Government of **Western Australia**
School Curriculum and Standards Authority

Western Australian Curriculum

Mathematics

Scope and sequence of the mandated curriculum content

Pre-primary–Year 10 | Revised curriculum

For familiarisation in 2025

Acknowledgement of Country

Kaya. The School Curriculum and Standards Authority (the Authority) acknowledges that our offices are on Whadjuk Noongar boodjar and that we deliver our services on the country of many traditional custodians and language groups throughout Western Australia. The Authority acknowledges the traditional custodians throughout Western Australia and their continuing connection to land, waters and community. We offer our respect to Elders past and present.

Disclaimer

Any resources such as texts, websites and so on that may be referred to in this document are provided as examples of resources that teachers can use to support their learning programs. Their inclusion does not imply that they are mandatory or that they are the only resources relevant to the course. Teachers must exercise their professional judgement as to the appropriateness of any they may wish to use.

2024/77069[v8]

Contents

Overview

The current Western Australian Curriculum: Mathematics was adopted from the Australian Curriculum version 8.1.

The Western Australian Curriculum: Mathematics has been adapted from the current Western Australian Curriculum, the New South Wales Curriculum and Australian Curriculum version 9, and has been contextualised for the *Western Australian Curriculum and Assessment Outline*.

Guide to reading this document

The Scope and sequence shows the **mandated** curriculum for teaching, written as **content descriptions** across year levels so that a sequence can be viewed across the years of schooling from Pre-primary to Year 10.

The document is organised by three Mathematics strands: Number and algebra; Measurement and geometry; and Probability and statistics.

The **Number and algebra** strand for **Pre-primary to Year 6** includes: Understanding number; Understanding equalities and inequalities; Patterns and relationships; Calculating with number; Financial mathematics; and Modelling with number.

The **Number and algebra** strand for **Years 7–10** includes: Understanding number; Calculating with number; Algebraic techniques; Linear and non-linear equations and inequalities; Linear and non-linear patterns and relationships; Financial mathematics; and Modelling with number and algebra.

The **Measurement and geometry** strand for **Pre-primary to Year 10** includes: Two-dimensional space and structures; Three-dimensional space and structures; Non-spatial measurement; and Modelling with measurement and geometry.

The **Probability and statistics** strand for **Pre-primary to Year 6** includes: Probability; and Statistics.

The **Probability and statistics** strand for **Years 7–10** includes: Probability and statistics; and Modelling with probability and statistics.

The optional content in Years 9 and 10 is intended to build and extend students' year level knowledge according to areas of interest, understanding of content and preparation for subsequent study. Teachers may choose optional content according to the needs of the student/s.

The tables below outline the subject organisation for the Pre-primary to Year 10 Mathematics curriculum.

Pre-primary to Year 6

Number and algebra					
Understanding number	Understanding equalities and inequalities	Patterns and relationships	Calculating with number	Financial mathematics	Modelling with number

Measurement and geometry			
Two-dimensional space and structures	Three-dimensional space and structures	Non-spatial measurement	Modelling with measurement and geometry

Probability and statistics	
Probability	Statistics

Years 7–10

Number and algebra						
Understanding number	Calculating with number	Algebraic techniques	Linear and non-linear equations and inequalities	Linear and non-linear patterns and relationships	Financial mathematics	Modelling with number and algebra

Measurement and geometry			
Two-dimensional space and structures	Three-dimensional space and structures	Non-spatial measurement	Modelling with measurement and geometry

Probability and statistics	
Probability and statistics	Modelling with probability and statistics

Pre-primary–Year 6

Strand: Number and algebra

Sub-strand: Understanding number

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Say, read, write and order numbers up to 20, from any starting point. Count collections up to 20	Say, read, write and order numbers to 120 and recognise the repetition of the 0–9 sequence of digits. Skip count collections by twos, fives and tens from zero	Read, write and order numbers to at least 1020, including on a number line. Recognise the repetition of the 0–99 sequence of digits, and the role of zero. Skip count forwards and backwards by twos, threes, fives and tens from any starting point	Read, write and order numbers to at least four-digits, including on a number line. Recognise the repetition of the 0–999 sequence of digits	Read, write and order numbers to at least six-digits. Recognise the significance of the final digit to determine odd and even numbers	Read, write and order seven-digit numbers and beyond	Investigate the use of positive and negative integers to represent everyday situations. Read, write and order integers on a number line
				Read and write decimal numbers up to two decimal places	Read, write, compare and order decimal numbers, including on a number line	

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Subitise, partition and compare small collections	Explore different ways to represent and partition collections up to 100, including in groups of 10, using concrete materials	Explore different ways to represent and partition two- and three-digit numbers, including in groups of 10 and 10 groups of 10 to make 100, using concrete materials, numbers and symbols	Explore different ways to represent and partition numbers up to four-digits, including groups of 10 (tens), 10 groups of 10 (hundreds) and beyond, using concrete materials and number sentences. Recognise that the value of a digit is determined by its place in a numeral	Represent numbers up to five-digits using place value and non-standard partitions with equations. Recognise the '10 times as many' place value relationship between adjacent places from right to left	Represent and partition numbers up to seven-digits. Use the multiplicative place value relationship between adjacent places to explain the value of a digit	Represent and explain the multiplicative place value relationship between places in any number, including decimals
				Represent and explain the relationship between one whole being shared equally among 10 as 0.1 or $\frac{1}{10}$ and being shared equally among 100	Represent and partition decimal numbers. Use the multiplicative place value relationship between adjacent places to explain the value of a digit	

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
				as 0.01 or $\frac{1}{100}$ using concrete materials		
	Explore partitions of numbers with small collections, using part-part-whole relationships	Explore the relationship between addition and subtraction with small collections, using part-part-whole knowledge, numbers and symbols	Represent and explain the relationship between addition and subtraction, using part-part-whole models and number sentences			
		Recall addition and subtraction facts to 10	Recall addition and subtraction facts to 20			
Explore grouping and sharing of small collections	Explore different ways to equally group or share small collections	Explore multiplication and division using repeated addition, equal grouping and arrays	Explore the relationship between multiplication and division, using diagrams, arrays and number sentences	Represent and explain the relationship between multiplication and division, using arrays and equations	Explore, identify and represent factors and multiples of whole numbers in arrays and explain reasoning	Explore, identify and represent square, prime and composite numbers in arrays and explain reasoning

