

Scope and Sequence: Australian Curriculum v9 Mathematics by Haese Mathematics (7-10)

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This document summarises how our **Mathematics for Australia (second edition)** books align with version 9 of the Australian Curriculum.

Green text indicates where book material does *not* align with version 9 of the Australian Curriculum. **Red** text indicates optional material for post-Year 10 Mathematics pathways and material from the **Mathematics for Australia 10A book**.

Content description	Mathematics for Australia 7	Mathematics for Australia 8	Mathematics for Australia 9	Mathematics for Australia 10/10A
Number				
<p>Year 7</p> <ul style="list-style-type: none"> Describe the relationship between perfect square numbers and square roots, and use squares of numbers and square roots of perfect square numbers to solve problems. (AC9M7N01) <p>Year 8</p> <ul style="list-style-type: none"> Recognise irrational numbers in applied contexts, including square roots and π. (AC9M8N01) <p>Year 9</p> <ul style="list-style-type: none"> Recognise that the real number system includes the rational numbers and the irrational numbers, and solve problems involving real numbers using digital tools. (AC9M9N01) 	2A: Square numbers	3O: Irrational numbers 11C: Circumference	7D: Linear inequalities 7E: Solving linear inequalities 9A: Square roots 9B: Properties of radicals 9C: Simplest surd form 9D: Cube and higher roots 9E: Power equations 10A: Pythagoras' theorem 10C: Problem solving 10D: The converse of Pythagoras' theorem	
<p>Year 7</p> <ul style="list-style-type: none"> Represent natural numbers as products of powers of prime numbers using exponent notation. (AC9M7N02) <p>Year 8</p> <ul style="list-style-type: none"> Establish and apply the exponent laws with positive integer exponents and the zero-exponent, using exponent notation with numbers. (AC9M8N02) 	1D: Index notation 2A: Square numbers 2B: Cubic numbers 2G: Prime and composite numbers 2H: Highest common factor 2J: Lowest common multiple	1B: Index notation 6A: Index laws 6B: Expansion laws 6C: The zero index law 6D: The negative index law		
<p>Year 7</p> <ul style="list-style-type: none"> Represent natural numbers in expanded notation using place value and powers of 10. (AC9M7N03) 	1A: Place value 1D: Index notation			
<p>Year 7</p> <ul style="list-style-type: none"> Find equivalent representations of rational numbers and represent rational numbers on a number line. (AC9M7N04) 	5A: The number line 6D: Fractions on number line 6E: Equal fractions 6F: Lowest terms 6G: Cancelling common factors 6I: Comparing fractions 7B: Decimal numbers on a number line 7C: Ordering decimal numbers 7E: Converting decimals to fractions 7F: Converting fractions to decimals 9B: Converting percentages into decimals and fractions 9C: Converting decimals and fractions into percentages			

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<p>Year 7</p> <ul style="list-style-type: none"> Round decimals to a given accuracy appropriate to the context and use appropriate rounding and estimation to check the reasonableness of solutions. (AC9M7N05) <p>Year 8</p> <ul style="list-style-type: none"> Recognise terminating and recurring decimals, using digital tools as appropriate. (AC9M8N03) <p>Year 10</p> <ul style="list-style-type: none"> Recognise the effect of using approximations of real numbers in repeated calculations and compare the results when using exact representations. (AC9M10N01) 	<p>4E: Estimation</p> <p>7D: Rounding decimal numbers</p>	<p>3N: Rational numbers</p>		
<p>Year 7</p> <ul style="list-style-type: none"> Use the 4 operations with positive rational numbers including fractions, decimals and percentages to solve problems using efficient calculation strategies. (AC9M7N06) <p>Year 8</p> <ul style="list-style-type: none"> Use the 4 operations with integers and with rational numbers, choosing and using efficient strategies and digital tools where appropriate. (AC9M8N04) 	<p>1C: Operations</p> <p>4A: Addition strategies 4B: Subtractions strategies 4C: Multiplication strategies 4D: Division strategies 4F: Order of operations 4G: Problem solving</p> <p>6J: Adding and subtracting fractions 6K: Multiplying a fraction by a whole number 6L: Multiplying fractions 6N: Dividing fractions</p> <p>7G: Adding and subtracting decimal numbers 7J: Multiplying decimal numbers 7K: Dividing decimal numbers</p> <p>9E: Finding a percentage of a quantity</p>	<p>1A: Operations with negative numbers 1G: Order of operations</p> <p>3C: Adding and subtracting fractions 3D: Multiplying fractions 3E: Dividing fractions 3H: Adding and subtracting decimal numbers 3J: Multiplying decimal numbers 3K: Dividing decimal numbers</p>		
<p>Year 7</p> <ul style="list-style-type: none"> Compare, order and solve problems involving addition and subtraction of integers. (AC9M7N07) 	<p>5A: The number line 5B: Words indicating positive and negative 5C: Addition and subtractions with negative numbers 5D: Adding and subtracting negative numbers</p>			
<p>Year 7</p> <ul style="list-style-type: none"> Recognise, represent and solve problems involving ratios. (AC9M7N08) 	<p>16A: Ratio 16B: Ratio and fractions 16E: Proportions 16F: Using ratios to divide quantities</p>			

