Australian Curriculum Mathematics Alignment Document_V8.2		Year 10A
Content Descriptors	**Elaborations**	**Math-U-See links**
Number and Algebra		
Real numbers		
Define rational and irrational numbers and perform operations with surds and fractional indices (ACMNA264)	• understanding that the real number system includes irrational numbers • extending the index laws to rational number indices • performing the four operations with surds	Algebra 2, lessons 4, 6 Honours Algebra 2, lesson 7
Use the definition of a logarithm to establish and apply the laws of logarithms (ACMNA265)	• investigating the relationship between exponential and logarithmic expressions • simplifying expressions using the logarithm laws	Pre-Calculus, lessons 21, 22 Pre-Calculus Honours, lesson 22
Patterns and algebra		
Investigate the concept of a polynomial and apply the factor and remainder theorems to solve problems (ACMNA266)	• investigating the relationship between algebraic long division and the factor and remainder theorems	Algebra 2, lesson 9 (Background, Pre-Calculus Honours, lessons 4, 5) Pre-Calculus Honours, lessons 14-1-2-3, lesson 15, lessons 17-1-2
Linear and non-linear relationships		
Describe, interpret and sketch parabolas, hyperbolas, circles and exponential functions and their transformations (ACMNA267)	• applying transformations, including translations, reflections in the axes and stretches to help graph parabolas, rectangular hyperbolas, circles and exponential functions	(Revision, Algebra 2, lesson 26) Algebra 2, lessons 23, 24, 25 Pre-Calculus Honours, lessons 19-1, 20-1-2, lesson 25 (graphic calculator)
Solve simple exponential equations (ACMNA270)	• investigating exponential equations derived from authentic mathematical models based on population growth	Algebra 2 Honours, lessons 21, 22 Pre-Calculus, lessons 28,29
Apply understanding of polynomials to sketch a range of curves and describe the features of these curves from their equation (ACMNA268)	• investigating the features of graphs of polynomials including axes intercepts and the effect of repeated factors	Algebra 2, lesson 27
Factorise monic and non-monic quadratic expressions and solve a wide range of quadratic equations derived from a variety of contexts (ACMNA269)	• writing quadratic equations that represent practical problems	Algebra 2, lessons 12, 13, 24, 25 Algebra 2 Honours, lessons 25, 26
Measurement and Geometry		
Using units of measurement		
Solve problems involving surface area and volume of right pyramids, right cones, spheres and related composite solids (ACMMG271)	• using formulas to solve problems • using authentic situations to apply knowledge and understanding of surface area and volume	Geometry, lessons 15, 16 Geometry Honours, lessons 17, 19

Geometric reasoning		
Prove and apply angle and chord properties of circles (ACMMG272)	• performing a sequence of steps to determine an unknown angle or length in a diagram involving a circle, or circles, giving a justification in moving from one step to the next • communicating a proof using a logical sequence of statements • proving results involving chords of circles	Geometry Honours, lessons 27, 28
Pythagoras and trigonometry		
Establish the sine, cosine and area rules for any triangle and solve related problems (ACMMG273)	• applying knowledge of sine, cosine and area rules to authentic problems such as those involving surveying and design	Pre-Calculus, lessons 11, 12, 13, 14 Pre-Calculus Honours, lessons 11, 13
Use the unit circle to define trigonometric functions, and graph them with and without the use of digital technologies (ACMMG274)	• establishing the symmetrical properties of trigonometric functions • investigating angles of any magnitude • understanding that trigonometric functions are periodic and that this can be used to describe motion	Geometry, lesson 30 Pre-Calculus, lessons 7, 8, 15, 23, 24 Pre-Calculus Honours, lessons 12-1-2, 24
Solve simple trigonometric equations (ACMMG275)	• using periodicity and symmetry to solve equations	Pre-Calculus, lessons 9, 10
Apply Pythagoras' Theorem and trigonometry to solving three-dimensional problems in right-angled triangles (ACMMG276)	• investigating the applications of Pythagoras' theorem in authentic problems	
Statistics and Probability		
Chance		
Investigate reports of studies in digital media and elsewhere for information on their planning and implementation (ACMSP277)	• evaluating the appropriateness of sampling methods in reports where statements about a population are based on a sample • evaluating whether graphs in a report could mislead, and whether graphs and numerical information support the claims	
Data representation and interpretation		
Calculate and interpret the mean and standard deviation of data and use these to compare datasets (ACMSP278)	• using the standard deviation to describe the spread of a set of data • using the mean and standard deviation to compare numerical data set	
Use information technologies to investigate bivariate numerical data sets. Where appropriate use a straight line to describe the relationship allowing for variation (ACMSP279)	• investigating different techniques for finding a 'line of best fit'	