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			Recall multiplication facts of 2, 3, 4, 5 and 10, and related division facts	Recall multiplication facts up to 10×10, and related division facts		
	Recognise, describe and create a half by dividing a physical whole into two equal parts or a collection into two equal quantities	Recognise, describe and create halves, quarters and eighths by repeatedly halving a physical whole or a collection	Recognise, represent and describe unit fractions $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}$ and $\frac{1}{10}$. Combine unit fractions with the same denominator to create a complete whole	Explore and represent common equivalent fractions and make connections to their decimal representation	Count by unit fractions, locate and represent on number lines and extend to mixed numerals	Order common fractions with the same and related denominators, including mixed numerals, using diagrams and number lines
					Identify the use of percentages in everyday situations and recognise that 100% represents a complete whole, which is equal to one	Connect commonly used percentages, including 10%, 25% and 50% to fractions and decimals, including on a number line

Sub-strand: Understanding equalities and inequalities

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		Use the equality symbol to indicate the same value in number sentences involving addition and subtraction	Explore and use the greater than, less than and equality symbols to compare two whole numbers and statements involving addition and subtraction	Decide if statements of equality and inequality involving the four operations are true, and explain reasoning	Complete and check statements of equality and inequality involving the four operations, and explain reasoning	Complete, check and construct statements of equality and inequality involving the four operations, including the use of brackets and order of operations, and explain reasoning

Sub-strand: Patterns and relationships

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Copy and continue repeating patterns in everyday environments using a range of materials, sounds and movement	Continue and create repeating patterns. Explore and label repeating patterns to show how many of each element is in a repeat unit (core)	Recognise and continue increasing or decreasing additive patterns with collections and numbers, and identify missing elements in a pattern	Create and represent increasing or decreasing additive patterns from any starting point, using concrete materials and numbers, and describe rules to represent the pattern	Create and represent increasing multiplicative patterns, using concrete materials and numbers, and describe rules to represent the pattern	Follow rules to create increasing or decreasing additive and multiplicative patterns using concrete materials and numbers. Explore ways to predict unknown values	Create and represent increasing or decreasing patterns using concrete materials and numbers. Use words to generalise rules that relate each element of a pattern to its position

Sub-strand: Calculating with number

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Manipulate collections to add and subtract quantities to 20 and beyond, exploring a range of strategies	Add and subtract one- and two-digit numbers, using a range of strategies	Add and subtract two- and three-digit numbers, using a range of strategies	Add and subtract whole numbers up to four-digits, using flexible and efficient strategies	Add and subtract any whole numbers, using flexible and efficient strategies	Choose and use flexible and efficient strategies to calculate with whole numbers, involving any of the four operations and explore the use of the order of operations
					Add and subtract fractions with the same denominator, using flexible and efficient strategies	Add and subtract fractions with related denominators, using flexible and efficient strategies, based on knowledge of equivalence
						Add and subtract decimals to two decimal places, using flexible and efficient strategies

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
				Multiply two-digit numbers by one-and two-digit numbers, and divide whole numbers by one-digit numbers, where there is no remainder, using flexible and efficient strategies	Multiply larger whole numbers by one- and two-digit numbers and divide whole numbers by one-digit numbers, including those with remainders, using flexible and efficient strategies	Multiply decimals by whole numbers and multiply and divide decimals by powers of 10, using flexible and efficient strategies
						Determine a familiar fraction, decimal or percentage of a whole number
			Explore additive estimation strategies to evaluate the reasonableness of a calculation in familiar contexts	Explore a range of additive estimation strategies for different situations, including using knowledge of odd and even numbers	Explore multiplicative estimation strategies and their appropriateness in different situations	Use estimation and rounding to make reasonable evaluations and justify results

Sub-strand: Financial mathematics

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Explore making purchases using coins, notes, and debit cards	Explore different payment formats and identify Australian coins and notes, according to their value	Explore and describe the relationship between dollars ($) and cents (c) and their value in the contexts of spending, saving and donating	Investigate financial transactions, recognising equivalent values and change	Explore saving and spending, recognising that limited amounts of money are available	Identify features of budgets and create a simple budget, comparing prices where possible	Create a plan for a savings goal, predict expenses and identify that saving money with a bank attracts interest

Sub-strand: Modelling with number

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Explore and represent familiar real-world situations involving adding, removing, grouping or sharing small collections using role-play or concrete materials	Represent quantities and actions in real-world situations involving adding, taking away, sharing or equal groupings using role-play, concrete materials, drawings or numbers.	Identify and represent real-world situations involving addition, subtraction, simple multiplication or division using objects or diagrams labelled with numbers and symbols that match	Identify and represent a range of real-world addition and subtraction situations with part-part-whole models, and multiplication and division situations with arrays. Write	Identify and represent real-world additive and multiplicative situations with diagrams and equations to reach a solution. Interpret and communicate findings in context	Identify and represent a range of real-world additive and multiplicative situations with equations, using diagrams where needed. Interpret and communicate findings in context	In real-world situations involving whole numbers, order of operations and fractions with the same denominator I. analyse the situation and identify relevant information

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Describe the meaning of the representations and answers in context	the actions in the situation. Interpret the meaning of answers in context	number sentences to reach a solution and interpret in context			II. mathematically represent the situation, including using equations to reach a solution III. interpret and communicate findings in the context, exploring and justifying decisions