Content description	Mathematics for Australia 7	Mathematics for Australia 8	Mathematics for Australia 9	Mathematics for Australia 10/10A
<p>Year 7</p> <ul style="list-style-type: none"> Use mathematical modelling to solve practical problems, involving rational numbers and percentages, including financial contexts; formulate problems, choosing representations and efficient calculation strategies, using digital tools as appropriate; interpret and communicate solutions in terms of the situation, justifying choices made about the representation. (AC9M7N09) <p>Year 8</p> <ul style="list-style-type: none"> Use mathematical modelling to solve practical problems involving rational numbers and percentages, including financial contexts; formulate problems, choosing efficient calculation strategies and using digital tools where appropriate; interpret and communicate solutions in terms of the situation, reviewing the appropriateness of the model. (AC9M8N05) 	<p>5C: Addition and subtractions with negative numbers 5D: Adding and subtracting negative numbers 5H: Calculator use</p> <p>9E: Finding a percentage of a quantity 9F: Percentage increase or decrease</p>	<p>1H: Problem solving</p> <p>5C: Expressing one quantity as a percentage of another 5D: Finding a percentage of a quantity 5E: Percentage increase or decrease 5F: Finding a percentage change 5G: Profit and loss 5H: Discount 5I: Goods and services tax</p>		
Algebra				
<p>Year 7</p> <ul style="list-style-type: none"> Recognise and use variables to represent everyday formulas algebraically and substitute values into formulas to determine an unknown. (AC9M7A01) 	<p>8H: Algebraic substitution 8I: Formulae</p>			
<p>Year 7</p> <ul style="list-style-type: none"> Formulate algebraic expressions using constants, variables, operations and brackets. (AC9M7A02) 	<p>8A: Building expressions 8B: Product notation 8C: Index notation 8F: Equal expressions 8G: Collecting like terms</p> <p>10I: Writing equations 10J: Word problems</p>			
<p>Year 9</p> <ul style="list-style-type: none"> Apply the exponent laws to numerical expressions with integer exponents and extend to variables. (AC9M9A01) 			<p>1A: Exponent notation</p> <p>3A: Exponent laws 3B: Zero and negative exponents 3D: International system (SI) units</p>	

Content description	Mathematics for Australia 7	Mathematics for Australia 8	Mathematics for Australia 9	Mathematics for Australia 10/10A
<p>Year 8</p> <ul style="list-style-type: none"> • Create, expand, factorise, rearrange and simplify linear expressions, applying the associative, commutative, identity, distributive and inverse properties. (AC9M8A01) <p>Year 9</p> <ul style="list-style-type: none"> • Simplify algebraic expressions, expand binomial products and factorise monic quadratic expressions. (AC9M9A02) <p>Year 10</p> <ul style="list-style-type: none"> • Expand, factorise and simplify expressions and solve equations algebraically, applying exponent laws involving products, quotients and powers of variables, and the distributive property. (AC9M10A01) • Operations on numbers involving fractional exponents and surds. (optional) 		<p>4G: Collecting like terms</p> <p>6E: Distributive law 6F: Factorisation</p>	<p>2E: Collecting like terms 2F: Algebraic products 2G: Algebraic quotients</p> <p>5B: The product $(a + b)(c + d)$ 5C: The difference between two squares 5D: The perfect squares expansion 5E: Further expansion</p> <p>15B: Difference between two squares factorisation 15C: Perfect squares factorisation 15D: Quadratic trinomials 15E: Miscellaneous factorisation</p> <p>16B: Simplifying algebraic fractions 16C: Multiplying algebraic fractions 16D: Dividing algebraic fractions 16E: Adding and subtracting algebraic fractions</p>	<p>1A: Exponent laws 1B: Rational exponents</p> <p>2A: The distributive law 2B: The product $(a + b)(c + d)$ 2C: The difference between two squares 2D: The perfect squares expansion 2E: Further expansion 2F: The binomial expansion</p> <p>3A: Common factors 3B: Difference between two squares factorisation 3C: Perfect squares factorisation 3D: Expressions with four terms 3E: Factorising $x^2 + bx + c$ 3F: Factorising $ax^2 + bx + c, a \neq 1$ 3F (3G): Miscellaneous factorisation</p> <p>5B: Simplifying algebraic fractions 5C: Multiplying algebraic fractions 5D: Dividing algebraic fractions 5E: Adding and subtracting algebraic fractions</p> <p>6A: Linear equations 6B: Equations with fractions 6C: Problem solving</p> <p>8D: Power equations 8E: Operations with radicals 8F: Division with surds</p> <p>13A: Equations of the form $x^2 = k$ 13B: The null factor law 13C: Solving by factorisation 13D: Completing the square 13E: The quadratic formula 13F: Problem solving</p>
<p>Year 9</p> <ul style="list-style-type: none"> • Find the gradient of a line segment, the midpoint of the line interval and the distance between 2 distinct points on the Cartesian plane. (AC9M9A03) 			<p>17A: The distance between two points 17B: Midpoints 17C: Gradient 17D: Parallel and perpendicular lines 17E: Using coordinate geometry</p>	

