

# 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**.

**Blue** text indicates material found in the Online Supplementary Content for the corresponding book.

Content description	Mathematics for Australia 7	Mathematics for Australia 8	Mathematics for Australia 9	Mathematics for Australia 10/10A
<b>Number</b>				
<p><b>Year 7</b></p> <ul style="list-style-type: none"> <li>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)</li> </ul> <p><b>Year 8</b></p> <ul style="list-style-type: none"> <li>Recognise irrational numbers in applied contexts, including square roots and <math>\pi</math>. (AC9M8N01)</li> </ul> <p><b>Year 9</b></p> <ul style="list-style-type: none"> <li>Recognise that the real number system includes the rational numbers and the irrational numbers, and solve problems involving real numbers using digital tools. (AC9M9N01)</li> </ul>	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	
<p><b>Year 7</b></p> <ul style="list-style-type: none"> <li>Represent natural numbers as products of powers of prime numbers using exponent notation. (AC9M7N02)</li> </ul> <p><b>Year 8</b></p> <ul style="list-style-type: none"> <li>Establish and apply the exponent laws with positive integer exponents and the zero-exponent, using exponent notation with numbers. (AC9M8N02)</li> </ul>	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><b>Year 7</b></p> <ul style="list-style-type: none"> <li>Represent natural numbers in expanded notation using place value and powers of 10. (AC9M7N03)</li> </ul>	1A: Place value 1D: Index notation			

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<b>Year 7</b> <ul style="list-style-type: none"> <li>Find equivalent representations of rational numbers and represent rational numbers on a number line. (AC9M7N04)</li> </ul>	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			
<b>Year 7</b> <ul style="list-style-type: none"> <li>Round decimals to a given accuracy appropriate to the context and use appropriate rounding and estimation to check the reasonableness of solutions. (AC9M7N05)</li> </ul> <b>Year 8</b> <ul style="list-style-type: none"> <li>Recognise terminating and recurring decimals, using digital tools as appropriate. (AC9M8N03)</li> </ul> <b>Year 10</b> <ul style="list-style-type: none"> <li>Recognise the effect of using approximations of real numbers in repeated calculations and compare the results when using exact representations. (AC9M10N01)</li> </ul>	4E: Estimation  7D: Rounding decimal numbers	3N: Rational numbers		
<b>Year 7</b> <ul style="list-style-type: none"> <li>Use the 4 operations with positive rational numbers including fractions, decimals and percentages to solve problems using efficient calculation strategies. (AC9M7N06)</li> </ul> <b>Year 8</b> <ul style="list-style-type: none"> <li>Use the 4 operations with integers and with rational numbers, choosing and using efficient strategies and digital tools where appropriate. (AC9M8N04)</li> </ul>	1C: Operations  4A: Addition strategies 4B: Subtractions strategies 4C: Multiplication strategies 4D: Division strategies 4F: Order of operations 4G: Problem solving  6J: Adding and subtracting fractions 6K: Multiplying a fraction by a whole number 6L: Multiplying fractions 6N: Dividing fractions  7G: Adding and subtracting decimal numbers 7J: Multiplying decimal numbers 7K: Dividing decimal numbers  9E: Finding a percentage of a quantity	1A: Operations with negative numbers 1G: Order of operations  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		
<b>Year 7</b> <ul style="list-style-type: none"> <li>Compare, order and solve problems involving addition and subtraction of integers. (AC9M7N07)</li> </ul>	5A: The number line 5B: Words indicating positive and negative 5C: Addition and subtractions with negative numbers 5D: Adding and subtracting negative numbers			