Strand: Measurement and geometry

Sub-strand: Two-dimensional space and structures

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Sort, name and represent familiar two-dimensional shapes and recognise them within the environment	Name and classify familiar two-dimensional shapes based on sides and vertices using informal language	Identify and draw two-dimensional shapes and describe their similarities and differences using spatial terms, including opposite, parallel, curved, straight and vertices	Explore one-step slides (translations) and flips (reflections) of familiar two-dimensional shapes, make connections to line symmetry and describe the movement of the shape	Explore, visualise, describe and create two-dimensional shapes that result from combining or splitting familiar shapes	Explore line and rotational symmetry in two-dimensional shapes	Explore, visualise and describe translations, reflections or rotations of two-dimensional shapes
Explore and compare the length of everyday items to say which is longer and explain reasoning	Directly and indirectly compare lengths, including by counting uniform informal units	Estimate, measure and compare lengths, by choosing appropriate uniform informal units, and place end to end without gaps or overlaps	Estimate, measure and order lengths in uniform units, including millimetres, centimetres and metres	Estimate, measure and compare the perimeter of two-dimensional shapes, using scaled instruments and appropriate informal or formal units	Choose and use appropriate metric units and part units to estimate and measure lengths	Convert between units of length, by connecting metric units to the decimal system and extend to units of mass and capacity

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
					Describe and test a sequence of steps to determine the perimeter of rectangles	
		Explore and directly compare the areas of two shapes by superimposing one over the other	Compare the areas of two shapes indirectly, using uniform informal units, without gaps and overlaps	Estimate, measure and compare the areas of rectangles, using uniform informal square units in arrays	Identify dimensions of a metric square unit. Estimate, measure and compare areas using metric square units	Describe and test a sequence of steps to determine the area of rectangles based on dimensions
		Explore quarter-, half- and full-turns in everyday situations	Identify angles as measures of turn between two lines that intersect and directly compare angle sizes in everyday situations	Indirectly compare angles and identify as being equal to, greater than or less than a right angle	Estimate, measure and construct angles in degrees using a protractor. Classify acute, right, obtuse, reflex and straight angles	Investigate angles in a right angle, on a straight line, angles at a point and vertically opposite angles, to determine unknown angles and explain reasoning

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Show and describe position and movement in familiar locations	Give and follow directions within familiar locations	Locate positions and pathways on simple maps of familiar locations	Create and interpret simple maps to show positions and pathways, considering the relative position of key features	Create or interpret a grid map, describe positions and pathways, and explore scale and legends	Use directional language, grid references and grid coordinates to describe positions and pathways	Explore the Cartesian plane as the intersection of two number lines at zero, using the coordinate system to locate points in all four quadrants

Sub-strand: Three-dimensional space and structures

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Explore familiar three-dimensional objects in the environment	Recognise, sort and name familiar three-dimensional objects and identify the two-dimensional shapes that comprise them	Manipulate, visualise and name familiar three-dimensional objects, informally describe features and connect to common uses	Visualise and make models of three-dimensional objects. Compare and classify objects according to the key features of faces, edges and vertices	Connect three-dimensional objects to their two-dimensional representations and visualise and describe key features that cannot be seen	Visualise and connect three-dimensional objects to their nets and build objects from their nets	Visualise, sketch and construct three-dimensional objects, including prisms and pyramids
Explore capacity and compare containers to say which holds more and explain reasoning	Directly and indirectly compare the capacities of a pair of containers	Estimate, measure and compare the capacities of different containers using uniform informal units	Measure and order capacity in uniform units, including millilitres. Estimate larger capacities using a litre container	Estimate, measure and compare capacity in litres and millilitres using scaled instruments	Choose appropriate units to estimate and measure capacity	
				Explore and directly compare volumes, and recognise that objects with different shapes can have the same volume	Identify the dimensions of a metric cubic unit. Construct and compare rectangular prisms using cubes and determine their volume	Describe and test a sequence of steps to determine the volume of rectangular prisms based on dimensions

Sub-strand: Non-spatial measurement

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Explore mass and compare everyday items to say which is heavier	Directly compare the masses of two objects by hefting and using balance scales	Estimate and compare masses of objects using balance scales and uniform informal units	Compare objects to common benchmarks, including 100 g, 250 g, half and one kilogram	Estimate and measure mass in kilograms and grams using analogue and digital scales	Choose appropriate units to estimate, measure and compare mass	
Sequence days of the week and times of the day, making connections to routines, and compare duration of familiar events using everyday language	Read the time on digital clocks and make connections to routines. Explore and describe duration informally in years, months, weeks, days, hours, minutes and seconds	Tell time to the hour, half- and quarter-hour, on analogue and digital clocks. Identify the date and determine the duration between two events in days using a calendar	Tell the time in minutes using analogue and digital clocks. Describe duration in hours, minutes and seconds and identify the relationship between them	Convert between units of time, tell the time on digital and analogue clocks using ‘am’ and ‘pm’ notation and determine duration	Explore, describe and convert between 12- and 24-hour time systems and use to determine duration	Use timetables and itineraries in 12- and 24-hour time systems to determine the duration of events and journeys

Sub-strand: Modelling with measurement and geometry

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
				In real-world situations involving two-dimensional shapes, three-dimensional objects, grid maps, determining length, capacity or mass in metric units or converting between units of time, mathematically represent the problem to reach a solution. Interpret and communicate findings in the context of the situation	In real-world situations involving transformation of two-dimensional shapes, nets, grid reference systems, determining length, area, capacity, volume or mass in metric units or converting between 12- and 24-hour time, mathematically represent the problem to reach a solution. Interpret and communicate findings in the context of the situation	In real-world situations involving transformation of two-dimensional shapes, rectangular prisms, pyramids, Cartesian plane, measuring and converting metric units for length, mass and capacity, determining volume and area in metric units or determining the duration of events and journeys I. analyse the situation and identify relevant information

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
						II. mathematically represent the situation to reach a solution III. interpret and communicate findings in the context, exploring and justifying decisions

Strand: Probability and statistics

Sub-strand: Probability

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Explore and describe familiar events using the everyday language of chance	Describe and reason about the likelihood of familiar events occurring, using the everyday language of chance	Classify familiar events involving chance as being 'possible' or 'impossible' and using the everyday language of chance to compare the likelihood of them happening	Describe familiar events using the language of chance. Identify and list possible outcomes of everyday chance events	Order the likelihood of everyday chance events. Identify when events are not affected by previous events	Compare a range of everyday chance events, grouping into those with outcomes that are equally likely or not equally likely	Order everyday chance events and phrases on a scale from 0 to 1, where 0 represents an event that is certain not to happen (impossible) and 1 represents an event that is certain to happen
			Recognise the likelihood of outcomes for planned, equally likely, repeated chance experiments. Conduct the experiments and recognise variation in the results	Predict the likelihood of outcomes of unequally likely, repeated chance experiments. Conduct the experiments, describe variation and compare to the prediction	Conduct repeated chance experiments with equally likely outcomes, including with the use of digital tools. Represent results as fractions, compare with others and discuss variation	Conduct repeated chance experiments and simulations with equally likely or unequally likely outcomes, including with the use of digital tools, for an increasing number of trials.

