



MATHEMATICS – Scope and sequence P–6

	Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Number and algebra							
Number and place value	Establish understanding of the language and processes of counting by naming numbers in sequences, initially to and from 20, moving from any starting point	Develop confidence with number sequences to and from 100 by ones from any starting point. Skip count by twos, fives and tens starting from zero	Investigate number sequences, initially those increasing and decreasing by twos, threes, fives and tens from any starting point, then moving to other sequences	Investigate the conditions required for a number to be odd or even and identify odd and even numbers	Investigate and use the properties of odd and even numbers	Identify and describe factors and multiples of whole numbers and use them to solve problems	Identify and describe properties of prime, composite, square and triangular numbers
	Connect number names, numerals and quantities, including zero, initially up to 10 and then beyond	Recognise, model, read, write and order numbers to at least 100. Locate these numbers on a number line	Recognise, model, represent and order numbers to at least 1000	Recognise, model, represent and order numbers to at least 10 000	Recognise, represent and order numbers to at least tens of thousands	Use estimation and rounding to check the reasonableness of answers to calculations	
	Subitise small collections of objects	Count collections to 100 by partitioning numbers using place value	Group, partition and rearrange collections up to 1000 in hundreds, tens and ones to facilitate more efficient counting	Apply place value to partition, rearrange and regroup numbers to at least 10 000 to assist calculations and solve problems	Apply place value to partition, rearrange and regroup numbers to at least tens of thousands to assist calculations and solve problems		
	Compare, order and make correspondences between collections, initially to 20, and explain reasoning	Represent and solve simple addition and subtraction problems using a range of strategies including counting on, partitioning and rearranging parts	Explore the connection between addition and subtraction	Recognise and explain the connection between addition and subtraction	Investigate number sequences involving multiples of 3, 4, 6, 7, 8, and 9		Investigate everyday situations that use integers. Locate and represent these numbers on a number line

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Number and place value	Represent practical situations to model addition and sharing		Solve simple addition and subtraction problems using a range of efficient mental and written strategies	Recall addition facts for single-digit numbers and related subtraction facts to develop increasingly efficient mental strategies for computation			
			Recognise and represent multiplication as repeated addition, groups and arrays	Recall multiplication facts of two, three, five and ten and related division facts	Recall multiplication facts up to 10×10 and related division facts		
			Recognise and represent division as grouping into equal sets and solve simple problems using these representations			Solve problems involving division by a one digit number, including those that result in a remainder	
				Represent and solve problems involving multiplication using efficient mental and written strategies and appropriate digital technologies	Develop efficient mental and written strategies and use appropriate digital technologies for multiplication and for division where there is no remainder	Use efficient mental and written strategies and apply appropriate digital technologies to solve problems Solve problems involving multiplication of large numbers by one- or two-digit numbers using efficient mental, written strategies and appropriate digital technologies	Select and apply efficient mental and written strategies and appropriate digital technologies to solve problems involving all four operations with whole numbers
Fractions and decimals		Recognise and describe one-half as one of two equal parts of a whole	Recognise and interpret common uses of halves, quarters and eighths of shapes and collections	Model and represent unit fractions including $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{5}$ and their multiples to a complete whole	Investigate equivalent fractions used in contexts	Compare and order common unit fractions and locate and represent them on a number line	Compare fractions with related denominators and locate and represent them on a number line

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Fractions and decimals					Count by quarters, halves and thirds, including with mixed numerals. Locate and represent these fractions on a number line	Investigate strategies to solve problems involving addition and subtraction of fractions with the same denominator	Solve problems involving addition and subtraction of fractions with the same or related denominators
					Recognise that the place value system can be extended to tenths and hundredths. Make connections between fractions and decimal notation	Recognise that the place value system can be extended beyond hundredths	Find a simple fraction of a quantity where the result is a whole number, with and without digital technologies
						Compare, order and represent decimals	Add and subtract decimals, with and without digital technologies, and use estimation and rounding to check the reasonableness of answers
							Multiply decimals by whole numbers and perform divisions by non-zero whole numbers where the results are terminating decimals, with and without digital technologies
							Multiply and divide decimals by powers of 10
							Make connections between equivalent fractions, decimals and percentages
Real numbers	This sequence starts at Year 7						

