

# Turramurra High School - 2021 - Year 10 5.3/5.2+ - Scope and Sequence

## Term 1 - Tuesday, 28th January to Thursday, 1st April

Week 1		Week 2		Week 3		Week 4		Week 5		Week 6		Week 7		Week 8		Week 9		Week 10			
School holidays	27/1	28/1	29/1	1/2	3/2	8/2	15/2	22/2	1/3	8/3	15/3	22/3	29/3	Good Friday							
	SDD 1	SDD 2	Algebraic Techniques	Swimming Carnival	Topic 1: Algebraic Techniques	Topic 2: Equations and Polynomials					Topic 3: Trigonometry									Topic 4: Rational Indices, Surds and Logarithms	
			MA5.3 1WM, MA5.3		MA5.3 1WM, MA5.3 2WM, MA5.3 3WM, MA5.3 5NA	MA5.3 1WM, MA5.3 2WM, MA5.3 3WM, MA5.3 7NA, MA5.3 10NA					MA5.1 10MG, MA5.2 13MG, MA5.3 1WM, MA5.3 2WM, MA5.3 3WM, MA5.3 15MG									MA5.3 1WM, MA5.3 2WM, MA5.3 3WM, MA5.3 6NA	
			● Uses algebraic techniques to simplify expressions, expand binomial products and factorise quadratic expressions.		● Uses algebraic techniques to simplify expressions, expand binomial products and factorise quadratic expressions.	● Solve complex linear, quadratic, and simple cubic and rearranges literal equations.  ● Investigate the concept of a polynomial and apply the four operations to polynomials and simple graphing					● Review Trigonometry from Year 9; finding the length of sides and size of angles and solving angles of elevation/depression and bearings problems. ● Applies Pythagoras' theorem and right angles-trigonometric relationships to solve problems involving problems involving three dimensions. ● Solves problems in right-angled triangles using the exact sine, cosine and tangent ratios for 30°, 45° and 60°.									● Practice simplifying surds and rationalizing the denominator. ● Use integers and fractions for index notation. ● Convert between surd and index notation. ● Simplify and expand algebraic expressions involving integer and fractional indices Logarithms ● Define logarithms as indices: $y = a^x$ is equivalent to $x = \log_a y$ , and explain why this definition only makes sense when $a > 0, a \neq 1$ ● Manipulates and solves expressions and equations with exponentials using log laws	
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## Term 2 - Monday, 19th April to Friday, 25th June

	Week 1		Week 2		Week 3		Week 4		Week 5		Week 6		Week 7		Week 8		Week 9		Week 10	
19/4			26/4		3/5		10/5		17/5		24/5		31/5		7/6		14/6		21/6	
S. D. D.	Topic 4: Rational Indices, Surds and Logarithms continued			Athletics Carnival	Topic 5: Non- Right Trigonometry							Topic 6: Linear Relationships				Queens Birthday	Topic 7: Non-Linear Relationships			
	MA5.3 1WM, MA5.3 2WM, MA5.3 3WM, MA5.3 6NA				MA5.3 1WM, MA5.3 2WM, MA5.3 3WM, MA5.3 15MG							MA5.3 1WM, MA5.3 2WM, MA5.3 3WM, MA5.3 8NA					MA5.1 7NA, MA5.2 10NA, MA5.3 1WM, MA5.3 2WM, MA5.3 3WM, MA5.3 9NA, MA5.3 10NA			
	<ul style="list-style-type: none"><li>● Practice simplifying surds and rationalizing the denominator.</li><li>● Use integers and fractions for index notation.</li><li>● Convert between surd and index notation.</li><li>● Simplify and expand algebraic expressions involving integer and fractional indices</li></ul> Logarithms <ul style="list-style-type: none"><li>● Define logarithms as indices: <math>y = a^x</math> is equivalent to <math>x = \log_a y</math>, and explain why this definition only makes sense when <math>a &gt; 0, a \neq 1</math></li><li>● Manipulates and solves expressions and equations with exponentials using log laws</li></ul>				<ul style="list-style-type: none"><li>● Use the unit circle to define trigonometric functions, and graph them, with and without the use of digital technologies.</li><li>● Determine the possible acute and/or obtuse angle(s), given a trigonometric ratio.</li><li>● Establish the sine, cosine and area rules for any triangle and solve related problems.</li></ul>							<ul style="list-style-type: none"><li>● Uses formulas to find midpoint, gradient and distance on the Cartesian plane, and applies standard forms of the equation of a straight line.</li><li>● Determine the angle of inclination of a line on the cartesian plane by establishing and using the relationship <math>m = \tan \theta</math>.</li><li>● Solves a variety of problems by applying coordinate geometry formulas.</li></ul>					<ul style="list-style-type: none"><li>● Describe, interpret and sketch parabolas, hyperbolas, circles, cubics, exponential and logarithmic functions and their transformations.</li><li>● Understands and uses interval notation as a way of representing the domain and range.</li><li>● Extension: Apply an understanding of polynomials to sketch a range of curves and describe the features of these curves from their equation.</li></ul>			
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**Term 3 - Monday, 12th July to Friday, 17th September**