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
						Compare expected and observed frequencies in terms of variation as the number of trials increase

Sub-strand: Statistics

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		Describe and interpret real-life data represented in lists, tables and one-to-one block and picture graphs	Describe and interpret real-life data represented in dot plots and column graphs with scale intervals of one	Describe and interpret real-life data represented in many-to-one pictographs and column graphs	Describe and interpret line graphs that show how real-life continuous data changes over time	Describe and interpret a range of displays for real-life numerical data, including side-by-side column graphs, using mode, range and shape
						Describe how the features of real-life data displays may influence an audience
Collect, group and compare data using objects and images to make inferences	Answer simple questions of interest by collecting and comparing categorical data using objects, pictures, tallies and numbers to record frequencies	Choose and answer simple questions of interest by collecting and comparing categorical data. Display data using lists, tables and one-to-one block and picture graphs	In a real-world context, explore questions of interest by collecting categorical or discrete numerical data through observation or surveys. Organise	In a real-world context, pose questions and collect categorical or discrete numerical data, checking for accuracy and consistency. Organise and	In a real-world context, pose and refine questions, and collect categorical or discrete numerical data. Organise and make choices to represent data. Interpret and	In a real-world context involving numerical data I. analyse the situation to pose a refined question II. choose the most appropriate way to collect data to ensure accuracy

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			and represent data in dot plots, tables and column graphs and interpret to answer a question	represent data in pictographs and column graphs and interpret the data to communicate findings in terms of the context	communicate findings in terms of the context, and reflect on variation and accuracy	and consistency, and make choices to represent data, including line graphs and side-by-side column graphs III. interpret and communicate findings in terms of the context and describe reasons for variation

Years 7–10

Strand: Number and algebra

Sub-strand: Understanding number

Year 7	Year 8	Year 9	Year 10
Explore and represent equivalent fractions with related and unrelated denominators, visually and numerically Explore and explain relationships between fractions, decimals and percentages Draw and label, or use a given number line, to locate, order and compare with equality and inequality symbols, fractions, terminating decimals, percentages and integers	Investigate, define, identify and use correct notation for rational and irrational numbers, including terminating, recurring and rounded decimals Draw and label, or use a given number line, to locate, order and compare with equality and inequality symbols, rational and irrational numbers, including numbers written in index form, and percentages	Investigate very large and very small numbers and move flexibly between their exact and approximated scientific notation Investigate, define, compare and order real numbers, with equality and inequality symbols, including those expressed in scientific notation **Year 9 optional** Explore to develop a sequence of steps to flexibly move between recurring decimals and fractions	Move flexibly between real number inequalities expressed as a worded statement, algebraically or on a number line

Year 7	Year 8	Year 9	Year 10
Explore to extend addition and subtraction of positive integers to include negative integers Explore and interpret multiplication and division of positive fractions, visually and numerically Explore and interpret multiplication and division of positive decimals, visually and numerically Use place value understanding to explore rounding decimals to a specified number of decimal places	Explore to extend multiplicative thinking with positive integers to include multiplication and division of negative integers		
Extend the use of associative, commutative and distributive laws, additive and multiplicative partitioning, inverse operations, order of operations, equality and inequality to validate a range of mental and written strategies involving the four operations on whole numbers, positive fractions and decimals, and addition and subtraction of integers	Extend the use of associative, commutative and distributive laws, additive and multiplicative partitioning, inverse operations, order of operations, equality and inequality to validate a range of mental and written strategies involving the four operations on any rational number		

Year 7	Year 8	Year 9	Year 10
Explore and explain the use of ratios and fractions to compare numbers and quantities. Make connections between equivalent fractions and between equivalent ratios	Explore and apply proportional reasoning to find unknown numbers in equivalent ratios and fractions Identify, interpret, compare and use familiar rates, including those represented as graphs that show a quantity varying over time		

Sub-strand: Calculating with number

Year 7	Year 8	Year 9	Year 10
Convert between fractions, decimals and percentages using flexible and efficient strategies Determine percentages of quantities and express one quantity as a percentage of another using flexible and efficient strategies	Calculate percentage increases and decreases, using knowledge of fractions and decimals to improve efficiency		
Add and subtract integers using flexible and efficient strategies Add and subtract positive fractions with related and unrelated denominators using flexible and efficient strategies Multiply and divide positive fractions using flexible and efficient strategies Multiply and divide positive decimals using flexible and efficient strategies Use appropriate rounding, estimation strategies and context to check reasonableness of solutions	Multiply and divide integers using flexible and efficient strategies Use flexible and efficient strategies for calculations involving the four operations with rational numbers, including those written in index form, using rounding, estimation or the context to check reasonableness of results	Use flexible and efficient strategies for calculations involving the four operations with real numbers and express solutions in exact form or as an approximation	Use absolute and percentage error to compare the result of using approximate rather than exact real numbers on final calculations