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<b>Year 7</b> <ul style="list-style-type: none"> <li>Recognise, represent and solve problems involving ratios. (AC9M7N08)</li> </ul>	16A: Ratio 16B: Ratio and fractions 16E: Proportions 16F: Using ratios to divide quantities			
<b>Year 7</b> <ul style="list-style-type: none"> <li>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)</li> </ul> <b>Year 8</b> <ul style="list-style-type: none"> <li>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)</li> </ul>	5C: Addition and subtractions with negative numbers 5D: Adding and subtracting negative numbers 5H: Calculator use  9E: Finding a percentage of a quantity 9F: Percentage increase or decrease	1H: Problem solving  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		
<b>Algebra</b>				
<b>Year 7</b> <ul style="list-style-type: none"> <li>Recognise and use variables to represent everyday formulas algebraically and substitute values into formulas to determine an unknown. (AC9M7A01)</li> </ul>	8H: Algebraic substitution 8I: Formulae			
<b>Year 7</b> <ul style="list-style-type: none"> <li>Formulate algebraic expressions using constants, variables, operations and brackets. (AC9M7A02)</li> </ul>	8A: Building expressions 8B: Product notation 8C: Index notation 8F: Equal expressions 8G: Collecting like terms  10I: Writing equations 10J: Word problems			
<b>Year 9</b> <ul style="list-style-type: none"> <li>Apply the exponent laws to numerical expressions with integer exponents and extend to variables. (AC9M9A01)</li> </ul>			1A: Exponent notation  3A: Exponent laws 3B: Zero and negative exponents 3D: International system (SI) units	

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<p><b>Year 8</b></p> <ul style="list-style-type: none"> <li>• Create, expand, factorise, rearrange and simplify linear expressions, applying the associative, commutative, identity, distributive and inverse properties. (AC9M8A01)</li> </ul> <p><b>Year 9</b></p> <ul style="list-style-type: none"> <li>• Simplify algebraic expressions, expand binomial products and factorise monic quadratic expressions. (AC9M9A02)</li> </ul> <p><b>Year 10</b></p> <ul style="list-style-type: none"> <li>• Expand, factorise and simplify expressions and solve equations algebraically, applying exponent laws involving products, quotients and powers of variables, and the distributive property. (AC9M10A01)</li> <li>• Operations on numbers involving fractional exponents and surds. (optional)</li> </ul>		<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 <math>(a + b)(c + d)</math> 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 <math>(a + b)(c + d)</math> 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 <math>x^2 + bx + c</math> 3F: Factorising <math>ax^2 + bx + c, a \neq 1</math> 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 <math>x^2 = k</math> 13B: The null factor law 13C: Solving by factorisation 13D: Completing the square 13E: The quadratic formula 13F: Problem solving</p>
<p><b>Year 9</b></p> <ul style="list-style-type: none"> <li>• 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)</li> </ul>			<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><b>Year 7</b></p> <ul style="list-style-type: none"> <li>Solve one-variable linear equations with natural number solutions; verify the solution by substitution. (AC9M7A03)</li> </ul> <p><b>Year 8</b></p> <ul style="list-style-type: none"> <li>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)</li> </ul> <p><b>Year 9</b></p> <ul style="list-style-type: none"> <li>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)</li> </ul> <p><b>Year 10</b></p> <ul style="list-style-type: none"> <li>Solve linear inequalities and simultaneous linear equations in 2 variables; interpret solutions graphically and communicate solutions in terms of the situation. (AC9M10A02)</li> <li>Simplification of combinations of linear expressions with rational coefficients and the solution of related equations. (optional)</li> </ul>	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 $y = mx + c$  21B: 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><b>Year 10</b></p> <ul style="list-style-type: none"> <li>Recognise the connection between algebraic and graphical representations of exponential relations and solve related exponential equations, using digital tools where appropriate. (AC9M10A03)</li> <li>The inverse relationship between exponential functions and logarithmic functions and the solution of related equations. (optional)</li> </ul>				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><b>Year 7</b></p> <ul style="list-style-type: none"> <li>Describe relationships between variables represented in graphs of functions from authentic data. (AC9M7A04)</li> </ul>	17A: Line graphs 17B: Travel graphs			
<p><b>Year 7</b></p> <ul style="list-style-type: none"> <li>Generate tables of values from visually growing patterns or the rule of a function; describe and plot these relationships on the Cartesian plane. (AC9M7A05)</li> </ul>	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><b>Year 8</b></p> <ul style="list-style-type: none"> <li>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)</li> </ul> <p><b>Year 9</b></p> <ul style="list-style-type: none"> <li>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)</li> </ul> <p><b>Year 10</b></p> <ul style="list-style-type: none"> <li>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)</li> </ul>		<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><b>Year 7</b></p> <ul style="list-style-type: none"> <li>Manipulate formulas involving several variables using digital tools, and describe the effect of systematic variation in the values of the variables. (AC9M7A06)</li> </ul> <p><b>Year 8</b></p> <ul style="list-style-type: none"> <li>Experiment with linear functions and relations using digital tools, making and testing conjectures and generalising emerging patterns. (AC9M8A04)</li> </ul> <p><b>Year 9</b></p> <ul style="list-style-type: none"> <li>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)</li> </ul> <p><b>Year 10</b></p> <ul style="list-style-type: none"> <li>Experiment with functions and relations using digital tools, making and testing conjectures and generalising emerging patterns. (AC9M10A05)</li> </ul>	8I: Formulae	<p>14B: Straight lines 14E: Graphing a line of the form <math>y = mx + c</math></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><b>Year 10</b></p> <ul style="list-style-type: none"> <li>Algebraic representations of quadratic functions of the form <math>f(x) = ax^2 + bx + c</math>. (optional)</li> </ul>				23C (25C): Using transformations to graph quadratics