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<p>Year 7</p> <ul style="list-style-type: none"> Solve one-variable linear equations with natural number solutions; verify the solution by substitution. (AC9M7A03) <p>Year 8</p> <ul style="list-style-type: none"> Graph linear relations on the Cartesian plane using digital tools where appropriate; solve linear equations and one-variable inequalities using graphical and algebraic techniques; verify solutions by substitution. (AC9M8A02) <p>Year 9</p> <ul style="list-style-type: none"> Identify and graph quadratic functions, solve quadratic equations graphically and numerically, and solve monic quadratic equations with integer roots algebraically, using graphing software and digital tools as appropriate. (AC9M9A04) <p>Year 10</p> <ul style="list-style-type: none"> Solve linear inequalities and simultaneous linear equations in 2 variables; interpret solutions graphically and communicate solutions in terms of the situation. (AC9M10A02) Simplification of combinations of linear expressions with rational coefficients and the solution of related equations. (optional) 	10A: Equations 10B: Solving by inspection 10C: Maintaining balance 10D: Inverse operations 10E: Algebraic flowcharts 10F: Solving equations 10G: Equations with a repeated variable 10H: Geometry problems 10I: Writing equations 10J: Word problems	7A: Solutions of an equation 7B: Maintaining balance 7C: Inverse operations 7D: Algebraic flowcharts 7E: Solving equations 7F: Equations with a repeated unknown 14A: The Cartesian plane 14B: Straight lines 14C: Gradient 14D: Axes intercepts 14E: Graphing a line of the form $y = mx + c$ From Mathematics for Australia 9 7D: Linear inequalities 7E: Solving linear inequalities	20A: Quadratic equations 20B: Equations of the form $x^2 = k$ 20C: The null factor law 20D: Solving by factorisation 20E: Problem solving 20F: Completing the square 21A: Quadratic functions 21B: Graphs of quadratic functions 21C: Using transformations to graph quadratics 21D: Axes intercepts 21E: Using axes intercepts to graph quadratics 21F: Projectile motion	6D: Linear inequalities 6E: Problem solving with inequalities 15D (15E): Linear inequalities in the Cartesian plane 16A: Graphical solution 16B: Solution by substitution 16C: Solution by elimination 16D: Problem solving 5E: Adding and subtracting algebraic fractions 6B: Equations with fractions
<p>Year 10</p> <ul style="list-style-type: none"> Recognise the connection between algebraic and graphical representations of exponential relations and solve related exponential equations, using digital tools where appropriate. (AC9M10A03) The inverse relationship between exponential functions and logarithmic functions and the solution of related equations. (optional) 				24A (26A): Exponential functions 24B (26B): Graphs of exponential functions 24C (26C): Exponential equations 24D (26D): Exponential growth 24E (26E): Exponential decay 26F: Logarithms 26G: Laws of logarithms 26H: Using logarithms
<p>Year 7</p> <ul style="list-style-type: none"> Describe relationships between variables represented in graphs of functions from authentic data. (AC9M7A04) 	17A: Line graphs 17B: Travel graphs			
<p>Year 7</p> <ul style="list-style-type: none"> Generate tables of values from visually growing patterns or the rule of a function; describe and plot these relationships on the Cartesian plane. (AC9M7A05) 	15B: Coordinates 15C: Positive and negative coordinates 15D: Plotting points from a table of values 15E: The equation of a line			

