Year Level: 10

Subject: Mathematics

Unit	Learning Focus	Victorian Curriculum
	TERM ONE	
Indices	Apply the first six index laws, reviewing and reinforcing previous learning. Apply the rules for negative and fractional indices. Be able to apply a combination of index laws.	factorise algebraic expressions by taking out a common algebraic factor (VC2M10A01) simplify algebraic products and quotients using exponent laws (VC2M10A02) apply the 4 operations to simple algebraic fractions with numerical or single variable denominators (VC2M10A03)
Algebra	Expand and factorise one and two brackets. Apply the operations +, -, x, ÷ to algebraic fractions.	expand binomial products and factorise monic quadratic expressions using a variety of strategies (VC2M10A04)
	TERM TWO	
Linear and Non - Linear Equations	Solve single and multi-step equations, including algebraic fractions. Translate a worded question into an algebraic equation, defining variables. Solve quadratic equations by hand and by technology.	substitute values into formulas to determine an unknown and rearrange formulas to solve for a particular term (VC2M10A05) solve problems involving linear equations, including those derived from formulas (VC2M10A07) solve linear equations involving simple algebraic fractions (VC2M10A12) solve simple quadratic equations using a range of strategies, including null factor law (VC2M10A13) solve linear inequalities and graph their solutions on a number line (VC2M10A08)
Measurement	Apply the Pythagoras' Theorem to calculate the side lengths of both 2-dimensional triangles and 3-dimensional shapes. Interpret a drawing and a worded question to be able to apply the theorem. Apply the appropriate surface area formula for 3-dimensional objects. Apply Heron's Formula for the area of a triangle.	solve problems involving the surface area and volume of composite objects using appropriate units (VC2M10M01)

	Calculate the volume of 3-dimensional objects.	
Pythagoras' Theorem and Trigonometry	Identify when triangles are congruent. Using scale factor to find unknown side lengths. Using Trigonometric ratios to find side lengths and angles in a triangle. Calculate angles of elevation and depression. Use and understand bearings. Worded application problems. Sine and Cosine Rules (Extension students only)	solve practical problems by applying Pythagoras' theorem and trigonometry to right-angled triangles, including problems involving direction and angles of elevation and depression (VC2M10M03) apply Pythagoras' theorem and trigonometry to solving three-dimensional problems in right-angled triangles (VC2M10ASP05)
TERM THREE		
Graphing	Sketch linear graphs from a table of values. Calculate the gradient of a line. Sketch linear graphs using the gradient – intercept method. Sketch linear graphs using the x and y intercept method. Determine equations of lines. Define and use gradients to determine parallel and perpendicular lines. Non-Linear Relationships: Quadratics (Extension students only)	solve problems involving gradients of parallel and perpendicular lines (VC2M10A10) explore the connection between algebraic and graphical representations of relations such as simple quadratic, reciprocal, circle and exponential, using digital tools as appropriate (VC2M10A11)
Simultaneous Equations	Graphical solutions of simultaneous equations. Solving simultaneous equations using both substitution and elimination methods.	solve simultaneous linear equations, using algebraic and graphical techniques including using digital tools (VC2M10A09)

	Define and solve linear inequalities.	
TERM FOUR		
Statistics: Univariate and Bivariate Data	Define and understand the difference between the 3 types of Measures of Centre – mean, median and mode. Be able to calculate the mean, median and mode from a set of data, including data in a frequency table, grouped data and a stem and leaf plot. Understand the measures of spread: range and Interquartile range (IQR). Be able to draw a box and whisker plots using 5-number summaries. Be able to analyse a box and whisker plot and compare data sets in a parallel plot. Construct scatter plots from data and draw conclusions from comparisons	compare data distributions for continuous numerical variables using quartiles and interquartile range and appropriate data displays including boxplots, histograms and dot plots; discuss the shapes of these distributions in terms of centre, spread, shape and outliers in the context of the data (VC2M10ST01) construct scatterplots and consider a line of good fit; comment on the association between the 2 numerical variables in terms of strength, direction and linearity (VC2M10ST02) analyse claims, inferences and conclusions of statistical reports in the media and other places, by linking claims to displays, statistics and representative data, including ethical considerations and identification of potential sources of bias (VC2M10ST04)
Probability	Define sample space, mutually exclusive, Complementary, odds. Draw and analyse Venn and Tree diagrams. Differentiate between dependent and independent events. Calculate conditional probability.	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 (VC2M10P02) use the language of 'if … then …', 'given', 'of' and 'knowing that' to investigate conditional statements and identify common mistakes in interpreting such language, and describe and interpret situations involving conditional probability; design and conduct simulations using digital tools to model conditional probability and interpret results (VC2M10P01)