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<b>Year 10</b> <ul style="list-style-type: none"> <li>Where <math>a</math>, <math>b</math> and <math>c</math> are non-zero integers, and their transformation to the form <math>f(x) = a(x + h)^2 + k</math> where <math>h</math> and <math>k</math> are non-zero rational numbers, and the solution of related equations. (optional)</li> </ul>				13E: The quadratic formula 23C (25C): Using transformations to graph quadratics 23D (25D): Axes intercepts 23E (25E): Axis of symmetry of a quadratic
<b>Measurement</b>				
<b>Year 7</b> <ul style="list-style-type: none"> <li>Solve problems involving the area of triangles and parallelograms using established formulas and appropriate units. (AC9M7M01)</li> </ul> <b>Year 8</b> <ul style="list-style-type: none"> <li>Solve problems involving the area and perimeter of irregular and composite shapes using appropriate units. (AC9M8M01)</li> </ul>	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		
<b>Year 7</b> <ul style="list-style-type: none"> <li>Solve problems involving the volume of right prisms including rectangular and triangular prisms, using established formulas and appropriate units. (AC9M7M02)</li> </ul> <b>Year 8</b> <ul style="list-style-type: none"> <li>Solve problems involving the volume and capacity of right prisms using appropriate units. (AC9M8M02)</li> </ul> <b>Year 9</b> <ul style="list-style-type: none"> <li>Solve problems involving the volume and surface area of right prisms and cylinders using appropriate units. (AC9M9M01)</li> </ul> <b>Year 10</b> <ul style="list-style-type: none"> <li>Solve problems involving the surface area and volume of composite objects using appropriate units. (AC9M10M01)</li> </ul>	14B: The volume of a prism	12C: Volume 12D: The volume of a solid of uniform cross-section  <b>From Mathematics for Australia 7</b> 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
<b>Year 7</b> <ul style="list-style-type: none"> <li>Describe the relationship between <math>\pi</math> and the features of circles including the circumference, radius and diameter. (AC9M7M03)</li> </ul> <b>Year 8</b> <ul style="list-style-type: none"> <li>Solve problems involving the circumference and area of a circle using formulas and appropriate units. (AC9M8M03)</li> </ul>	21A: Circles 21B: Circumference	11C: Circumference 11F: The area of a circle 11G: Area of composite figures		
<b>Year 7</b> <ul style="list-style-type: none"> <li>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)</li> </ul>	3C: Parallel and perpendicular lines 3F: Angle pairs 3G: Angle pairs on parallel lines 3H: Tests for parallelism 3I: Geometric construction			