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<p>Year 8</p> <ul style="list-style-type: none"> Use mathematical modelling to solve applied problems involving linear relations, including financial contexts; formulate problems with linear functions, choosing a representation; interpret and communicate solutions in terms of the situation, reviewing the appropriateness of the model. (AC9M8A03) <p>Year 9</p> <ul style="list-style-type: none"> Use mathematical modelling to solve applied problems involving change including financial contexts; formulate problems, choosing to use either linear or quadratic functions; interpret solutions in terms of the situation; evaluate the model and report methods and findings. (AC9M9A05) <p>Year 10</p> <ul style="list-style-type: none"> Use mathematical modelling to solve applied problems involving growth and decay, including financial contexts; formulate problems, choosing to apply linear, quadratic or exponential models; interpret solutions in terms of the situation; evaluate and modify models as necessary and report assumptions, methods and findings. (AC9M10A04) 		<p>10C: Substituting into formulae 10D: Geometric patterns 10E: Practical problems</p> <p>16E: Line graphs</p> <p>20A: Writing problems as equations 20B: Problem solving with algebra 20D: Solution by working backwards 20E: Miscellaneous problems</p>	<p>4J: Simple interest 4K: Compound interest (online)</p> <p>20E: Problem solving</p> <p>21F: Projectile motion</p> <p>24A: Direct proportion 24B: Powers in direct proportion 24C: Inverse proportion 24D: Powers in inverse proportion</p>	<p>12B: Appreciation and depreciation 12C: Simple interest 12D: Compound interest</p> <p>23H (25H): Problem solving with quadratic functions</p> <p>24D (26D): Exponential growth 24E (26E): Exponential decay</p>
<p>Year 7</p> <ul style="list-style-type: none"> Manipulate formulas involving several variables using digital tools, and describe the effect of systematic variation in the values of the variables. (AC9M7A06) <p>Year 8</p> <ul style="list-style-type: none"> Experiment with linear functions and relations using digital tools, making and testing conjectures and generalising emerging patterns. (AC9M8A04) <p>Year 9</p> <ul style="list-style-type: none"> Experiment with the effects of the variation of parameters on graphs of related functions, using digital tools, making connections between graphical and algebraic representations, and generalising emerging patterns. (AC9M9A06) <p>Year 10</p> <ul style="list-style-type: none"> Experiment with functions and relations using digital tools, making and testing conjectures and generalising emerging patterns. (AC9M10A05) 	8I: Formulae	<p>14B: Straight lines 14E: Graphing a line of the form $y = mx + c$</p> <p>20C: Solution by search</p>	<p>18D: Graphing from a table of values 18E: Gradient-intercept form 18F: General form 18G: Finding the equation of a line</p> <p>21B: Graphs of quadratic functions 21C: Using transformations to graph quadratics 21D: Axes intercepts 21E: Using axes intercepts to graph quadratics</p>	<p>15A: The equation of a line 15B: Graphing straight lines 15C: Finding the equation of a line</p> <p>22D (24D): Transformations of graphs</p> <p>23B (25B): Graphs of quadratic functions 23C (25C): Using transformations to graph quadratics 23D (25D): Axes intercepts</p> <p>24B (26B): Graphs of exponential functions</p>
<p>Year 10</p> <ul style="list-style-type: none"> Algebraic representations of quadratic functions of the form $f(x) = ax^2 + bx + c$. (optional) 				23C (25C): Using transformations to graph quadratics

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Year 10 <ul style="list-style-type: none"> Where a, b and c are non-zero integers, and their transformation to the form $f(x) = a(x + h)^2 + k$ where h and k are non-zero rational numbers, and the solution of related equations. (optional) 				13E: The quadratic formula 23C (25C): Using transformations to graph quadratics 23D (25D): Axes intercepts 23E (25E): Axis of symmetry of a quadratic
Measurement				
Year 7 <ul style="list-style-type: none"> Solve problems involving the area of triangles and parallelograms using established formulas and appropriate units. (AC9M7M01) Year 8 <ul style="list-style-type: none"> Solve problems involving the area and perimeter of irregular and composite shapes using appropriate units. (AC9M8M01) 	12D: The area of a rectangle 12E: The area of a triangle 12F: The area of a parallelogram	11B: Perimeter 11E: Area formulae 11G: Areas of composite figures		
Year 7 <ul style="list-style-type: none"> Solve problems involving the volume of right prisms including rectangular and triangular prisms, using established formulas and appropriate units. (AC9M7M02) Year 8 <ul style="list-style-type: none"> Solve problems involving the volume and capacity of right prisms using appropriate units. (AC9M8M02) Year 9 <ul style="list-style-type: none"> Solve problems involving the volume and surface area of right prisms and cylinders using appropriate units. (AC9M9M01) Year 10 <ul style="list-style-type: none"> Solve problems involving the surface area and volume of composite objects using appropriate units. (AC9M10M01) 	14B: The volume of a prism	12C: Volume 12D: The volume of a solid of uniform cross-section From Mathematics for Australia 7 14C: Capacity 14D: Connecting volume and capacity	13A: Solids with planar faces 13B: Cylinders 14B: Volume of a solid of uniform cross-section 14F: Connecting volume and capacity	11C: Surface area 11D: Volume 11E: Capacity
Year 7 <ul style="list-style-type: none"> Describe the relationship between π and the features of circles including the circumference, radius and diameter. (AC9M7M03) Year 8 <ul style="list-style-type: none"> Solve problems involving the circumference and area of a circle using formulas and appropriate units. (AC9M8M03) 	This content is introduced in Mathematics for Australia 8	11C: Circumference 11F: The area of a circle 11G: Area of composite figures		
Year 7 <ul style="list-style-type: none"> Identify corresponding, alternate and co-interior relationships between angles formed when parallel lines are crossed by a transversal; use them to solve problems and explain reasons. (AC9M7M04) 	3C: Parallel and perpendicular lines 3F: Angle pairs 3G: Angle pairs on parallel lines 3H: Tests for parallelism 3I: Geometric construction			

