Australian Curriculum Mathematics Alignment Document_V8.2		Year 7
Content Descriptors	**Elaborations**	**Math-U-See links**
Number and Algebra		
Number and Place Value	**Honours pre-algebra lesson 30 – developing reasoning and problem solving** **Honours algebra 1 lesson 1, 2, 3 – developing reasoning and problem solving**	
Investigate index notation and represent whole numbers as products of powers of prime numbers S(ACMNA149)	• defining and comparing prime and composite numbers and explaining the difference between them • applying knowledge of factors to strategies for expressing whole numbers as products of powers of prime factors, such as repeated division by prime factors or creating factor trees • solving problems involving lowest common multiples and greatest common divisors (highest common factors) for pairs of whole numbers by comparing their prime factorisation	Epsilon Lesson 13 Pre-algebra lesson 5, 6, 21, 22
Investigate and use square roots of perfect square numbers (ACMNA150)	• investigating square numbers such as 25 and 36 and developing square-root notation • investigating between which two whole numbers a square root lies	Pre-algebra lesson 8 Algebra 1 lesson 17
Apply the associative, communitive and distributive laws to aid mental and written computation (ACMNA151)	• understanding that arithmetic laws are powerful ways of describing and simplifying calculations	Pre-algebra lesson 12, 13 Algebra 1 lesson 1, 4
Compare, order, add and subtract integers (ACMNA280)		Pre-algebra lesson 1, 2, 4 (number lines)
Real numbers		
Compare fractions using equivalence. Locate and represent positive and negative fractions and mixed numbers on a number line (ACMNA152)	• exploring equivalence among families of fractions by using a fraction wall or a number line (for example by using a fraction wall to show that 2/3 is the same as 4/6 and 6/9)	Epsilon Lesson 16 Algebra 1 lesson 5
Solve problems involving addition and subtraction of fractions, including those with unrelated denominators (ACMNA153)	• exploring and developing efficient strategies to solve additive problems involving fractions (for example by using fraction walls or rectangular arrays with dimensions equal to the denominators)	Epsilon Lesson 5, 6, 8, 17, 18, 19, 20, 21, 22 *Honours pre-algebra lesson 4*
Multiply and divide fractions and decimals using efficient written strategies and digital technologies (ACMNA154)	• investigating multiplication of fractions and decimals, using strategies including patterning and multiplication as repeated addition, with both concrete materials and digital technologies, and identifying the processes for division as the inverse of multiplication	Epsilon Lesson 9, 10, 23, 24, 26, 28, 30
Express one quantity as a fraction of another, with and without the use of digital technologies (ACMNA155)	• using authentic examples for the quantities to be expressed and understanding the reasons for the calculations	Epsilon Lesson 9, 10, 23, 24, 26, 28, 30
Round decimals to a specified number of decimal places (ACMNA156)	• using rounding to estimate the results of calculations with whole numbers and decimals, and understanding the conventions for rounding	*Honours pre-algebra lesson 3, 28*
Connect fractions, decimals and percentages and carry out simple conversions (ACMNA157)	• justifying choices of written, mental or calculator strategies for solving specific problems including those involving large numbers	

	• understanding that quantities can be represented by different number types and calculated using various operations, and that choices need to be made about each • calculating the percentage of the total local municipal area set aside for parkland, manufacturing, retail and residential dwellings to compare land use	
Find percentages of quantities and express one quantity as a percentage of another, with and without digital technologies (ACMNA158)	• using authentic problems to express quantities as percentages of other amounts	Pre-algebra lesson 29 *Honours pre-algebra lesson 26, 28* *Honours algebra 2 lesson 14*
Recognise and solve problems involving simple ratios (ACMNA173)	• understanding that rate and ratio problems can be solved using fractions or percentages and choosing the most efficient form to solve a particular problem	Pre-algebra lesson 19 *Honours pre-algebra lesson 1, 2*
Money and financial mathematics		
Investigate and calculate 'best buys', with and without digital technologies (ACMNA174)	• applying the unitary method to identify ‘best buys’ situations, such as comparing the cost per 100g	
Patterns and algebra		
Introduce the concept of variables as a way of representing numbers using letters (ACMNA175)	• understanding that arithmetic laws are powerful ways of describing and simplifying calculations and that using these laws leads to the generality of algebra	Epsilon Lesson 24, 26, 28,30 Gamma lesson 8 Pre-algebra lesson 23 *Honours pre-algebra lesson 8, 9, 14, 18* Algebra 1 lesson 16
Create algebraic expressions and evaluate them by substituting a given value for each variable (ACMNA176)	• using authentic formulas to perform substitutions	Gamma lesson 8 Pre-algebra lesson 9 *Honours pre-algebra lesson 6, 7, 11, 12, 14, 18* *Honours algebra 2 lesson 5*
Extend and apply the laws and properties of arithmetic to algebraic terms and expressions (ACMNA177)	• identifying order of operations in contextualised problems, preserving the order by inserting brackets in numerical expressions, then recognising how order is preserved by convention • moving fluently between algebraic and word representations as descriptions of the same situation	Pre-algebra lesson 9, 12, 13, 23 *Honours pre-algebra lesson 5, 8, 9, 12, 18* Algebra 1 lesson 3