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<b>Year 7</b> <ul style="list-style-type: none"> <li>Demonstrate that the interior angle sum of a triangle in the plane is <math>180^\circ</math> and apply this to determine the interior angle sum of other shapes and the size of unknown angles. (AC9M7M05)</li> </ul>	11C: Angle sum of a triangle 11G: Angle sum of a quadrilateral  <b>From Mathematics for Australia 8</b> 9G: Angle sum of an $n$ -sided polygon			
<b>Year 8</b> <ul style="list-style-type: none"> <li>Solve problems involving duration, including using 12- and 24-hour time across multiple time zones. (AC9M8M04)</li> </ul>		13A: Units of time 13B: Time calculations 13C: 24-hour time 13D: Time zones		
<b>Year 8</b> <ul style="list-style-type: none"> <li>Recognise and use rates to solve problems involving the comparison of 2 related quantities of different units of measure. (AC9M8M05)</li> </ul>		16A: Rates 16B: Speed 16C: Density 16D: Converting rates		
<b>Year 9</b> <ul style="list-style-type: none"> <li>Solve problems involving very small and very large measurements, time scales and intervals expressed in scientific notation. (AC9M9M02)</li> </ul>			3C: Scientific notation 3D: International system (SI) units	
<b>Year 10</b> <ul style="list-style-type: none"> <li>Interpret and use logarithmic scales in applied contexts involving small and large quantities and change. (AC9M10M02)</li> </ul>				24H (26I): Logarithmic scales
<b>Year 8</b> <ul style="list-style-type: none"> <li>Use Pythagoras' theorem to solve problems involving the side lengths of right-angled triangles. (AC9M8M06)</li> </ul> <b>Year 9</b> <ul style="list-style-type: none"> <li>Solve spatial problems, applying angle properties, scale, similarity, Pythagoras' theorem and trigonometry in right-angled triangles. (AC9M9M03)</li> </ul> <b>Year 10</b> <ul style="list-style-type: none"> <li>Solve practical problems applying Pythagoras' theorem and trigonometry of right-angled triangles, including problems involving direction and angles of elevation and depression. (AC9M10M03)</li> <li>The graphs of <math>y = \sin(x)</math> and <math>y = \cos(x)</math> as functions of a real variable and the solution of related equations. (optional)</li> </ul>		24A: Pythagoras' theorem 24B: Problem solving	17A: The distance between two points  23A: Scale diagrams in geometry 23C: The trigonometric ratios 23D: Finding side lengths 23E: Finding angles 23F: Problem solving  10A: Pythagoras' theorem 10C: Problem solving 10D: The converse of Pythagoras' theorem  22B: Congruent triangles 22C: Similarity 22D: Similar triangles	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 $30^\circ$ and $45^\circ$ 27C: The Pythagorean identity 27D: Trigonometric functions 27E: Transformations of trigonometric functions 27F: Trigonometric equations
<b>Year 9</b> <ul style="list-style-type: none"> <li>Calculate and interpret absolute, relative and percentage errors in measurements, recognising that all measurements are estimates. (AC9M9M04)</li> </ul> <b>Year 10</b> <ul style="list-style-type: none"> <li>Identify the impact of measurement errors on the accuracy of results in practical contexts. (AC9M10M04)</li> </ul>			4H: Absolute and percentage error	

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<p><b>Year 7</b></p> <ul style="list-style-type: none"> <li>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)</li> </ul> <p><b>Year 8</b></p> <ul style="list-style-type: none"> <li>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)</li> </ul> <p><b>Year 9</b></p> <ul style="list-style-type: none"> <li>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)</li> </ul> <p><b>Year 10</b></p> <ul style="list-style-type: none"> <li>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)</li> </ul>	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	24A: Direct proportion  22C: Similarity 22D: Similar triangles 22E: Areas of similar figures 22F: Volumes of similar solids	17C: Similarity 17D: Similar triangles 17E: Areas and volumes of similar objects
<b>Space</b>				
<p><b>Year 7</b></p> <ul style="list-style-type: none"> <li>Represent objects in 2 dimensions; discuss and reason about the advantages and disadvantages of different representations. (AC9M7SP01)</li> </ul>	13A: Solids 13B: Nets of solids 13C: Oblique and isometric projections 13D: Views of solids			
<p><b>Year 7</b></p> <ul style="list-style-type: none"> <li>Classify triangles, quadrilaterals and other polygons according to their side and angle properties; identify and reason about relationships. (AC9M7SP02)</li> </ul>	11A: Polygons 11B: Triangles 11E: Isosceles triangles 11F: Quadrilaterals			
<p><b>Year 7</b></p> <ul style="list-style-type: none"> <li>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)</li> </ul>	20A: Translations 20B: Reflections 20D: Rotations 20F: Enlargements and reductions 20G: Combinations of transformations			