Sub-strand: Algebraic techniques

Year 7	Year 8	Year 9	Year 10
Represent in expanded form, evaluate, and compare numbers expressed in index notation, including powers of 10 Extend knowledge of factors to represent natural numbers as products of prime factors using index notation as appropriate Explore and explain connections between square numbers and square roots, cube numbers and cube roots, as products of repeated factors	Develop and apply the index laws for numbers in index form with positive-integer and zero indices	Extend and apply index laws with positive-integer indices and the zero index, to variable bases and simplify where appropriate Extend and apply index laws with numerical expressions of base 10 to include negative-integer indices. Develop the relationship between these negative indices and equivalent fractions and decimals	Extend and apply index laws with positive-integer indices and variable bases, to include negative-integer indices Substitute values into real-life linear, quadratic or simple exponential formulas to find unknowns using digital tools **Year 10 optional** Simplify algebraic products and quotients involving indices with integer and fractional indices **Year 10 optional** Establish the connection between fractional indices and surds. Perform the four operations with surds and rationalise the denominator if required **Year 10 optional** Interpret and use base-ten logarithmic scales on graphs of real-life contexts

Year 7	Year 8	Year 9	Year 10
Use real-world contexts or concrete materials to introduce the concept of a variable to represent a number using a letter. Create simple algebraic expressions and evaluate by substituting a given value for the variable/s Extend and apply the associative and commutative laws and properties of numbers to include variables	Extend and apply knowledge of additive and multiplicative partitioning, order of operations and the associative and commutative laws of numbers, to create or simplify algebraic expressions involving the four operations Extend and apply knowledge of the distributive law with numbers to algebraically expand and factorise expressions with a common numerical factor	Explore and apply the distributive law to expand and factorise algebraic expressions with a common algebraic factor, including collecting like terms where appropriate Explore and apply the distributive law to expand binomial products, collecting like terms where appropriate **Year 9 optional** Explore efficient strategies to simplify expressions that involve addition, subtraction, multiplication or division of algebraic fractions with an algebraic term in the numerator and a whole number denominator	Extend and apply knowledge of the expansion of binomial products to explore the factorisation of monic quadratics **Year 10 optional** Factorise monic and non-monic quadratic expressions using techniques, such as completing the square, perfect squares, difference of squares and grouping in pairs for four-term expressions **Year 10 optional** Explore efficient strategies to simplify expressions that involve addition, subtraction, multiplication or division of algebraic fractions with an algebraic expression in the numerator and/or denominator, including the use of factorisation

Sub-strand: Linear and non-linear equations and inequalities

Year 7	Year 8	Year 9	Year 10
Solve simple linear equations involving up to two operations and verify the solution by substitution	Solve linear equations involving up to three operations, including those with negative coefficients or requiring collection of like terms, and verify the solution by substitution Determine and explain why there are two solutions to a quadratic equation of the form $x^2 = k$ if $k > 0$	Solve linear equations involving brackets and/or a variable on each side of the equation, and verify the solution by substitution Determine and explain why there are up to two solutions to a quadratic equation of the form $ax^2 = k$ and verify the possible solution/s by substitution **Year 9 optional** Solve linear equations that involve simple algebraic fractions with numerical denominators and verify the solution by substitution **Year 9 optional** Solve quadratic equations in factorised form using the null factor theorem and verify the solution/s by substitution	Solve one-variable linear inequalities involving brackets and/or a variable on each side. Represent the solution on a number line and verify the solution by substitution Determine the solution to linear simultaneous equations in the forms $y = mx + c$ or $ax + by = c$ graphically and verify the solution by substitution **Year 10 optional** Determine the solution to linear simultaneous equations in the forms $y = mx + c$ or $ax + by = c$ algebraically and verify the solution by substitution or using digital tools **Year 10 optional** Identify the region on the Cartesian plane defined by linear inequalities **Year 10 optional** Solve monic and non-monic quadratic equations graphically and

Year 7	Year 8	Year 9	Year 10
			algebraically, including the use of the quadratic formula, factorising techniques and digital tools and verify the solution/s by substitution **Year 10 optional** Use algebraic techniques to solve exponential equations that involve terms with related bases **Year 10 optional** Solve cubic equations in the form $ax^3 = k$ or in factored form, algebraically or using digital tools

Sub-strand: Linear and non-linear patterns and relationships

Year 7	Year 8	Year 9	Year 10
Explore, describe and represent concrete and real-world, linear and non-linear growing patterns using a table of values and a graph. Determine unknown values in the pattern	Use a table of values to move flexibly between the equation of a line represented by $y = mx + c$ and its graph and make connections between the algebraic and graphical solution of the equation. Explore and explain similarities and differences between multiple lines on the same axes	Use the Cartesian plane to explore finding the distance, gradient and midpoint between two points Move flexibly between the equation of a line, represented by $y = mx + c$ and its graph using the gradient and y-intercept. Graph the equation of a line represented in $ax + by = c$ form **Year 9 optional** Develop and use the algebraic formulas for finding the distance, midpoint and gradient between two points **Year 9 optional** Rearrange formulae, including $ax + by = c$, to change the subject of the formula	Use a table of values to plot points and graph quadratic functions of the form $y = ax^2 + c$. Identify and relate key graphical and algebraic features and make connections to the graphical and algebraic solution/s of $ax^2 + c = k$. Use digital tools to explore the shapes, features and related solutions to more complex quadratic functions Use a table of values to plot points and graph exponential functions of the form $y = a^x$ where $a > 0$. Identify and relate key graphical and algebraic features and use these to determine graphical solutions of related equations. Use digital tools to explore the shapes, features and related solutions to more complex exponential functions

Year 7	Year 8	Year 9	Year 10
		Identify rates as direct proportion, represent algebraically and graphically and use both forms to predict unknown values and interpret in the context of the situation Use a table of values to plot points and graph quadratic functions of the form $y = ax^2$, describe key features and make connections to the algebraic solution/s of $ax^2 = k$ **Year 9 optional** Investigate indirect proportion, represent algebraically and graphically, use both forms to predict unknown values and interpret in the context of the situation	Identify and distinguish between linear, quadratic and exponential functions represented by equations, tables of values and graphs **Year 10 optional** Use gradient and/or point/s to graphically and algebraically determine equations of parallel and perpendicular lines **Year 10 optional** Graph monic and non-monic quadratics of the form $y = ax^2 + bx + c$ or $y = a(x - p)^2 + q$ and their transformations, manually and using digital tools. Identify and connect key graphical and algebraic features and make connections to the algebraic solution/s **Year 10 optional** Explore and use strategies, including digital tools, to model the equation of a quadratic function from a table of values or graph