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Money and financial mathematics		Recognise, describe and order Australian coins according to their value	Count and order small collections of Australian coins and notes according to their value	Represent money values in multiple ways and count the change required for simple transactions to the nearest five cents	Solve problems involving purchases and the calculation of change to the nearest five cents with and without digital technologies	Create simple financial plans	Investigate and calculate percentage discounts of 10%, 25% and 50% on sale items, with and without digital technologies
Patterns and algebra	Sort and classify familiar objects and explain the basis for these classifications. Copy, continue and create patterns with objects and drawings	Investigate and describe number patterns formed by skip-counting and patterns with objects	Describe patterns with numbers and identify missing elements	Describe, continue, and create number patterns resulting from performing addition or subtraction	Explore and describe number patterns resulting from performing multiplication	Describe, continue and create patterns with fractions, decimals and whole numbers resulting from addition and subtraction	Continue and create sequences involving whole numbers, fractions and decimals. Describe the rule used to create the sequence
			Solve problems by using number sentences for addition or subtraction		Solve word problems by using number sentences involving multiplication or division where there is no remainder		Explore the use of brackets and order of operations to write number sentences
					Find unknown quantities in number sentences involving addition and subtraction and identify equivalent number sentences involving addition and subtraction	Find unknown quantities in number sentences involving multiplication and division and identify equivalent number sentences involving multiplication and division	
Linear and non-linear relationships	This sequence starts at Year 7						

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	Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Measurement and geometry							
Using units of measurement	Use direct and indirect comparisons to decide which is longer, heavier or holds more, and explain reasoning in everyday language	Measure and compare the lengths and capacities of pairs of objects using uniform informal units	Compare and order several shapes and objects based on length, area, volume and capacity using appropriate uniform informal units	Measure, order and compare objects using familiar metric units of length, mass and capacity	Use scaled instruments to measure and compare lengths, masses, capacities and temperatures	Choose appropriate units of measurement for length, area, volume, capacity and mass	Connect decimal representations to the metric system
			Compare masses of objects using balance scales		Compare objects using familiar metric units of area and volume	Calculate perimeter and area of rectangles using familiar metric units	Convert between common metric units of length, mass and capacity Solve problems involving the comparison of lengths and areas using appropriate units
							Connect volume and capacity and their units of measurement
	Compare and order duration of events using everyday language of time Connect days of the week to familiar events and actions	Tell time to the half-hour Describe duration using months, weeks, days and hours	Tell time to the quarter-hour, using the language of ‘past’ and ‘to’ Name and order months and seasons Use a calendar to identify the date and determine the number of days in each month	Tell time to the minute and investigate the relationship between units of time	Convert between units of time Use ‘am’ and ‘pm’ notation and solve simple time problems	Compare 12- and 24-hour time systems and convert between them	Interpret and use timetables

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	Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Shape	Sort, describe and name familiar two-dimensional shapes and three-dimensional objects in the environment	Recognise and classify familiar two-dimensional shapes and three-dimensional objects using obvious features	Describe and draw two-dimensional shapes, with and without digital technologies	Make models of three-dimensional objects and describe key features	Compare the areas of regular and irregular shapes by informal means	Connect three-dimensional objects with their nets and other two-dimensional representations	Construct simple prisms and pyramids
			Describe the features of three-dimensional objects		Compare and describe two-dimensional shapes that result from combining and splitting common shapes, with and without the use of digital technologies		
Location and transformation	Describe position and movement	Give and follow directions to familiar locations	Interpret simple maps of familiar locations and identify the relative positions of key features	Create and interpret simple grid maps to show position and pathways	Use simple scales, legends and directions to interpret information contained in basic maps	Use a grid reference system to describe locations. Describe routes using landmarks and directional language	Investigate combinations of translations, reflections and rotations, with and without the use of digital technologies
			Investigate the effect of one-step slides and flips with and without digital technologies Identify and describe half and quarter turns	Identify symmetry in the environment	Create symmetrical patterns, pictures and shapes with and without digital technologies	Describe translations, reflections and rotations of two-dimensional shapes. Identify line and rotational symmetries	Introduce the Cartesian coordinate system using all four quadrants
						Apply the enlargement transformation to familiar two-dimensional shapes and explore the properties of the resulting image compared with the original	
Geometric reasoning	This sequence starts at Year 3			Identify angles as measures of turn and compare angle sizes in everyday situations	Compare angles and classify them as equal to, greater than, or less than, a right angle	Estimate, measure and compare angles using degrees. Construct angles using a protractor	Investigate, with and without digital technologies, angles on a straight line, angles at a point and vertically opposite angles. Use results to find unknown angles