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10
12/7		19/7	26/7	2/8	9/8	16/8	23/8	30/8	6/9	13/9
S. D. D.	Topic 7: Non-Linear Relationships <i>continued</i>	Topic 8: Graphs of Physical Phenomena	Topic 9: Simultaneous Eqns	Topic 10: Single Variable Data Analysis (A)	Topic 11: Data Analysis			Topic 12: Probability		Topic 13: Financial Mathematics
	MA5.1 7NA, MA5.2 10NA, MA5.3 1WM, MA5.3 2WM, MA5.3	MA5.3 1WM, MA5.3 2WM, MA5.3 3WM, MA5.3 4NA	MA5.3 1WM, MA5.3 2WM, MA5.3 3WM, MA5.3 7NA	MA5.2 15SP, MA5.3 18SP	MA5.2 1WM, MA5.2 3WM, MA5.2 15SP, MA5.2 16SP, MA5.3 1WM, MA5.3 2WM, MA5.3 19SP			MA5.2 1WM, MA5.2 2WM, MA5.2 3WM, MA5.1 13SP, MA5.2 17SP		MA5.2 1WM, MA5.2 2WM, MA5.2 4NA, MA5.1 5NA
	● Describe, interpret and sketch parabolas, hyperbolas, circles, cubics, exponential and logarithmic functions and their transformations. ● Understands and uses interval notation as a way of representing the domain and range. ● Extension: Apply an understanding of polynomials to sketch a range of curves and describe the features of these curves from their equation.	● Solves problems involving direct proportion; explore the relationship between graphs and equations corresponding to simple rate problems. ● Draws, interprets and analyses graphs of physical phenomena <b>(Note: This topic would suit being done alongside the Linear and non-linear relationships topics)</b>	● Review solving simultaneous equations, using algebraic and graphical techniques. ● Solves simultaneous equations, where one equation is non-linear, using algebraic and graphical techniques, including the use of digital technologies.	● Compare data displays using mean, median and range to describe and interpret numerical data sets in terms of location (centre) and spread. ● Determine quartiles and interquartile range, ● Construct and interpret box plots and use them to compare data sets. ● Compare shapes of box plots to corresponding histograms and dot plots.	● Review constructing and interpreting box plots and using them to compare data sets. ● Investigate and describe bivariate numerical data where the independent variable is time. ● Use scatter plots to investigate and comment on relationships between two numerical variables. ● Use information technologies to investigate bivariate numerical data sets; where appropriate, students use a straight line to describe the relationship, allowing for variation. ● Investigate reports of studies in digital media and elsewhere for information on their planning and implementation.			● Calculates relative frequencies from given or collected data to estimate probabilities of events involving "and" or "or" ● Interpret and use venn diagrams and two way tables. ● List all outcomes for two-step experiments, with and without replacement, using tree diagrams or arrays; assign probabilities to outcomes and determine probabilities for events. ● Describe the results of two- and three-step chance experiments, with and without replacement, assign probabilities to outcomes, and determines probabilities of events; investigate the concept of independence. ● Use the language of 'if .... then', 'given', 'of', 'knowing that' to investigate conditional statements and to identify common mistakes in interpreting such language		● Investigates ways of paying for an item and solves simple interest problems that involve buying on terms ● Connects compound interest to repeated applications of simple interest.and establishes then uses the formula for compound interest. ● Solves problems involving compound interest and depreciation. ● Solves equations arising from substitution into financial maths formulae.
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**Term 4 - Monday, 4th October to Thursday, 17th December**

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