Year 7	Year 8	Year 9	Year 10
			Year 10 optional Explore, describe and interpret circles and rectangular hyperbolas where the asymptotes are parallel to the axes, and their transformations, using digital tools and make connections between the algebraic and graphical representations

Sub-strand: Financial mathematics

Year 7	Year 8	Year 9	Year 10
Identify the features of transactional statements and verify transactions. Explain reasons for checking and keeping financial records	Identify the advantages and disadvantages of various forms of payment for goods and services and determine penalties, such as interest charged and fees, inherent in these payments	Explore, explain and perform calculations that relate to earning income. Identify the elements of an income statement/payslip, including employer superannuation contributions and income tax as a deduction from gross income Develop and use the simple interest formula to solve problems relating to saving and borrowing **Year 9 optional** Use authenticated websites to explore and compare different savings account options based on their characteristics (interest rates, fees, withdrawal policy) or compare price, quality, terms and conditions of goods and services, such as phone plans and digital subscriptions	Explore, explain and calculate income tax, including the use of tax tables Apply repeated simple interest to develop the compound interest formula and solve problems that relate to saving and borrowing **Year 10 optional** Use authenticated websites to investigate how changes to the principal, rate of return, voluntary contributions and time can affect superannuation balances or compare characteristics of insurance, such as young driver car insurance or holiday insurance and recognise that the cost is higher when the risk is higher

Sub-strand: Modelling with number and algebra

Year 7	Year 8	Year 9	Year 10
In real-world situations involving whole numbers, positive fractions, decimals and percentages, addition and subtraction of integers, numbers in index form, linear equations with up to two operations, simple number patterns and/or transactional money statements I. analyse the situation, decide if an exact or approximate solution is required and determine assumptions and constraints II. represent the situation mathematically in order to reach a solution III. interpret and communicate findings in terms of the context and any assumptions or constraints	In real-world situations involving rational and irrational numbers, ratios, rates, percentage increases and decreases, numbers in index form, the distributive law, factorisation, linear equations with up to three operations, linear or simple quadratic relationships and/or penalties involved in different forms of goods and services payment I. analyse the situation, decide if an exact or approximate solution is required and determine assumptions and constraints II. represent the situation mathematically in order to reach a solution III. interpret and communicate findings in terms of the context and any assumptions or constraints	In real-world situations involving scientific notation, real numbers, linear equations with variables and/or brackets on either side of the equation, quadratic graphs and equations, direct proportion and/or simple interest, earning income or income statements I. analyse the situation, decide if an exact or approximate solution is required and determine assumptions and constraints II. represent the situation mathematically in order to reach a solution III. interpret and communicate findings in terms of the context and any assumptions or constraints	In real-world situations involving real numbers, absolute and percentage error, linear inequalities, simultaneous equations, real-world formulae, quadratic or exponential functions, taxation, and/or compound interest I. analyse the situation, decide if an exact or approximate solution is required and determine assumptions and constraints II. represent the situation mathematically in order to reach a solution III. interpret and communicate findings in terms of the context and any assumptions or constraints

Strand: Measurement and geometry

Sub-strand: Two-dimensional space and structures

Year 7	Year 8	Year 9	Year 10
Establish and apply relationships between lengths of sides, perimeter and area for squares, rectangles and triangles. Generalise and apply formulas, using appropriate units Explore and explain efficient strategies to determine the perimeter and area of irregular or composite shapes composed of squares and rectangles Explore and establish connections and conversions between units of area	Establish and apply relationships between lengths of sides, perpendicular lengths, lengths of diagonals, perimeter and area for parallelograms, trapeziums, rhombuses and kites. Generalise and apply formulas, using appropriate units Identify, describe and explore the relationship between the radius, diameter and circumference of a circle and use this to establish and apply formulas to determine perimeter and area, using appropriate units Investigate in order to establish, define and use Pythagoras' theorem to find the length of an unknown side in a right-angled triangle	Explore, explain and use efficient strategies to determine the perimeter and area of composite shapes involving triangles, quadrilaterals and/or circles, (including sectors), using appropriate units Use Pythagoras' theorem to determine the perimeter and area of shapes involving right-angled triangles, in both exact and decimal approximation form. Investigate and apply the converse of Pythagoras' theorem to establish whether a triangle is right-angled **Year 9 optional** Explore and apply Pythagoras' theorem and trigonometry to simple situations involving right-angled triangles in three-dimensional contexts projected to two-dimensions	Use Pythagoras' theorem and/or trigonometry to determine unknown sides and angles in right-angled triangles involving angles of elevation and depression **Year 10 optional** Apply right-angled trigonometry to two dimensional situations involving navigational bearings **Year 10 optional** Explore to establish and use the sine, cosine and area rule to determine unknown sides and angles for any triangle **Year 10 optional** Use the unit circle and dynamic geometry software to explore and represent trigonometric functions graphically

Year 7	Year 8	Year 9	Year 10
			Year 10 optional Solve simple trigonometric equations graphically, algebraically or using the unit circle and verify solution/s by substitution
Explore, identify, define, name, label and apply the language, notation and conventions of geometry for points, lines, angles and polygons Investigate, identify and describe corresponding, alternate and co-interior angles formed when two parallel lines are crossed by a transversal. Use relationships to find unknown angles and explain reasoning Demonstrate that the interior angle sum of a triangle is $180°$ Explore to classify and name triangles according to their side and angle properties. Use the properties to find unknown angles in triangles and explain reasoning	Explore, identify, classify and establish properties of quadrilaterals, including the interior angle sum. Use this to determine unknown sides and angles in quadrilaterals and explain reasoning	Explore to identify and describe conditions for triangles to be congruent. Use this to determine unknown sides or angles in pairs of congruent triangles and explain reasoning	Explore to identify and describe conditions for triangles to be similar. Use this to determine unknown sides and angles in pairs of similar triangles and explain reasoning **Year 10 optional** Explore geometric relationships and apply deductive reasoning and a sequence of logically connected statements, to produce proofs of similar triangles and angle/chord/radius/tangent properties in circles