Content description	Mathematics for Australia 7	Mathematics for Australia 8	Mathematics for Australia 9	Mathematics for Australia 10/10A
<p><b>Year 8</b></p> <ul style="list-style-type: none"> <li>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)</li> </ul> <p><b>Year 9</b></p> <ul style="list-style-type: none"> <li>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)</li> </ul>		<p>19D: Congruent figures 19E: Using transformations to define congruence 19F: Congruent triangles</p> <p>23A: Enlargements and reductions 23B: Similarity 23C: Similar triangles 23D: Problem solving</p>	<p>22C: Similarity 22E: Areas of similar figures 22F: Volumes of similar solids</p>	
<p><b>Year 9</b></p> <ul style="list-style-type: none"> <li>Recognise the constancy of the sine, cosine and tangent ratios for a given angle in right-angled triangles using properties of similarity. (AC9M9SP01)</li> </ul>			<p>23B: Labelling right angle triangles 23C: The trigonometric ratios 23D: Finding side lengths</p>	
<p><b>Year 8</b></p> <ul style="list-style-type: none"> <li>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)</li> </ul>		<p><b>From Mathematics for Australia 9</b> 17F: 3-dimensional coordinate geometry</p> <p><b>From Mathematics for Australia 10</b> 14F: 3-dimensional coordinate geometry</p>		
<p><b>Year 8</b></p> <ul style="list-style-type: none"> <li>Establish properties of quadrilaterals using congruent triangles and angle properties, and solve related problems explaining reasoning. (AC9M8SP02)</li> </ul> <p><b>Year 10</b></p> <ul style="list-style-type: none"> <li>Apply deductive reasoning to proofs involving shapes in the plane and use theorems to solve spatial problems. (AC9M10SP01)</li> <li>Relationships between angles and various lines associated with circles (radii, diameters, chords, tangents). (optional)</li> </ul>		<p>9E: Quadrilaterals 9F: Angle sum of a quadrilateral 9G: Angle sum of an <math>n</math>-sided polygon</p> <p>19G: Proof using congruence</p>		<p>9D: Circle problems (Note: this section is not present in the 10A book)</p> <p>14E: Using coordinate geometry</p> <p>17B: Proof using congruence</p> <p>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>
<p><b>Year 10</b></p> <ul style="list-style-type: none"> <li>Interpret networks and network diagrams used to represent relationships in practical situations and describe connectedness. (AC9M10SP02)</li> </ul>				<p><b>From Mathematics for Australia 9</b> 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)</p>

Content description	Mathematics for Australia 7	Mathematics for Australia 8	Mathematics for Australia 9	Mathematics for Australia 10/10A
<p><b>Year 7</b></p> <ul style="list-style-type: none"> <li>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)</li> </ul> <p><b>Year 8</b></p> <ul style="list-style-type: none"> <li>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)</li> </ul> <p><b>Year 9</b></p> <ul style="list-style-type: none"> <li>Design, test and refine algorithms involving a sequence of steps and decisions based on geometric constructions and theorems; discuss and evaluate refinements. (AC9M9NSP03)</li> </ul> <p><b>Year 10</b></p> <ul style="list-style-type: none"> <li>Design, test and refine solutions to spatial problems using algorithms and digital tools; communicate and justify solutions. (AC9M10SP03)</li> </ul>			10B: Pythagorean triples	

