contacted as part of this process.

**Assessment Portfolio:** This contains evidence of work from the opportunities the students have been provided to demonstrate elements of the achievement standard.

**Portfolio Assessment Tasks for this subject will include:**

	<b>Week / Date Due</b>	<b>Essential Learning</b>
1. Measurement	<b>End of Term 2</b>	<b>6</b>
2. Gradient, mid-point and distance between two points	<b>Week 4</b>	<b>4</b>
3. Non-linear Relations	<b>Week 7</b>	<b>5</b>
4. Data	<b>Week 10</b>	<b>2,3,8</b>
5. Financial Maths	<b>Week 13</b>	<b>1</b>
6. Probability	<b>Week 16</b>	<b>7</b>
7. Algebra	<b>Week 20</b>	

**A-E Reporting Grade Descriptors** These are the grades and grade descriptors for reporting at the end of each Semester.

<b>A</b>	Demonstrating <b>excellent</b> achievement of what is expected (Consistently achieving a proficiency level of 4 or above in each of the Essential Learnings)
<b>B</b>	Demonstrating a <b>high</b> achievement of what is expected (Consistently achieving a proficiency level of between 3 and 4 in each of the Essential Learnings)
<b>C</b>	Demonstrating <b>satisfactory</b> achievement of what is expected (Achieving a proficiency level of 3 across the Essential Learnings)
<b>D</b>	Demonstrating <b>partial</b> achievement of what is expected (Achieving a proficiency of between 1 and 3 across the Essential Learnings)
<b>E</b>	Demonstrating <b>limited</b> achievement of what is expected (Achieving a proficiency of 1 or less in each of the Essential Learnings)

**S Status** is awarded where unavoidable circumstances have prevented assessment. Must be negotiated with the Principal.

#### **Grade Descriptors and the "C" grade**

In ACT public schools the Australian Curriculum Achievement Standard is aligned with a 'C' grade. The 'C' grade indicates that your child has demonstrated a satisfactory level of knowledge, understanding and skill in relation to the Achievement Standard.

#### **Appeals**

*A student must initiate an appeal for any grade with their subject teacher. If a student is dissatisfied with that initial process, they must pursue further appeal through the Faculty Executive Teacher for that subject.*

#### **Executive Teacher**

Colin Montgomery

22/06/2021

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