Year 7	Year 8	Year 9	Year 10
Plot coordinates on the Cartesian plane and explore, visualise, predict and determine image coordinates after translation or reflection across the axes, or rotation about the origin	Recognise and identify equal corresponding sides and equal corresponding angles of congruent figures. Explore, visualise, predict and determine the translation, reflection, rotation, or combination of these transformations, to match one congruent figure to another	Construct similar figures by enlargement and reduction and use this to establish, explain and apply properties of similar figures Use similarity to investigate and explain the constancy of the sine, cosine and tangent ratios for a given angle in right-angled triangles. Choose and use a trigonometric ratio to determine the length of an unknown side or the size of an unknown angle Apply the properties of similarity to determine scales, lengths and angles of real-life figures from scale drawings, maps, plans and photographs **Year 9 optional** Explore the relationship between sine and cosine ratios and the unit circle, determine their approximate values for angles from 0° to 360°, and identify pairs of angles that share the same ratio value	Investigate, explore and determine the effect on the perimeter and area of shapes when they are enlarged or reduced by a scale factor

Year 7	Year 8	Year 9	Year 10
		Year 9 optional Apply deductive reasoning and use a sequence of logically connected statements to produce proofs of congruent triangles	

Sub-strand: Three-dimensional space and structures

Year 7	Year 8	Year 9	Year 10
Move flexibly between building and drawing rectangular and composite rectangular prisms from different views	Explore in order to visualise and draw cross-sections of different solids and use this to identify prisms		
Establish and apply relationships between the number of identical layers of cubic units, the number of cubic units in each identical layer and volume for rectangular prisms and composite rectangular prisms. Generalise and apply formula, using appropriate units	Establish and apply relationships between the area of a uniform cross-section, the length perpendicular to that uniform cross-section and the volume of right prisms. Generalise, apply formulas and use this to connect to capacity if required, using appropriate units Explore and establish connections and conversions between units of volume and between units of volume and capacity	Establish, explain and apply formulas to determine the volume, capacity and surface area of cylinders, using appropriate units Explore and explain efficient strategies to determine the surface area of right prisms using appropriate units Use dynamic geometry software to explore and construct familiar objects in three-dimensions using transformations of two-dimensional figures	Use efficient strategies and apply formulas to determine the volume, capacity and surface area of composite solids, using appropriate units Investigate, calculate and identify the impact of errors on the accuracy and outcome of results in measurement situations Investigate in order to determine the effect on surface area and volume when objects are enlarged or reduced by a scale factor

Year 7	Year 8	Year 9	Year 10
			Year 10 optional Explore, explain and apply efficient strategies and formulas to determine the surface area and volume of right pyramids, right cones, spheres and related composite solids

Sub-strand: Non-spatial measurement

Year 7	Year 8	Year 9	Year 10
Explore and interpret representations of time zones within Australia using 12- and 24-hour time and determine the local time at different locations considering different times of the year	Explore and interpret representations of national and international time zones using 12- and 24-hour time, and determine duration of events across multiple time zones		

Sub-strand: Modelling with measurement and geometry

Year 7	Year 8	Year 9	Year 10
In real-world situations involving perimeter and area of squares, rectangles, triangles and rectangular composite shapes, parallel lines, properties of triangles, transformations of points, views of rectangular prisms and rectangular composite objects, volume, and/or Australian time zones I. analyse the situation, decide if an exact or approximate solution is required and determine assumptions and constraints II. represent the situation mathematically in order to reach a solution III. interpret and communicate findings in terms of the context and any assumptions or constraints	In real-world situations involving perimeter and area of quadrilaterals and circles, properties of quadrilaterals, transformations of figures, Pythagoras' theorem, congruency, cross-sections, volume or capacity of prisms and/or international time zones I. analyse the situation, decide if an exact or approximate solution is required and determine assumptions and constraints II. represent the situation mathematically in order to reach a solution III. interpret and communicate findings in terms of the context and any assumptions or constraints	In real-world situations involving the perimeter and area of composite shapes and right-angled triangles, enlargement and reduction of similar figures, finding unknown side lengths and angles using trigonometric ratios, scale in similar figures and/or volume, capacity and surface area of right prisms and cylinders I. analyse the situation, decide if an exact or approximate solution is required and determine assumptions and constraints II. represent the situation mathematically in order to reach a solution III. interpret and communicate findings in terms of the context and any assumptions or constraints	In real-world situations involving Pythagoras' theorem, trigonometry and angles of elevation and depression in right-angled triangles, volume, capacity and surface area of composite objects, the impact of errors in measurement and/or the effect of enlargement and reduction on perimeter, area and volume of similar figures and objects I. analyse the situation, decide if an exact or approximate solution is required and determine assumptions and constraints II. represent the situation mathematically in order to reach a solution III. interpret and communicate findings in terms of the context and any assumptions or constraints

Strand: Probability and statistics

Sub-strand: Probability and statistics

Year 7	Year 8	Year 9	Year 10
Construct sample spaces for single-stage chance experiments, assign probabilities to the outcomes and predict frequencies for different numbers of trials	Construct sample spaces, such as lists, simple tree diagrams, tables or arrays to show all possible outcomes for two events. Assign probabilities to outcomes and events including those involving 'and', 'not', 'at least', exclusive 'or' and inclusive 'or' Recognise that complementary events have a combined probability of one and use this relationship to calculate probabilities	Construct sample spaces to show outcomes for two-stage chance experiments both with and without replacement. Assign probabilities to outcomes and make informal connections to independent and dependent events **Year 9 optional** Identify independent and dependent two-stage chance events using $P(A \text{ and } B) = P(A) \times P(B)$ and sample spaces, such as tree diagrams to determine the probability of independent events	Choose and construct appropriate sample spaces to show outcomes for two- and three-stage chance experiments both with and without replacement. Assign probabilities to events involving conditional statements, such as 'if ... then', 'given', 'of', 'knowing that' **Year 10 optional** Use weighted tree diagrams and/or formulas to assign probabilities to two- and three-stage chance events including situations involving conditional probability