Linear and non-linear relationships		
Given coordinates, plot points on the Cartesian plane, and find coordinates for a given point (ACMNA178)	• plotting points from a table of integer values and recognising simple patterns, such as points that lie on a straight line	Algebra 1 lesson 5-4 *Honours algebra 1 lesson 5, 6*
Solve simple linear equations (ACMNA179)	• solving equations using concrete materials, such as the balance model, and explain the need to do the same thing to each side of the equation using substitution to check solutions • investigating a range of strategies to solve equations	
Investigate, interpret and analyse graphs from authentic data (ACMNA180)	• using travel graphs to investigate and compare the distance travelled to and from school • interpreting features of travel graphs such as the slope of lines and the meaning of horizontal lines • using graphs of evaporation rates to explore water storage	*Honours pre-algebra lesson 2* *Honours algebra 1 lesson 4*

Measurement and Geometry		
Using units of measurement		
Establish the formulas for areas of rectangles, triangles and parallelograms, and use these in problem-solving (ACMMG159)	• building on the understanding of the area of rectangles to develop formulas for the area of triangles • establishing that the area of a triangle is half the area of an appropriate rectangle • using area formulas for rectangles and triangles to solve problems involving areas of surfaces	Delta lesson 9 Geometry lesson 9 *Honours geometry lesson 9, 13* *Honours pre-algebra lesson 3, 4, 5, 12*
Calculate volumes of rectangular prisms (ACMMG160)	• investigating volumes of cubes and rectangular prisms and establishing and using the formula $V = l \times b \times h$ • understanding and using cubic units when interpreting and finding volumes of cubes and rectangular prisms	Delta lesson 26 Geometry lesson 14 (not cylinders) *Honours pre-algebra lesson 29*
Shape		
Draw different views of prisms and solids formed from combinations of prisms (ACMMG161)	• using aerial views of buildings and other 3-D structures to visualise the structure of the building or prism	*Honours pre-algebra lesson 16*
Location and transformation		
Describe translations, reflections in an axis and rotations of multiples of 90° on the Cartesian plane using coordinates. Identify line and rotational symmetries (ACMMG181)	• describing patterns and investigating different ways to produce the same transformation such as using two successive reflections to provide the same result as a translation • experimenting with, creating and re-creating patterns using combinations of reflections and rotations using digital technologies	
Geometric reasoning	**Geometry lessons 1 and 2 are good for review and setting the scene for develop geometric reasoning. Honours geometry lesson 1, 11, 22 support the development of logical thinking and reasoning**	
Classify triangles according to their side and angle properties and describe quadrilaterals (ACMMG165)	• identifying side and angle properties of scalene, isosceles, right-angled and obtuse-angled triangles • describing squares, rectangles, rhombuses, parallelograms, kites and trapeziums	Delta lesson 7, 13 Geometry lesson 10, 11 *Honours geometry lesson 25, 26*
Demonstrate that the angle sum of a triangle is 180° and use this to find the angle sum of a quadrilateral (ACMMG166)	• using concrete materials and digital technologies to investigate the angle sum of a triangle and quadrilateral	Geometry lesson 8, 10, 11 *Honours geometry lesson 25, 26*
Identify corresponding, alternate and co-interior angles when two straight lines are crossed by a transversal (ACMMG163)	• defining and classifying pairs of angles as complementary, supplementary, adjacent and vertically opposite	Geometry lesson 6, 7 *Honours geometry lesson 7, 8, 24*
Investigate conditions for two lines to be parallel and solve simple numerical problems using reasoning (ACMMG164)	• constructing parallel and perpendicular lines using their properties, a pair of compasses and a ruler, and dynamic geometry software • defining and identifying the relationships between alternate, corresponding and co-interior angles for a pair of parallel lines cut by a transversal	Delta lesson 5 Geometry lesson 5, 6 *Honours geometry lesson 24, 25, 26*

Statistics and Probability		
Chance		
Construct sample spaces for single-step experiments with equally likely outcomes (ACMSP167)	• discussing the meaning of probability terminology (for example probability, sample space, favourable outcomes, trial, events and experiments) • distinguishing between equally likely outcomes and outcomes that are not equally likely	Geometry lesson 2 (set notation)
Assign probabilities to the outcomes of events and determine probabilities for events (ACMSP168)	• expressing probabilities as decimals, fractions and percentages	
Data representation and interpretation		
Identify and investigate issues involving numerical data collected from primary and secondary sources (ACMSP169)	• obtaining secondary data from newspapers, the Internet and the Australian Bureau of Statistics • investigating secondary data relating to the distribution and use of non-renewable resources around the world	Geometry lesson 2, 3 *Honours algebra 1 lesson 4*
Construct and compare a range of data displays including stem-and-leaf plots and dot plots (ACMSP170)	• understanding that some data representations are more appropriate than others for particular data sets, and answering questions about those data sets • using ordered stem-and-leaf plots to record and display numerical data collected in a class investigation, such as constructing a class plot of height in centimetres on a shared stem-and-leaf plot for which the stems 12, 13, 14, 15, 16 and 17 have been produced	*Honours algebra 1 lesson 9*
Calculate mean, median, mode and range for sets of data. Interpret these statistics in the context of data (ACMSP171)	• understanding that summarising data by calculating measures of centre and spread can help make sense of the data	Delta lesson 11 *Honours pre-algebra lesson 27*
Describe and interpret data displays using median, mean and range (ACMSP172)	• using mean and median to compare data sets and explaining how outliers may affect the comparison • locating mean, median and range on graphs and connecting them to real life	*Honours pre-algebra lesson 27*