Year 10A Mathematics (Extension)
Learning and Assessment Overview 2021

Semester 1		Semester 2	
MAX 10.01 **Algebra and Linear Modelling,** **Data Representation and Interpretation**	**MAX 10.02** **Three-Dimensional Objects &** **Linear and Non-Linear** **Relationships**	**MAX 10.03** **Algebra and Non-Linear Modelling, Money** **and Financial Mathematics Chance**	**MAX 10.04** **Geometric Reasoning &** **Pythagoras and Trigonometry**
Patterns and Algebra – expand and factorise linear expressions and expand binomial products, simplify algebraic products and quotients using index laws, apply the four operations to algebraic fractions, manipulate expressions and equations to solve problems involving algebraic fractions **Real Numbers –** redefine the number system to include irrational numbers, extend the index laws to include rational number indices, define and operate with surds **Linear and Non-linear Relationships -** formulate and solve problems involving linear equations and inequations, including those derived from formulae **Probability and Statistics –** develop an understanding of statistical measures of centre and spread to describe data sets, analyse data displays (box plots, histograms and scatter plots) to make generalisations, calculate statistical measures of data sets, graphically represent relationships, draw a line of best fit, apply known strategies to compare data, manipulate reports and data displays to identify trends, use statistical measures to analyse data and reports.	**Using Units of Measurement –** recall formulas to calculate area and volume, calculate the surface area and volume of prisms and cylinders, solve problems involving calculating surface area and volume of composite solids. **Linear and Non-Linear Relationships -** represent and solve problems involving simple linear equations, represent and solve problems involving simple linear inequalities and solve simultaneous equations graphically and algebraically. **Money and Financial Mathematics –** recall simple and compound interest formulas, calculate simple and compound interest, connect simple and compound interest, substitute into a formula, connect graphical and algebraic representations of functions, solve financial problems involving compound interest and loans. **Real Numbers –** use the definition of a logarithm to establish and apply the laws of logarithms and solve simple exponential equations	**Algebra and Non-Linear Modelling -** apply the rules of expanding and factorising to quadratics, choose appropriate methods to factorise monic quadratic expressions, choose appropriate methods to factorise monic and non-monic quadratic expressions, formulate and solve real-life problems involving monic and non-monic quadratic equations, extend application of graphing techniques from linear functions to parabolas, circles and exponential functions and transform relations and functions and simplify expressions involving irrational numbers. **Chance -** describe the results of two- and three-step chance experiments, assign and determine probabilities including conditional probability and investigate the concepts of dependence and independence and evaluate media statements and statistical reports.	**Pythagoras' Theorem and Trigonometry –** revise Pythagoras' theorem and solve contextualised problems; apply the trigonometric ratios to solve problems, by substituting into formulas, in two and three dimensions, solve contextualised trigonometric problems including surveying and orienteering, apply Pythagoras' theorem and trigonometry to three dimensional problems, establish and apply the sine and cosine rules and solve related problems, define and graph trigonometric functions and solve simple trigonometric equations. **Real Numbers –** operate with surds (rationalising the denominator) **Geometric Reasoning –** recall angle relationships for straight lines, triangles and quadrilaterals, prove angle relationships using formal proofs for congruency and similarity rules, apply understanding of plane shapes to prove geometric properties, develop generalisations about angle relationships in a circle, apply knowledge of proof to circle-geometry theorem relationships, use the properties of circles to determine and justify unknown quantities relating to circle geometry.
Unit Duration	**Unit Duration**	**Unit Duration**	**Unit Duration**
Weeks 1 - 10 (10 weeks)	Weeks 11 - 20 (10 weeks)	Weeks 21 - 30 (10 weeks)	Weeks 31 - 38 (8 weeks)
Assessment Task/s	**Assessment Task/s**	**Assessment Task/s**	**Assessment Task/s**

MAX 10.01.01 **Test** *Technique:* Examination *Mode:* Short response items *Conditions:* 60 mins		**MAX 10.02.01** **Semester Test** *Technique:* Examination *Mode:* Short response items *Conditions:* 60 mins		**MAX 10.03.01** **Test** *Technique:* Examination *Mode:* Short response items *Conditions:* 60 mins	**MAX 10.03.02** **Assignment** *Technique:* Extended Response *Mode:* Written + Practical *Conditions:* 2 weeks classtime, 400-600 words
					MAX 10.04.01 **Test** *Technique:* Examination *Mode:* Short response items *Conditions:* 60 mins
Issued: n/a *Due:* T1 Week 10		*Issued:* n/a *Due:* T2 Week 10		*Issued:* n/a *Due:* T3 Week 6	*Issued:* T 3 Week 6 *Due:* T 3 Week 10
					Issued: n/a *Due:* T 4 Week 8