Content description	Mathematics for Australia 7	Mathematics for Australia 8	Mathematics for Australia 9	Mathematics for Australia 10/10A
Year 7 <ul style="list-style-type: none"> Demonstrate that the interior angle sum of a triangle in the plane is 180° and apply this to determine the interior angle sum of other shapes and the size of unknown angles. (AC9M7M05) 	11C: Angle sum of a triangle 11G: Angle sum of a quadrilateral From Mathematics for Australia 8 9G: Angle sum of an n -sided polygon			
Year 8 <ul style="list-style-type: none"> Solve problems involving duration, including using 12- and 24-hour time across multiple time zones. (AC9M8M04) 		13A: Units of time 13B: Time calculations 13C: 24-hour time 13D: Time zones		
Year 8 <ul style="list-style-type: none"> Recognise and use rates to solve problems involving the comparison of 2 related quantities of different units of measure. (AC9M8M05) 		16A: Rates 16B: Speed 16C: Density 16D: Converting rates		
Year 9 <ul style="list-style-type: none"> Solve problems involving very small and very large measurements, time scales and intervals expressed in scientific notation. (AC9M9M02) 			3C: Scientific notation 3D: International system (SI) units	
Year 10 <ul style="list-style-type: none"> Interpret and use logarithmic scales in applied contexts involving small and large quantities and change. (AC9M10M02) 				24H (26I): Logarithmic scales
Year 8 <ul style="list-style-type: none"> Use Pythagoras' theorem to solve problems involving the side lengths of right-angled triangles. (AC9M8M06) Year 9 <ul style="list-style-type: none"> Solve spatial problems, applying angle properties, scale, similarity, Pythagoras' theorem and trigonometry in right-angled triangles. (AC9M9M03) Year 10 <ul style="list-style-type: none"> Solve practical problems applying Pythagoras' theorem and trigonometry of right-angled triangles, including problems involving direction and angles of elevation and depression. (AC9M10M03) The graphs of $y = \sin(x)$ and $y = \cos(x)$ as functions of a real variable and the solution of related equations. (optional) 		This content is introduced in Mathematics for Australia 9	10A: Pythagoras' theorem 10C: Problem solving 10D: The converse of Pythagoras' theorem 17A: The distance between two points 22B: Congruent triangles 22D: Similarity 22E: Similar triangles 22F: Problem solving 23A: Scale diagrams in geometry 23C: The trigonometric ratios 23D: Finding side lengths 23E: Finding angles 23F: Problem solving	9A: Pythagoras' theorem 9C: Problem solving 9D: Circle problems (Note: this section is not present in the 10A book) 9E (9D): The converse of Pythagoras' theorem 18B (19B): The trigonometric ratios 18C (19C): Finding side lengths 18D (19D): Finding angles 18E (19E): Problem solving 18F (19F): True bearings 27A: The unit circle 27B: Multiples of 30° and 45° 27C: The Pythagorean identity 27D: Trigonometric functions 27E: Transformations of trigonometric functions 27F: Trigonometric equations
Year 9 <ul style="list-style-type: none"> Calculate and interpret absolute, relative and percentage errors in measurements, recognising that all measurements are estimates. (AC9M9M04) Year 10 <ul style="list-style-type: none"> Identify the impact of measurement errors on the accuracy of results in practical contexts. (AC9M10M04) 			4H: Absolute and percentage error	

