



**COURSE OUTLINE**  
**MATHEMATICS ESSENTIALS – GENERAL YEAR 11: 2022**  
**UNIT 2**



Term	Week	Topic and key teaching points	Syllabus content	Assessment
<p>Throughout the unit, students apply the mathematical thinking process to real-world problems</p> <ul style="list-style-type: none"> <li>• interpret the task and gather the key information</li> <li>• identify the mathematics which could help to complete the task</li> <li>• analyse information and data from a variety of sources</li> <li>• apply existing mathematical knowledge and strategies to obtain a solution</li> <li>• verify the reasonableness of the solution</li> <li>• communicate findings in a systematic and concise manner.</li> </ul> <p>In Unit 2, students apply the statistical investigation process to real-world tasks</p> <ul style="list-style-type: none"> <li>• clarify the problem and pose one or more questions that can be answered with data</li> <li>• design and implement a plan to collect or obtain appropriate data</li> <li>• select and apply appropriate graphical or numerical techniques to analyse the data</li> <li>• interpret the results of this analysis and relate the interpretation to the original question</li> <li>• communicate findings in a systematic and concise manner.</li> </ul>				
2 3	9-10 1-3	<b>Topic 2.1: Representing and comparing data</b>	<p><b>Classifying data</b></p> <p>2.1.1 identify examples of categorical data            2.1.2 identify examples of numerical data</p> <p><b>Data presentation and interpretation</b></p> <p>2.1.3 display categorical data in tables and column graphs            2.1.4 display numerical data as frequency distributions, dot plots, stem and leaf plots and histograms            2.1.5 recognise and identify outliers            2.1.6 compare the suitability of different methods of data presentation in real-world contexts</p> <p><b>Summarising and interpreting data</b></p>	<p><b>Test 4</b>  <b>Term 3 Week 3</b></p> <ul style="list-style-type: none"> <li>• <b>Classifying data</b></li> <li>• <b>Data presentation and interpretation</b></li> <li>• <b>Summarising and interpreting data</b></li> <li>• <b>Comparing data sets</b></li> </ul>



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			<p>2.1.7 identify the mode and calculate other measures of central tendency, the arithmetic mean and the median, using technology when appropriate</p> <p>2.1.8 investigate the suitability of measures of central tendency in various real-world contexts</p> <p>2.1.9 investigate the effect of outliers on the mean and the median</p> <p>2.1.10 calculate and interpret quartiles</p> <p>2.1.11 use informal ways of describing spread, such as: spread out/dispersed, tightly packed, clusters, gaps, more/less dense regions, outliers</p> <p>2.1.12 interpret statistical measures of spread, such as: the range, interquartile range and standard deviation</p> <p>2.1.13 investigate real-world examples from the media illustrating inappropriate uses, of measures of central tendency and spread.</p> <p><b>Comparing data sets</b></p> <p>2.1.14 compare back to back stem plots for different data sets</p> <p>2.1.15 complete a five-number summary for different data sets</p> <p>2.1.16 construct and interpret box plots using a five number summary</p> <p>2.1.17 compare the characteristics of the shape of histograms using symmetry, skewness and bimodality.</p>	
3	4-5	<b>Topic 2.2: Percentages</b>	<p><b>Percentage calculations</b></p> <p>2.2.1 review calculating a percentage of a given amount</p> <p>2.2.2 review one amount expressed as a percentage of another</p> <p><b>Applications of percentages</b></p> <p>2.2.3 determine the overall change in a quantity following repeated percentage changes; for example, an increase of 10% followed by a decrease of 10%</p> <p>2.2.4 calculate simple interest</p>	<b>Statistical Investigation Term 3 Week 4/5</b>
3	6-9	<b>Topic 2.3: Rates and ratios</b>	<p><b>Ratios</b></p> <p>2.3.1 identify common use of ratios to express comparisons of quantities in practical situations</p>	<b>Test 5 Term 3 Week 9</b>



