Australian Curriculum Mathematics Alignment Document_V8.2		Year 10
Content Descriptors	**Elaborations**	**Math-U-See links**
Number and Algebra		
Money and financial mathematics		
Connect the compound interest formula to repeated applications of simple interest using appropriate digital technologies (ACMNA229)	• working with authentic information, data and interest rates to calculate compound interest and solve related problems	
Patterns and algebra		
Factorise algebraic expressions by taking out a common algebraic factor (ACMNA230)	• using the distributive law and the index laws to factorise algebraic expressions • understanding the relationship between factorisation and expansion	Honours Algebra 1, lesson 26 Algebra 2, lessons 1, 2, 5
Simplify algebraic products and quotients using index laws (ACMNA231)	• applying knowledge of index laws to algebraic terms, and simplifying algebraic expressions using both positive and negative integral indices	Algebra 2, lessons 2, 3, 15
Apply the four operations to simple algebraic fractions with numerical denominators (ACMNA232)	• expressing the sum and difference of algebraic fractions with a common denominator • using the index laws to simplify products and quotients of algebraic fractions	Algebra 2, lesson 5 (extension)
Expand binomial products and factorise monic quadratic expressions using a variety of strategies (ACMNA233)	• exploring the method of completing the square to factorise quadratic expressions and solve quadratic equations • identifying and using common factors, including binomial expressions, to factorise algebraic expressions using the technique of grouping in pairs • using the identities for perfect squares and the difference of squares to factorise quadratic expressions	Algebra 2, lessons 5, 11, 12 Honours Algebra 2, lesson 17
Substitute values into formulas to determine an unknown (ACMNA234)	• solving simple equations arising from formulas	Algebra 2, lesson 5 Honours Algebra 2, lesson 20
Linear and non-linear relationships		
Solve problems involving linear equations, including those derived from formulas (ACMNA235)	• representing word problems with simple linear equations and solving them to answer questions	Algebra 2, lessons 18, 19
Solve linear inequalities and graph their solutions on a number line (ACMNA236)	• representing word problems with simple linear inequalities and solving them to answer questions	Honours Algebra 1, lesson 12 Honours Algebra 2, lessons 27, 28
Solve linear simultaneous equations, using algebraic and graphical techniques, including using digital technology (ACMNA237)	• associating the solution of simultaneous equations with the coordinates of the intersection of their corresponding graphs	Honours Algebra 1, lessons 14, 17 Algebra 2, lessons 28, 29, 30 (extension) Honours Algebra 2, lessons 24, 34

Solve problems involving parallel and perpendicular lines (ACMNA238)	• solving problems using the fact that parallel lines have the same gradient and conversely that if two lines have the same gradient then they are parallel • solving problems using the fact that the product of the gradients of perpendicular lines is –1 and conversely that if the product of the gradients of two lines is –1 then they are perpendicular	Algebra 2, lessons 20, 21
Explore the connection between algebraic and graphical representations of relations such as simple quadratics, circles and exponentials using digital technology as appropriate (ACMNA239)	• sketching graphs of parabolas, and circles • applying translations, reflections and stretches to parabolas and circles • sketching the graphs of exponential functions using transformations	Honours Algebra 1, lessons 19, 20
Solve linear equations involving simple algebraic fractions (ACMNA240)	• solving a wide range of linear equations, including those involving one or two simple algebraic fractions, and checking solutions by substitution • representing word problems, including those involving fractions, as equations and solving them to answer the question	Honours Algebra 1, lesson 27
Solve simple quadratic equations using a range of strategies (ACMNA241)	• using a variety of techniques to solve quadratic equations, including grouping, completing the square, the quadratic formula and choosing two integers with the required product and sum	Honours Algebra 1, lessons 28, 34 Honours Algebra 2, lessons 13, 25, 26, 30
Measurement and Geometry		
Using units of measurement		
Solve problems involving surface area and volume for a range of prisms, cylinders and composite solids (ACMMG242)	• investigating and determining the volumes and surface areas of composite solids by considering the individual solids from which they are constructed	Geometry Honours, lesson 19
Geometric reasoning	**Geometry lessons 1 and 2 are good for review and setting the scene to develop geometric reasoning. Honours geometry lesson 1, 11, 22 support the development of logical thinking and reasoning**	
Formulate proofs involving congruent triangles and angle properties (ACMMG243)	• applying an understanding of relationships to deduce properties of geometric figures (for example the base angles of an isosceles triangle are equal)	Geometry, lesson 22 Geometry Honours, lessons 22. 23
Apply logical reasoning, including the use of congruence and similarity, to proofs and numerical exercises involving plane shapes (ACMMG244)	• distinguishing between a practical demonstration and a proof (for example demonstrating triangles are congruent by placing them on top of each other, as compared to using congruence tests to establish that triangles are congruent) • Performing a sequence of steps to determine an unknown angle giving a justification in moving from one step to the next. • communicating a proof using a sequence of logically connected statements	Geometry Honours, lessons 25, 26, 30

Pythagoras and trigonometry		
Solve right-angled triangle problems including those involving direction and angles of elevation and depression (ACMMG245)	• applying Pythagoras' Theorem and trigonometry to problems in surveying and design	(Review – Pre-Calculus , lessons 1 – 5) Pre-Calculus, lesson 6 Geometry Honours, lessons 18, 21
Statistics and Probability		
Chance		
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)	• recognising that an event can be dependent on another event and that this will affect the way its probability is calculated	
Use the language of 'if ....then, 'given', 'of', 'knowing that' to investigate conditional statements and identify common mistakes in interpreting such language (ACMSP247)	• using two-way tables and Venn diagrams to understand conditional statements • using arrays and tree diagrams to determine probabilities	
Data representation and interpretation		
Determine quartiles and interquartile range(ACMSP248)	finding the five-number summary (minimum and maximum values, median and upper and lower quartiles) and using its graphical representation, the box plot, as tools for both numerically and visually comparing the centre and spread of data sets	
Construct and interpret box plots and use them to compare data sets (ACMSP249)	• understanding that box plots are an efficient and common way of representing and summarising data and can facilitate comparisons between data sets • using parallel box plots to compare data about the age distribution of Aboriginal and Torres Strait Islander people with that of the Australian population as a whole	
Compare shapes of box plots to corresponding histograms and dot plots (ACMSP250)	• investigating data in different ways to make comparisons and draw conclusions	
Use scatter plots to investigate and comment on relationships between two numerical variables (ACMSP251)	• using authentic data to construct scatter plots, make comparisons and draw conclusions	
Investigate and describe bivariate numerical data where the independent variable is time (ACMSP252)	• investigating biodiversity changes in Australia since European occupation • constructing and interpreting data displays representing bivariate data over time	
Evaluate statistical reports in the media and other places by linking claims to displays, statistics and representative data (ACMSP253)	• investigating the use of statistics in reports regarding the growth of Australia's trade with other countries of the Asia region	

	• evaluating statistical reports comparing the life expectancy of Aboriginal and Torres Strait Islander people with that of the Australian population as a whole	