Content description	Mathematics for Australia 7	Mathematics for Australia 8	Mathematics for Australia 9	Mathematics for Australia 10/10A
<p>Year 7</p> <ul style="list-style-type: none"> Use mathematical modelling to solve practical problems involving ratios; formulate problems, interpret and communicate solutions in terms of the situation, justifying choices made about the representation. (AC9M7M06) <p>Year 8</p> <ul style="list-style-type: none"> Use mathematical modelling to solve practical problems involving ratios and rates, including financial contexts; formulate problems; interpret and communicate solutions in terms of the situation, reviewing the appropriateness of the model. (AC9M8M07) <p>Year 9</p> <ul style="list-style-type: none"> Use mathematical modelling to solve practical problems involving direct proportion, rates, ratio and scale, including financial contexts; formulate the problems and interpret solutions in terms of the situation; evaluate the model and report methods and findings. (AC9M9M05) <p>Year 10</p> <ul style="list-style-type: none"> Use mathematical modelling to solve practical problems involving proportion and scaling of objects; formulate problems and interpret solutions in terms of the situation; evaluate and modify models as necessary, and report assumptions, methods and findings. (AC9M10M05) 	16A: Ratio 16B: Ratio and fractions 16E: Proportions 16F: Using ratios to divide quantities	15A: Ratio 15D: Proportions 15E: Using ratios to divide quantities 15F: Scale diagrams 16A: Rates 16B: Speed 16C: Density 16D: Converting rates	22C: Enlargements and reductions 22G: Areas of similar figures 22H: Volumes of similar solids 24A: Direct proportion	17C: Similarity 17D: Similar triangles 17E: Areas and volumes of similar objects

Space

<p>Year 7</p> <ul style="list-style-type: none"> Represent objects in 2 dimensions; discuss and reason about the advantages and disadvantages of different representations. (AC9M7SP01) 	13A: Solids 13B: Nets of solids 13C: Oblique and isometric projections 13D: Views of solids			
<p>Year 7</p> <ul style="list-style-type: none"> Classify triangles, quadrilaterals and other polygons according to their side and angle properties; identify and reason about relationships. (AC9M7SP02) 	11A: Polygons 11B: Triangles 11E: Isosceles triangles 11F: Quadrilaterals			
<p>Year 7</p> <ul style="list-style-type: none"> Describe transformations of a set of points using coordinates in the Cartesian plane, translations and reflections on an axis, and rotations about a given point. (AC9M7SP03) 	20A: Translations 20B: Reflections 20D: Rotations 20F: Enlargements and reductions 20G: Combinations of transformations			

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<p>Year 8</p> <ul style="list-style-type: none"> Identify the conditions for congruence and similarity of triangles and explain the conditions for other sets of common shapes to be congruent or similar, including those formed by transformations. (AC9M8SP01) <p>Year 9</p> <ul style="list-style-type: none"> Apply the enlargement transformation to shapes and objects using dynamic geometry software as appropriate; identify and explain aspects that remain the same and those that change. (AC9M9SP02) 		19D: Congruent figures 19E: Using transformations to define congruence 19F: Congruent triangles Similarity is introduced in Mathematics for Australia 9	22C: Enlargements and reductions 22D: Similarity 22G: Areas of similar figures 22H: Volumes of similar solids	
<p>Year 9</p> <ul style="list-style-type: none"> Recognise the constancy of the sine, cosine and tangent ratios for a given angle in right-angled triangles using properties of similarity. (AC9M9SP01) 			23B: Labelling right angle triangles 23C: The trigonometric ratios 23D: Finding side lengths	
<p>Year 8</p> <ul style="list-style-type: none"> Describe the position and location of objects in 3 dimensions in different ways, including using a three-dimensional coordinate system with the use of dynamic geometric software and other digital tools. (AC9M8SP03) 		From Mathematics for Australia 9 17F: 3-dimensional coordinate geometry From Mathematics for Australia 10 14F: 3-dimensional coordinate geometry		
<p>Year 8</p> <ul style="list-style-type: none"> Establish properties of quadrilaterals using congruent triangles and angle properties, and solve related problems explaining reasoning. (AC9M8SP02) <p>Year 10</p> <ul style="list-style-type: none"> Apply deductive reasoning to proofs involving shapes in the plane and use theorems to solve spatial problems. (AC9M10SP01) Relationships between angles and various lines associated with circles (radii, diameters, chords, tangents). (optional) 		9E: Quadrilaterals 9F: Angle sum of a quadrilateral 9G: Angle sum of an n -sided polygon 19G: Proof using congruence		9D: Circle problems (Note: this section is not present in the 10A book) 14E: Using coordinate geometry 17B: Proof using congruence 18A: Angle in a semi-circle theorem 18B: Chords of a circle theorem 18C: Radius-tangent theorem 18D: Tangents from an external point theorem 18E: Angle between a tangent and a chord theorem 18F: Angle at the centre theorem 18G: Angles subtended by the same arc theorem
<p>Year 10</p> <ul style="list-style-type: none"> Interpret networks and network diagrams used to represent relationships in practical situations and describe connectedness. (AC9M10SP02) 				From Mathematics for Australia 9 27A: Networks (online) 27B: Routes on networks (online) 27C: Shortest route problems (online) 27D: Eulerian networks (online) 27E: Planar networks (online) 27F: Euler's formula (online)