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	Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Pythagoras and trigonometry	This sequence starts at Year 9						
Statistics and probability							
Chance		Identify outcomes of familiar events involving chance and describe them using everyday language such as 'will happen', 'won't happen' or 'might happen'	Identify practical activities and everyday events that involve chance. Describe outcomes as 'likely' or 'unlikely' and identify some events as 'certain' or 'impossible'	Conduct chance experiments, identify and describe possible outcomes and recognise variation in results	Describe possible everyday events and order their chances of occurring	List outcomes of chance experiments involving equally likely outcomes and represent probabilities of those outcomes using fractions	Describe probabilities using fractions, decimals and percentages
					Identify everyday events where one cannot happen if the other happens	Recognise that probabilities range from 0 to 1	Conduct chance experiments with both small and large numbers of trials using appropriate digital technologies
					Identify events where the chance of one will not be affected by the occurrence of the other		Compare observed frequencies across experiments with expected frequencies
Data representation and interpretation	Answer yes/no questions to collect information and make simple inferences	Choose simple questions and gather responses and make simple inferences	Identify a question of interest based on one categorical variable. Gather data relevant to the question	Identify questions or issues for categorical variables. Identify data sources and plan methods of data collection and recording	Select and trial methods for data collection, including survey questions and recording sheets	Pose questions and collect categorical or numerical data by observation or survey	Interpret and compare a range of data displays, including side-by-side column graphs for two categorical variables
		Represent data with objects and drawings where one object or drawing represents one data value. Describe the displays	Collect, check and classify data	Collect data, organise into categories and create displays using lists, tables, picture graphs and simple column graphs, with and without the use of digital technologies	Construct suitable data displays, with and without the use of digital technologies, from given or collected data. Include tables, column graphs and picture graphs where one picture can represent many data values	Construct displays, including column graphs, dot plots and tables, appropriate for data type, with and without the use of digital technologies	Interpret secondary data presented in digital media and elsewhere

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	Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Data representation and interpretation			Create displays of data using lists, table and picture graphs and interpret them	Interpret and compare data displays	Evaluate the effectiveness of different displays in illustrating data features including variability	Describe and interpret different data sets in context	

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	Year 7	Year 8	Year 9	Year 10	Year 10A
Number and algebra					
Number and place value	Investigate index notation and represent whole numbers as products of powers of prime numbers	Use index notation with numbers to establish the index laws with positive integral indices and the zero index	This sequence ends in Year 8		
	Investigate and use square roots of perfect square numbers Apply the associative, commutative and distributive laws to aid mental and written computation Compare, order, add and subtract integers	Carry out the four operations with rational numbers and integers, using efficient mental and written strategies and appropriate digital technologies			
Fractions and decimals	This sequence ends in Year 6				
Real numbers	Compare fractions using equivalence. Locate and represent positive and negative fractions and mixed numbers on a number line Solve problems involving addition and subtraction of fractions, including those with unrelated denominators Multiply and divide fractions and decimals using efficient written strategies and digital technologies Express one quantity as a fraction of another, with and without the use of digital technologies				
	Round decimals to a specified number of decimal places	Investigate terminating and recurring decimals	Apply index laws to numerical expressions with integer indices Express numbers in scientific notation		Use the definition of a logarithm to establish and apply the laws of logarithms