## Statistics

<p><b>Year 7</b></p> <ul style="list-style-type: none"> <li>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)</li> </ul>	19D: Numerical data 19F: Measuring the centre 19G: Measuring the spread			
<p><b>Year 8</b></p> <ul style="list-style-type: none"> <li>Investigate techniques for data collection including census, sampling, experiment and observation, and explain the practicalities and implications of obtaining data through these techniques. (AC9M8ST01)</li> </ul> <p><b>Year 8</b></p> <ul style="list-style-type: none"> <li>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)</li> </ul> <p><b>Year 9</b></p> <ul style="list-style-type: none"> <li>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)</li> </ul>		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><b>Year 9</b></p> <ul style="list-style-type: none"> <li>Analyse reports of surveys in digital media and elsewhere for information on how data was obtained to estimate population means and medians. (AC9M9ST01)</li> </ul> <p><b>Year 10</b></p> <ul style="list-style-type: none"> <li>Analyse claims, inferences and conclusions of statistical reports in the media, including ethical considerations and identification of potential sources of bias. (AC9M10ST01)</li> </ul>			26F: Measures of centre	20G (22H): Evaluating reports
<p><b>Year 7</b></p> <ul style="list-style-type: none"> <li>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)</li> </ul> <p><b>Year 8</b></p> <ul style="list-style-type: none"> <li>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)</li> </ul> <p><b>Year 9</b></p> <ul style="list-style-type: none"> <li>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)</li> </ul> <p><b>Year 10</b></p> <ul style="list-style-type: none"> <li>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)</li> <li>Measures of spread, their interpretation and usefulness with respect to different data distributions. (optional)</li> </ul>	<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><b>Year 10</b></p> <ul style="list-style-type: none"> <li>Construct scatterplots and comment on the association between the 2 numerical variables in terms of strength, direction and linearity. (AC9M10ST03)</li> </ul>				<p>21B (23B): Association between numerical variables 21C (23C): Correlation 21D (23E): Line of best fit by eye 23D: Pearson's correlation coefficient <math>r</math> 23E: Line of best fit by eye 23F: Linear regression</p>
<p><b>Year 10</b></p> <ul style="list-style-type: none"> <li>Construct two-way tables and discuss possible relationship between categorical variables. (AC9M10ST04)</li> </ul>				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
<b>Year 9</b> <ul style="list-style-type: none"> <li>Choose appropriate forms of display or visualisation for a given type of data; justify selections and interpret displays for a given context. (AC9M9ST04)</li> </ul>			26C: Discrete numerical data 26D: Continuous numerical data 26H: Comparing numerical data	
<b>Year 7</b> <ul style="list-style-type: none"> <li>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)</li> </ul> <b>Year 8</b> <ul style="list-style-type: none"> <li>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)</li> </ul> <b>Year 9</b> <ul style="list-style-type: none"> <li>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)</li> </ul> <b>Year 10</b> <ul style="list-style-type: none"> <li>Plan and conduct statistical investigations of situations that involve bivariate data; evaluate and report findings with consideration of limitations of any inferences. (AC9M10ST05)</li> </ul>				23F: Linear regression
<b>Probability</b>				
<b>Year 7</b> <ul style="list-style-type: none"> <li>Identify the sample space for single-stage events; assign probabilities to the outcomes of these events and predict relative frequencies for related events. (AC9M7P01)</li> </ul>	18A: Describing probability 18B: Using numbers to describe probabilities 18C: Sample space 18D: Theoretical probability 18E: Experimental probability			
<b>Year 8</b> <ul style="list-style-type: none"> <li>Recognise that complementary events have a combined probability of one; use this relationship to calculate probabilities in applied contexts. (AC9M8P01)</li> </ul>		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><b>Year 8</b></p> <ul style="list-style-type: none"> <li>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)</li> </ul> <p><b>Year 9</b></p> <ul style="list-style-type: none"> <li>List all outcomes for compound events both with and without replacement, using lists, tree diagrams, tables or arrays; assign probabilities to outcomes. (AC9M9P01)</li> </ul> <p><b>Year 10</b></p> <ul style="list-style-type: none"> <li>Use the language of “if .... then”, “given”, “of”, “knowing that” to describe and interpret situations involving conditional probability. (AC9M10P01)</li> </ul>		<p>17B: Sample space 17C: Theoretical probability 17D: Independent events 17G: Probabilities from two-way tables 17H: Probabilities from Venn diagrams</p> <p>22A: Tree diagrams 22B: Probabilities from tree diagrams</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><b>Year 9</b></p> <ul style="list-style-type: none"> <li>Calculate relative frequencies from given or collected data to estimate probabilities of events involving “and”, inclusive “or” and exclusive “or”. (AC9M9P02)</li> </ul>			<p>25C: Probabilities from Venn diagrams 25G: Experimental probability 25H: Probabilities from tabled data</p>	
<p><b>Year 7</b></p> <ul style="list-style-type: none"> <li>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)</li> </ul> <p><b>Year 8</b></p> <ul style="list-style-type: none"> <li>Conduct repeated chance experiments and simulations, using digital tools to determine probabilities for compound events, and describe results. (AC9M8P03)</li> </ul> <p><b>Year 9</b></p> <ul style="list-style-type: none"> <li>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)</li> </ul> <p><b>Year 10</b></p> <ul style="list-style-type: none"> <li>Design and conduct repeated chance experiments and simulations using digital tools to model conditional probability and interpret results. (AC9M10P02)</li> </ul>	18F: The accuracy of experimental probabilities	17E: Experimental probability		<p>19F: Expectation 19H: Simulations</p>
<p><b>Year 10</b></p> <ul style="list-style-type: none"> <li>Counting principles, and factorial notation as a representation that provides efficient counting in multiplicative contexts, including calculations of probabilities. (optional)</li> </ul>				<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>