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			<p>2.3.2 use diagrams or concrete materials to show simple ratios, such as 1 to 4, 1:1:2</p> <p>2.3.3 understand the relationship between simple fractions, percentages and ratio, for example, a ratio of 1:4 is the same as 20% to 80% or 1/5 to 4/5.</p> <p>2.3.4 express a ratio in simplest form</p> <p>2.3.5 determine the ratio of two quantities in context</p> <p>2.3.6 divide a quantity in a given ratio, for example, share \$12 in the ratio 1 to 2</p> <p>2.3.7 use ratio to describe simple scales</p> <p><b>Rates</b></p> <p>2.3.8 review identifying common usage of rates, such as km/h</p> <p>2.3.9 convert units for rate; for example, km/h to m/s, mL/min to L/h</p> <p>2.3.10 complete calculations with rates, including solving problems involving direct proportion in terms of rate</p> <p>2.3.11 use rates to make comparisons</p> <p>2.3.12 use rates to determine costs</p>	<ul style="list-style-type: none"> <li>• <b>Percentage calculations</b></li> <li>• <b>Applications of percentages</b></li> <li>• <b>Ratios</b></li> <li>• <b>Rates</b></li> </ul>
3 4	10 1-5	<p><b>Topic 2.4:</b>  <b>Time and Motion</b></p>	<p><b>Time</b></p> <p>2.4.1 use of units of time, conversions between units, fractional, digital and decimal representations</p> <p>2.4.2 represent time using 12 hour and 24 hour clocks</p> <p>2.4.3 calculate time intervals, for example, time between, time ahead, time behind</p> <p>2.4.4 interpret timetables, such as bus, train and ferry timetables</p> <p>2.4.5 use several timetables and electronic technologies to plan the most time-efficient routes</p> <p>2.4.6 interpret complex timetables, such as tide charts, sunrise charts and moon phases</p> <p>2.4.7 compare the time taken to travel a specific distance with various modes of transport.</p> <p><b>Distance and length</b></p>	<p><b>Test 5</b>  <b>Term 4 Week 3</b></p> <ul style="list-style-type: none"> <li>• <b>Time</b></li> <li>• <b>Distance and length</b></li> </ul> <p><b>Practical Application 2</b>  <b>Time and Motion</b>  <b>Term 4 Week 5</b></p> <ul style="list-style-type: none"> <li>• <b>Time</b></li> <li>• <b>Distance and length</b></li> <li>• <b>Speed</b></li> </ul>



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		<p>2.4.8 use scales to calculate distances and lengths on plans, maps and charts 2.4.9 plan routes for practical purposes, accounting for local conditions.</p> <p><b>Speed</b></p> <p>2.4.10 identify the appropriate units for different activities, such as walking, running, swimming and flying 2.4.11 calculate speed, distance or time using the formula speed = distance/time 2.4.12 calculate the time or costs for a journey from distances estimated from maps 2.4.13 interpret distance versus time graphs 2.4.14 calculate and interpret the average speed</p>	
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**Grade descriptions Year 11 Essential**

**A grade**

- Interpret the task and choose the maths Identifies information that is concentrated or from multiple sources. Chooses the appropriate mathematics to solve a range of problems in unstructured but familiar situations.
- Apply mathematical knowledge to obtain a solution Applies information and calculates accurate solutions for multi-step problems. Modifies calculated results or conclusions when conditions are changed.
- Interpret and communicate Compares situations and explains or justifies solutions and conclusions to multi-step problems. Uses comprehensive mathematical language and ideas. Links responses to the original question or context.

**B grade**

- Interpret the task and choose the maths Identifies and links more than one piece of information. Chooses the appropriate mathematics to solve problems in mostly familiar and sometimes unstructured but familiar situations.
- Apply mathematical knowledge to obtain a solution Applies information and calculates mostly accurate solutions for problems with limited steps. Checks calculated results and makes adjustments where necessary.
- Interpret and communicate Expresses or justifies solutions to limited step problems using a range of mathematical language with some link to the original question or context. Mostly includes correct units.

**C grade**

- Interpret the task and choose the maths Identifies relevant information and chooses the appropriate mathematics to solve a problem in straightforward or familiar situations.



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- Apply mathematical knowledge to obtain a solution Applies information and calculates mostly accurate solutions for single step problems. Rounds to specified level or appropriate to familiar, everyday contexts.
- Interpret and communicate Expresses solutions or conclusions to single-step problems using simple mathematical language or a routine statement. Mostly includes correct units in short responses.

**D grade**

- Interpret the task and choose the maths Identifies relevant information that is narrow in scope or when supported by scaffolding or prompts.
- Apply mathematical knowledge to obtain a solution Applies information from simple tables, graphs and text to answer structured questions that require short calculations or where an example is supplied.
- Interpret and communicate Provides limited evidence of methods or calculations used to answer a familiar problem. Provides some detail with limited use of mathematical language, in interpretation or presenting a conclusion when prompted.

**E grade**

- Does not meet the requirements of a D grade and/or has completed insufficient assessment tasks to be assigned a higher grade.