MATHEMATICS – Scope and sequence 7–10

	Year 7	Year 8	Year 9	Year 10	Year 10A
Real numbers	Connect fractions, decimals and percentages and carry out simple conversions Find percentages of quantities and express one quantity as a percentage of another, with and without digital technologies	Solve problems involving the use of percentages, including percentage increases and decreases, with and without digital technologies			
	Recognise and solve problems involving simple ratios	Solve a range of problems involving rates and ratios, with and without digital technologies	Solve problems involving direct proportion. Explore the relationship between graphs and equations corresponding to simple rate problems		
		Investigate the concept of irrational numbers, including π			Define rational and irrational numbers and perform operations with surds and fractional indices
Money and financial mathematics	Investigate and calculate ‘best buys’, with and without digital technologies	Solve problems involving profit and loss, with and without digital technologies	Solve problems involving simple interest	Connect the compound interest formula to repeated applications of simple interest using appropriate digital technologies	
Patterns and algebra	Introduce the concept of variables as a way of representing numbers using letters	Extend and apply the distributive law to the expansion of algebraic expressions	Extend and apply the index laws to variables, using positive integer indices and the zero index	Factorise algebraic expressions by taking out a common algebraic factor	Investigate the concept of a polynomial and apply the factor and remainder theorems to solve problems
	Create algebraic expressions and evaluate them by substituting a given value for each variable	Factorise algebraic expressions by identifying numerical factors	Apply the distributive law to the expansion of algebraic expressions, including binomials, and collect like terms where appropriate	Simplify algebraic products and quotients using index laws	
	Extend and apply the laws and properties of arithmetic to algebraic terms and expressions	Simplify algebraic expressions involving the four operations		Apply the four operations to simple algebraic fractions with numerical denominators	
				Expand binomial products and factorise monic quadratic expressions using a variety of strategies	

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	Year 7	Year 8	Year 9	Year 10	Year 10A
Patterns and algebra				Substitute values into formulas to determine an unknown	
Linear and non-linear relationships	Given coordinates, plot points on the Cartesian plane, and find coordinates for a given point	Plot linear relationships on the Cartesian plane with and without the use of digital technologies	Find the distance between two points located on the Cartesian plane using a range of strategies, including graphing software	Solve problems involving linear equations, including those derived from formulas	Describe, interpret and sketch parabolas, hyperbolas, circles and exponential functions and their transformations
	Solve simple linear equations	Solve linear equations using algebraic and graphical techniques. Verify solutions by substitution	Find the midpoint and gradient of a line segment (interval) on the Cartesian plane using a range of strategies, including graphing software	Solve linear inequalities and graph their solutions on a number line	Solve simple exponential equations
	Investigate, interpret and analyse graphs from authentic data		Sketch linear graphs using the coordinates of two points and solve linear equations	Solve linear simultaneous equations, using algebraic and graphical techniques, including using digital technology	Apply understanding of polynomials to sketch a range of curves and describe the features of these curves from their equation
			Graph simple non-linear relations with and without the use of digital technologies and solve simple related equations	Solve problems involving parallel and perpendicular lines	Factorise monic and non-monic quadratic expressions and solve a wide range of quadratic equations derived from a variety of contexts
				Explore the connection between algebraic and graphical representations of relations such as simple quadratics, circles and exponentials using digital technology as appropriate	
				Solve linear equations involving simple algebraic fractions	
				Solve simple quadratic equations using a range of strategies	

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	Year 7	Year 8	Year 9	Year 10	Year 10A
Measurement and geometry					
Units of measurement	Establish the formulas for areas of rectangles, triangles and parallelograms, and use these in problem-solving	Choose appropriate units of measurement for area and volume and convert from one unit to another	Calculate areas of composite shapes		
	Calculate volumes of rectangular prisms	Find perimeters and areas of parallelograms, trapeziums, rhombuses and kites	Calculate the surface area and volume of cylinders and solve related problems Solve problems involving the surface area and volume of right prisms	Solve problems involving surface area and volume for a range of prisms, cylinders and composite solids	Solve problems involving surface area and volume of right pyramids, right cones, spheres and related composite solids
		Investigate the relationship between features of circles such as circumference, area, radius and diameter. Use formulas to solve problems involving circumference and area			
		Develop formulas for volumes of rectangular and triangular prisms and prisms in general. Use formulas to solve problems involving volume			
		Solve problems involving duration, including using 12- and 24-hour time within a single time zone	Investigate very small and very large time scales and intervals		
Shape	Draw different views of prisms and solids formed from combinations of prisms	This sequence ends at Year 7			
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	This sequence ends at Year 7			

