



Newton Moore Senior High School  
Mathematics  
Year 10 Program Course 2  
2016



## Course Description

### Text and Resources

References are given for three separate texts:

Cambridge Essential Mathematics 10 + 10A (EM)

Jacaranda Maths Quest 10 + 10A for the Australian Curriculum (MQ)

Dr Terry Dwyer Mathematics 10 National Curriculum 10 + 10A (Dwyer)

The following are also useful resources:

Sadler Understanding Mathematics 3 & 4

Instant Lessons Black Line Master Series "Maths in ..."

Specifically:

'Maths in Disasters' by Sue Thomson and Ian Forster ©Sue Thomson, Ian Forster and Learning Essentials 2003

'Maths in Science' by Barbara Lynch © Barbara Lynch and Blake Education 2007

'Maths in the Environment' by Sue Thomson and Ian Forster © Sue Thomson and Ian Forster 1996

'Maths in Food' by Sue Thomson and Ian Forster ©Sue Thomson and Ian Forster 1997

### Assessment

Common Assessment

Semester One

2 Tests (End of each term)

1 Investigation

### 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**. They make the connections between algebraic and graphical representations of (some) relations. Students solve surface area and volume problems relating to composite solids. 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. They find unknown values after substitution into formulas. Students solve 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 multistep chance experiments and assign probabilities for these experiments. They calculate quartiles and interquartile ranges.

## Proficiency Strands: Year 10 Mathematics

**Understanding:** 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:** Using a range of strategies to solve equations and using calculations to investigate the shape of data sets.

**Problem Solving:** 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,

**Reasoning:** Formulating geometric proofs involving congruence and similarity, interpreting and evaluating media statements and interpreting and comparing data sets.

## Course Outline

	Time	Summary	Year 10 Content Descriptions
Term 1	Weeks 1	<b>Number &amp; Algebra</b> <ul style="list-style-type: none"> <li>• <i>Set of Real numbers</i></li> <li>• <i>Integer operations</i></li> <li>• Use Index laws to simplify numerical and simple algebraic expressions with integer indices</li> <li>• Scientific notation including negative powers to represent very small and very large numbers</li> <li>• Significant figures</li> </ul> Surds -simplifying	Apply <a href="#">index</a> laws to numerical expressions with <a href="#">integer</a> indices ( <a href="#">ACMNA209</a> )  Express numbers in <a href="#">scientific notation</a> ( <a href="#">ACMNA210</a> )  Extend and apply the <a href="#">index</a> laws to variables, using positive <a href="#">integer</a> indices and the zero <a href="#">index</a> ( <a href="#">ACMNA212</a> )  Investigate very small and very large time scales and intervals ( <a href="#">ACMMG219</a> )
	Weeks 2 - 5	<b>Linear Algebra</b> <ul style="list-style-type: none"> <li>• Review of Skills</li> <li>• Equations</li> <li>• Simultaneous equations</li> </ul>	Substitute values into formulas to determine an unknown ( <a href="#">ACMNA234</a> ) Solve problems involving linear equations, including those derived from formulas ( <a href="#">ACMNA235</a> ) Solve linear equations involving simple algebraic fractions ( <a href="#">ACMNA240</a> ) Solve linear simultaneous equations, using algebraic and graphical techniques including using digital technology ( <a href="#">ACMNA237</a> )
	Weeks 6 - 10	<b>Trigonometry (right triangles)</b> <ul style="list-style-type: none"> <li>• Review of Year 9 trig and Pythagoras' theorem</li> <li>• Angle of elevation, depression</li> <li>• bearings</li> </ul>	Solve right angled triangle problems including those involving direction and angles of elevation and depression ( <a href="#">ACMMG245</a> )

		<b>Measurement</b> <ul style="list-style-type: none"> <li>• Surface area and volume of prisms, pyramid and composite solids</li> <li>• Problems involving rates</li> <li>• Problems requiring knowledge of Pythagoras and trigonometry</li> </ul>	Solve problems involving surface area and volume for a range of prisms, cylinders and composite solids (ACMMG242)
Term 2	Weeks 11-15	<b>Finance</b> <ul style="list-style-type: none"> <li>• Review of Year 8,9 percentages, best buys, simple interest etc.</li> <li>• Compound Interest</li> </ul>	Connect the compound interest formula to repeated applications of simple interest using appropriate digital technologies (ACMNA229)
	Weeks 16-20	<b>Exponentials and other functions</b> <ul style="list-style-type: none"> <li>• Rules from tables</li> <li>• Graphing</li> <li>• Interpreting graphs</li> <li>• Simple growth and decay applications</li> </ul>	Explore the connection between algebraic and graphical representations of ... exponentials using digital technology as appropriate (ACMNA239)
Term 3	Weeks 21-25	<b>Univariate Data</b> <ul style="list-style-type: none"> <li>• Boxplots</li> <li>• Histograms</li> <li>• Mean and standard deviation</li> </ul>	Determine quartiles and interquartile range (ACMSP248)  Construct and interpret box plots and use them to compare data sets (ACMSP249)  10A: Calculate and interpret the mean and standard deviation of data and use these to compare data sets (ACMSP278)  Compare shapes of box plots to corresponding histograms and dot plots (ACMSP250)
		<b>Probability</b> <ul style="list-style-type: none"> <li>• Two and three step experiments</li> <li>• Conditional probability</li> </ul>	Describe the results of two and three step chance experiments, both with and without replacements, assign probabilities to outcomes and determine probabilities of events.[Investigate the concept of independence] (ACMSP246)  Use the language of 'if ....then, 'given', 'of', 'knowing that' to investigate conditional statements and identify common mistakes in interpreting such language (ACMSP247)
	Weeks 26-30	<b>Geometry</b> <ul style="list-style-type: none"> <li>• Review of similarity and congruence</li> <li>• Review of quadrilaterals</li> <li>• Simple proofs</li> </ul>	Formulate proofs involving congruent triangles and angle properties (ACMMG243)

Term 4	Weeks 31-35	<b>Bivariate Data</b> <ul style="list-style-type: none"> <li>• Scatterplots</li> <li>• Direction, strength</li> <li>• Line of best fit (use to review linear functions)</li> </ul>	<p>Evaluate statistical reports in the media and other places by linking claims to displays, statistics and representative data (ACMSP253)</p> <p>Use scatter plots to investigate and comment on relationships between two numerical variables (ACMSP251)</p> <p>Investigate and describe bivariate numerical data where the independent variable is time (ACMSP252)</p>
	Weeks 36-40	<b>Non right triangle trigonometry</b> <ul style="list-style-type: none"> <li>• Sine rule</li> <li>• Cosine rule</li> <li>• Area</li> </ul>	<p>10A: Establish the sine, cosine and area rules for any triangle and solve related problems (ACMMG273)</p>

This course outline may be subject to change, any changes will be communicated to students.

### Assessment Outline

[Insert Assessment Outline from Reporting to Parents here](#)