Content description	Mathematics for Australia 7	Mathematics for Australia 8	Mathematics for Australia 9	Mathematics for Australia 10/10A
<p>Year 7</p> <ul style="list-style-type: none"> Design and create algorithms involving a sequence of steps and decisions that will sort and classify sets of shapes according to their attributes, and describe how the algorithms work. (AC9M7SP04) <p>Year 8</p> <ul style="list-style-type: none"> Design, create and test algorithms involving a sequence of steps and decisions that identify congruency or similarity of shapes, and describe how the algorithm works. (AC9M8SP04) <p>Year 9</p> <ul style="list-style-type: none"> Design, test and refine algorithms involving a sequence of steps and decisions based on geometric constructions and theorems; discuss and evaluate refinements. (AC9M9NSP03) <p>Year 10</p> <ul style="list-style-type: none"> Design, test and refine solutions to spatial problems using algorithms and digital tools; communicate and justify solutions. (AC9M10SP03) 			10B: Pythagorean triples	

Statistics

<p>Year 7</p> <ul style="list-style-type: none"> Acquire data sets for discrete and continuous numerical variables and calculate the range, median, mean and mode; make and justify decisions about which measures of central tendency provide useful insights into the nature of the distribution of data. (AC9M7ST01) 	19D: Numerical data 19F: Measuring the centre 19G: Measuring the spread			
<p>Year 8</p> <ul style="list-style-type: none"> Investigate techniques for data collection including census, sampling, experiment and observation, and explain the practicalities and implications of obtaining data through these techniques. (AC9M8ST01) <p>Year 8</p> <ul style="list-style-type: none"> Analyse and report on the distribution of data from primary and secondary sources using random and non-random sampling techniques to select and study samples. (AC9M8ST02) <p>Year 9</p> <ul style="list-style-type: none"> Analyse how different sampling methods can affect the results of surveys and how choice of representation can be used to support a particular point of view. (AC9M9ST02) 		18A: Data collection	26A: Data collection	

Content description	Mathematics for Australia 7	Mathematics for Australia 8	Mathematics for Australia 9	Mathematics for Australia 10/10A
<p>Year 9</p> <ul style="list-style-type: none"> Analyse reports of surveys in digital media and elsewhere for information on how data was obtained to estimate population means and medians. (AC9M9ST01) <p>Year 10</p> <ul style="list-style-type: none"> Analyse claims, inferences and conclusions of statistical reports in the media, including ethical considerations and identification of potential sources of bias. (AC9M10ST01) 			26F: Measures of centre	20G (22H): Evaluating reports
<p>Year 7</p> <ul style="list-style-type: none"> Create different types of numerical data displays including stem-and-leaf plots using software where appropriate; describe and compare the distribution of data, commenting on the shape, centre and spread including outliers and determining the range, median, mean and mode. (AC9M7ST02) <p>Year 8</p> <ul style="list-style-type: none"> Compare variations in distributions and proportions obtained from random samples of the same size drawn from a population and recognise the effect of sample size on this variation. (AC9M8ST03) <p>Year 9</p> <ul style="list-style-type: none"> Represent the distribution of multiple data sets for numerical variables using comparative representations; compare data distributions with consideration of centre, spread and shape, and the effect of outliers on these measures. (AC9M9ST03) <p>Year 10</p> <ul style="list-style-type: none"> Compare data distributions for continuous numerical variables using appropriate data displays including boxplots; discuss the shapes of these distributions in terms of centre, spread, shape and outliers in the context of the data. (AC9M10ST02) Measures of spread, their interpretation and usefulness with respect to different data distributions. (optional) 	<p>19D: Numerical data 19E: Stem-and-leaf plots 19F: Measuring the centre 19G: Measuring the spread</p> <p>Describing the distribution of data is introduced in Mathematics for Australia 9</p>	<p>18B: Categorical data 18C: Numerical data 18D: Grouped data 18E: Stem-and-leaf plots 18F: Measures of centre and spread 18G: Measure of centre and spread from a frequency table</p>	<p>26E: Describing the distribution of data 26F: Measures of centre 26G: Measures of spread 26H: Comparing numerical data</p>	<p>20A (22A): Discrete numerical data 20B (22B): Continuous numerical data 20C (22C): Describing the distribution of data 20D (22D): Measures of centre 20E (22E): Box-and-whisker plots 20F (22F): Cumulative frequency graphs 22G: Standard deviation</p>
<p>Year 10</p> <ul style="list-style-type: none"> Construct scatterplots and comment on the association between the 2 numerical variables in terms of strength, direction and linearity. (AC9M10ST03) 				<p>21B (23B): Association between numerical variables 21C (23C): Correlation 21D (23E): Line of best fit by eye 23D: Pearson's correlation coefficient r 23E: Line of best fit by eye 23F: Linear regression</p>
<p>Year 10</p> <ul style="list-style-type: none"> Construct two-way tables and discuss possible relationship between categorical variables. (AC9M10ST04) 				21A (23A): Association between categorical variables