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	Year 7	Year 8	Year 9	Year 10	Year 10A
Geometric reasoning	Identify corresponding, alternate and co-interior angles when two straight lines are crossed by a transversal	Define congruence of plane shapes using transformations Develop the conditions for congruence of triangles	Use the enlargement transformation to explain similarity and develop the conditions for triangles to be similar Solve problems using ratio and scale factors in similar figures	Formulate proofs involving congruent triangles and angle properties Apply logical reasoning, including the use of congruence and similarity, to proofs and numerical exercises involving plane shapes	Prove and apply angle and chord properties of circles
	Investigate conditions for two lines to be parallel and solve simple numerical problems using reasoning				
	Demonstrate that the angle sum of a triangle is 180° and use this to find the angle sum of a quadrilateral	Establish properties of quadrilaterals using congruent triangles and angle properties, and solve related numerical problems using reasoning			
	Classify triangles according to their side and angle properties and describe quadrilaterals				
Pythagoras and trigonometry	This sequence starts at Year 9		Investigate Pythagoras' Theorem and its application to solving simple problems involving right-angled triangles	Solve right-angled triangle problems including those involving direction and angles of elevation and depression	Establish the sine, cosine and area rules for any triangle and solve related problems
	This sequence starts at Year 9		Use similarity to investigate the constancy of the sine, cosine and tangent ratios for a given angle in right-angled triangles		Use the unit circle to define trigonometric functions, and graph them with and without the use of digital technologies
	This sequence starts at Year 9		Apply trigonometry to solve right-angled triangle problems		Solve simple trigonometric equations
	This sequence starts at Year 9				Apply Pythagoras' Theorem and trigonometry to solving three-dimensional problems in right-angled triangles

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	Year 7	Year 8	Year 9	Year 10	Year 10A
Statistics and probability					
Chance	Construct sample spaces for single-step experiments with equally likely outcomes	Identify complementary events and use the sum of probabilities to solve problems	List all outcomes for two-step chance experiments, both with and without replacement using tree diagrams or arrays. Assign probabilities to outcomes and determine probabilities for events	Describe the results of two- and three-step chance experiments, both with and without replacements, assign probabilities to outcomes and determine probabilities of events. Investigate the concept of independence	Investigate reports of studies in digital media and elsewhere for information on their planning and implementation
	Assign probabilities to the outcomes of events and determine probabilities for events	Describe events using language of ‘at least’, exclusive ‘or’ (A or B but not both), inclusive ‘or’ (A or B or both) and ‘and’	Calculate relative frequencies from given or collected data to estimate probabilities of events involving ‘and’ or ‘or’	Use the language of ‘if ... then’, ‘given’, ‘of’, ‘knowing that’ to investigate conditional statements and identify common mistakes in interpreting such language	
		Represent events in two-way tables and Venn diagrams and solve related problems	Investigate reports of surveys in digital media and elsewhere for information on how data were obtained to estimate population means and medians		
Data representation and interpretation	Identify and investigate issues involving numerical data collected from primary and secondary sources	Investigate techniques for collecting data, including census, sampling and observation	Identify everyday questions and issues involving at least one numerical and at least one categorical variable, and collect data directly and from secondary sources	Determine quartiles and interquartile range	Calculate and interpret the mean and standard deviation of data and use these to compare data sets
	Construct and compare a range of data displays including stem-and-leaf plots and dot plots	Explore the practicalities and implications of obtaining data through sampling using a variety of investigative processes	Construct back-to-back stem-and-leaf plots and histograms and describe data, using terms including ‘skewed’, ‘symmetric’ and ‘bi modal’	Construct and interpret box plots and use them to compare data sets	Use information technologies to investigate bivariate numerical data sets. Where appropriate use a straight line to describe the relationship allowing for variation
	Calculate mean, median, mode and range for sets of data. Interpret these statistics in the context of data	Explore the variation of means and proportions of random samples drawn from the same population	Compare data displays using mean, median and range to describe and interpret numerical data sets in terms of location (centre) and spread	Compare shapes of box plots to corresponding histograms and dot plots	
	Describe and interpret data displays using median, mean and range	Investigate the effect of individual data values, including outliers, on the mean and median		Use scatter plots to investigate and comment on relationships between two numerical variables	

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	Year 7	Year 8	Year 9	Year 10	Year 10A
Data representation and interpretation				Investigate and describe bivariate numerical data where the independent variable is time	
				Evaluate statistical reports in the media and other places by linking claims to displays, statistics and representative data	