Year 7	Year 8	Year 9	Year 10
Conduct repeated single-stage chance experiments and simulations to produce datasets, including through the use of digital tools, for an increasingly large number of trials. Discuss and describe variation and estimated probabilities for outcomes and compare to predictions and theoretical probability, where appropriate	Conduct repeated chance experiments and simulations for two events to produce datasets, including through the use of digital tools, for a large number of trials. Discuss, explain and compare variation and estimated probabilities for simple and compound events	Conduct repeated two-stage chance experiments and simulations, both with and without replacement, to produce datasets, including through the use of digital tools. Discuss, compare and interpret variation and estimated probabilities for compound events	Conduct repeated chance experiments and simulations to model conditional probability and produce datasets using digital tools. Discuss, compare and analyse variation and estimated probabilities for conditional events
Explore and determine the mean, mode, median and range for sets of data and justify, using the context, which measure best reflects the dataset	Analyse data represented in stem and leaf plots, column graphs and frequency tables to determine the mean, mode/s, median and range. Describe the effect of any outliers on the statistical measures	Analyse data with multiple variables represented in tables, describe using statistical measures and relative frequencies to make inferences	Analyse bivariate data represented in a two-way table, using proportions and comment on possible association between categorical variables
Represent primary categorical and numerical data in a Venn diagram, calculate related relative frequencies and interpret results	Use secondary data represented in two-way tables and Venn diagrams to describe events, including those that are mutually exclusive. Estimate related probabilities and make predictions as appropriate	Explore, choose and create graphical or visual representations and justify choice with regards to context, purpose, data type and intended audience	Represent secondary data in two-way tables or Venn diagrams and assign probabilities to outcomes involving conditional statements

Year 7	Year 8	Year 9	Year 10
Represent collected data in a stem and leaf plot, describe the shape and spread including outliers, and compare to dot plots or column graphs. Use the data to estimate probabilities of specific outcomes	Investigate and explain techniques for data collection, including census, survey, experiment and observation and explain the practicalities and implications of obtaining data through these techniques Explore, analyse and compare variation between results from same size random samples drawn from the same population. Identify and explain how chance variation impacts on data validity, reliability and conclusions drawn	Interpret and compare multiple datasets represented in back-to-back stem and leaf plots and histograms with consideration of shape, spread and centre Describe different sampling methods and analyse how the different methods can affect the results of surveys. Identify and explain how chance variation impacts on the data validity, reliability and conclusions drawn from surveys **Year 9 optional** Produce and organise accurate and valid, ungrouped continuous data to construct histograms and frequency polygons. Determine summary statistics and analyse the distribution in terms of centre, shape and spread	Represent the relationship between bivariate data in a scatter plot and draw a trend line by eye if appropriate. Use the graph and context to describe any association in terms of strength, direction, linearity and outliers. Make predictions and recognise and explain any limitations of the model Represent and analyse boxplots. Explain differences between multiple boxplot datasets in terms of shape, spread and centre. Compare or match the shapes of boxplots to distributions depicting the same data **Year 10 optional** Produce, organise and represent accurate and valid data in a cumulative frequency graph and use this to analyse quartiles and percentiles

Year 7	Year 8	Year 9	Year 10
			Year 10 optional Determine the mean and standard deviation of a dataset. Investigate, analyse and interpret the effect of individual data values, including outliers, on the standard deviation
Critically analyse statistical statements made in the media and other real-life situations, that relate to the averages of mean, mode and median. Investigate the impact of chance variation on the dataset from which the averages were determined	Critically analyse visual representations and tables in the media and other real-life situations to identify misleading or inaccurate features and interpretations. Recognise the impact of the validity and reliability of the data used	Critically analyse statistics in the media and other real-life situations relating to data samples, including the effect of chance variation on sample analyses	Critically analyse the claims, inferences and conclusions of statistical reports in the media and other real-life situations and identify potential sources of bias

Sub-strand: Modelling with probability and statistics

Year 7	Year 8	Year 9	Year 10
In real-world situations that involve assigning a probability to single-stage chance experiments or simulations, statistical measures, stem and leaf plots, dot plots, column graphs and/or Venn diagrams I. analyse the situation, pose questions as required, determine assumptions and constraints II. determine appropriate production of a valid and reliable dataset, statistical measures, data representations and analyses, including examination of distributions, to effectively investigate the situation III. interpret, draw inferences and communicate findings in terms of the context, assumptions, constraints, chance variation and knowledge or insights gained	In real-world situations that involve two-stage chance experiments or simulations, complementary events, data collection methods, same sized random sampling and/or analysis of graphs, tables and data I. analyse the situation, pose questions as required, determine assumptions and constraints II. determine appropriate production of a valid and reliable dataset, statistical measures, data representations and analyses, including examination of distributions, to effectively investigate the situation III. interpret, draw inferences and communicate findings in terms of the context, assumptions, constraints, chance variation and knowledge or insights gained	In real-world situations involving two-stage chance experiments or simulations both with or without replacement, different sampling methods, choosing and creating graphical representations and/or analysis of tables and comparative graphs I. analyse the situation, pose questions as required, determine assumptions and constraints II. determine appropriate production of a valid and reliable dataset, statistical measures, data representations and analyses, including examination of distributions, to effectively investigate the situation III. interpret, draw inferences and communicate findings in terms of the context, assumptions, constraints, chance variation and knowledge or insights gained	In real-world situations involving two- and three-stage chance experiments both with and without replacement, conditional probability or statements, boxplots, bivariate data and/or two-way tables I. analyse the situation, pose questions as required, determine assumptions and constraints II. determine appropriate production of a valid and reliable dataset, statistical measures, data representations and analyses, including examination of distributions, to effectively investigate the situation III. interpret, draw inferences and communicate findings, in terms of the context, assumptions, constraints, chance variation and knowledge or insights gained

Year 7	Year 8	Year 9	Year 10
			Year 10 optional Using the modelling process to design and conduct a chance experiment, simulation or statistics experiment on a topic of interest