Content description	Mathematics for Australia 7	Mathematics for Australia 8	Mathematics for Australia 9	Mathematics for Australia 10/10A
Year 9 <ul style="list-style-type: none"> Choose appropriate forms of display or visualisation for a given type of data; justify selections and interpret displays for a given context. (AC9M9ST04) 			26C: Discrete numerical data 26D: Continuous numerical data 26H: Comparing numerical data	
Year 7 <ul style="list-style-type: none"> Plan and conduct statistical investigations involving data for discrete and continuous numerical variables; analyse and interpret distributions of data and report findings in terms of shape and summary statistics. (AC9M7ST03) Year 8 <ul style="list-style-type: none"> Plan and conduct statistical investigations involving samples of a population; use ethical and fair methods to make inferences about the population and report findings, acknowledging uncertainty. (AC9M8ST04) Year 9 <ul style="list-style-type: none"> Plan and conduct statistical investigations involving the collection and analysis of different kinds of data; report findings and discuss the strength of evidence to support any conclusions. (AC9M9ST05) Year 10 <ul style="list-style-type: none"> Plan and conduct statistical investigations of situations that involve bivariate data; evaluate and report findings with consideration of limitations of any inferences. (AC9M10ST05) 				23F: Linear regression
Probability				
Year 7 <ul style="list-style-type: none"> Identify the sample space for single-stage events; assign probabilities to the outcomes of these events and predict relative frequencies for related events. (AC9M7P01) 	18A: Describing probability 18B: Using numbers to describe probabilities 18C: Sample space 18D: Theoretical probability 18E: Experimental probability			
Year 8 <ul style="list-style-type: none"> Recognise that complementary events have a combined probability of one; use this relationship to calculate probabilities in applied contexts. (AC9M8P01) 		17A: Probability 17C: Theoretical probability		

Content description	Mathematics for Australia 7	Mathematics for Australia 8	Mathematics for Australia 9	Mathematics for Australia 10/10A
<p>Year 8</p> <ul style="list-style-type: none"> Determine all possible combinations for 2 events, using two-way tables, tree diagrams and Venn diagrams, and use these to determine probabilities of specific outcomes in practical situations. (AC9M8P02) <p>Year 9</p> <ul style="list-style-type: none"> List all outcomes for compound events both with and without replacement, using lists, tree diagrams, tables or arrays; assign probabilities to outcomes. (AC9M9P01) <p>Year 10</p> <ul style="list-style-type: none"> Use the language of “if then”, “given”, “of”, “knowing that” to describe and interpret situations involving conditional probability. (AC9M10P01) 		<p>17B: Sample space 17C: Theoretical probability 17D: Independent events 17G: Probabilities from two-way tables 17H: Probabilities from Venn diagrams</p> <p>Tree diagrams are introduced in Mathematics for Australia 9</p>	<p>25A: Sample space and events 25B: Theoretical probability 25D: Independent events 25E: Dependent events 25F: Probabilities from tree diagrams 25H: Probabilities from tabled data</p>	<p>19B (21B): Theoretical probability 19C (21C): Independent events 19D (21D): Dependent events 19G (21G): Conditional probability</p>
<p>Year 9</p> <ul style="list-style-type: none"> Calculate relative frequencies from given or collected data to estimate probabilities of events involving “and”, inclusive “or” and exclusive “or”. (AC9M9P02) 			<p>25C: Probabilities from Venn diagrams 25G: Experimental probability 25H: Probabilities from tabled data</p>	
<p>Year 7</p> <ul style="list-style-type: none"> Conduct repeated chance experiments and run simulations with a large number of trials using digital tools; compare predictions about outcomes with observed results, explaining the differences. (AC9M7P02) <p>Year 8</p> <ul style="list-style-type: none"> Conduct repeated chance experiments and simulations, using digital tools to determine probabilities for compound events, and describe results. (AC9M8P03) <p>Year 9</p> <ul style="list-style-type: none"> Design and conduct repeated chance experiments and simulations, using digital tools to compare probabilities of simple events to related compound events, and describe results. (AC9M9P03) <p>Year 10</p> <ul style="list-style-type: none"> Design and conduct repeated chance experiments and simulations using digital tools to model conditional probability and interpret results. (AC9M10P02) 	18F: The accuracy of experimental probabilities	17E: Experimental probability		<p>19F: Expectation 19H: Simulations</p>
<p>Year 10</p> <ul style="list-style-type: none"> Counting principles, and factorial notation as a representation that provides efficient counting in multiplicative contexts, including calculations of probabilities. (optional) 				<p>28A: The product principle (online) 28B: The sum principle (online) 28C: Factorial notation (online) 28D: Permutations (online) 28E: Combinations (online) 28F: Probabilities using permutations and combinations (online)</p>