# Scope and sequence Mathematics Reception to year 6

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# Mathematics: Scope and sequence reception to year 6

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#### Achievement standards

Scope and sequence

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# **Context statement**

The Mathematics curriculum is organised around the interaction of three content strands and four proficiency strands. The content strands are number and algebra, measurement and geometry and statistics and probability.

The Mathematics curriculum is taught through the proficiency strands of understanding, fluency, problem-solving and reasoning. They indicate the breadth of mathematical actions that teachers can emphasise. They describe how content is explored or developed.

Mathematics aims to instil in students an appreciation of the elegance and power of mathematical reasoning. Students are reasoning mathematically when they explain their thinking, when they deduce and justify strategies used and when they compare and contrast ideas and explain their choices.

Links between the various components of mathematics, are made clear and taught as interconnected skills.

Students need to be supported to build a robust knowledge of adaptable and transferable mathematical concepts. They need to make connections between related concepts and become confident, creative users and communicators of mathematics.

The South Australian Mathematics Scope and Sequence R-10:

- provides the achievement standards positioned with related strands; number and algebra, measurement and geometry statistics and probability
- makes the relationship between achievement standards and content explicit through listing the achievement standards alongside the relevant content descriptors
- emphasises the progression of skills by highlighting the verbs to emphasise the development of skills across the curriculum
- supports clarity by breaking achievement standards into dot points
- provides the sequence of content and sequence of achievement
- includes content descriptors listed with their associated elaborations.

## Achievement standards

#### Strand: Number and algebra

Number and algebra are developed together, as each enriches the study of the other. Students apply number sense and strategies for counting and representing numbers. They explore the magnitude and properties of numbers. They apply a range of strategies for computation and understand the connections between operations. They recognise patterns and understand the concepts of variable and function. They build on their understanding of the number system to describe relationships and formulate generalisations. They recognise equivalence and solve equations and inequalities. They apply their number and algebra skills to conduct investigations, solve problems and communicate their reasoning.

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<ul> <li>By the end of reception, students:</li> <li>count to and from 20</li> <li>use counting strategies to solve problems using manipulatives</li> <li>represent, continue and create simple patterns</li> <li>compare and order small collections</li> <li>group objects based on common characteristics</li> <li>connect number names and numerals with sets of up to 10 elements.</li> </ul>	<ul> <li>By the end of year 1, students:</li> <li>count to and from 100 and locate these numbers on a number line</li> <li>partition numbers using place value</li> <li>carry out simple additions and subtractions using counting strategies</li> <li>recognise Australian coins according to their value</li> <li>identify representations of one half</li> <li>describe number sequences resulting from skip counting by 2s, 5s and 10s</li> <li>continue simple patterns involving numbers and objects, with and without the use of digital technology.</li> </ul>	<ul> <li>By the end of year 2, students:</li> <li>count to and from, and order numbers up to 1000</li> <li>perform simple addition and subtraction calculations using a range of strategies</li> <li>count and order small collections of Australian notes and coins</li> <li>represent multiplication and division by grouping into sets</li> <li>divide collections and shapes into halves, quarters and eighths</li> <li>recognise increasing and decreasing number sequences involving 2s, 3s, 5s and 10s</li> <li>identify the missing element in a number sequence.</li> </ul>	<ul> <li>By the end of year 3, students:</li> <li>count and order numbers to and from 10 000</li> <li>recognise the connection between addition and subtraction</li> <li>solve problems using efficient strategies for multiplication, with and without the use of digital technology</li> <li>recall addition and multiplication facts for single-digit numbers</li> <li>represent money values in various ways and correctly count out change from financial transactions</li> <li>model and represent unit fractions for halves, thirds, quarters, fifths and eighths, and multiples of these, up to one</li> <li>classify numbers as either odd or even</li> <li>continue number patterns involving addition or subtraction</li> <li>explore simple number sequences based on multiples.</li> </ul>	<ul> <li>By the end of year 4, students:</li> <li>recall multiplication facts to 10 x 10 and related division facts</li> <li>choose appropriate strategies for calculations involving multiplication and division, with and without the use of digital technology</li> <li>solve simple purchasing problems, with and without the use of digital technology</li> <li>locate familiar fractions on a number line</li> <li>recognise common equivalent fractions in familiar contexts</li> <li>make connections between fractions and decimal notations up to two decimal places</li> <li>identify and explain strategies for finding unknown quantities in number sentences</li> <li>use the properties of odd and even numbers and describe number patterns resulting from multiplication</li> <li>continue number sequences involving multiples of single-digit numbers.</li> </ul>	<ul> <li>By the end of year 5, students:</li> <li>solve simple problems involving the four operations using a range of strategies, including strategies that use digital technology</li> <li>check the reasonableness of answers using estimation and rounding</li> <li>identify and describe factors and multiples</li> <li>explain plans for simple budgets</li> <li>order decimals and unit fractions and locate them on a number line</li> <li>add and subtract fractions with the same denominator</li> <li>identify and explain strategies for finding unknown quantities in number sentences</li> <li>continue patterns by adding or subtracting fractions and decimals.</li> </ul>	<ul> <li>By the end of year 6, students:</li> <li>recognise the properties of prime, composite, square and triangular numbers</li> <li>solve problems that involve all four operations with whole numbers</li> <li>describe the use of integers in everyday contexts</li> <li>locate fractions and integers on a number line</li> <li>connect fractions, decimals and percentages as different representations of the same number</li> <li>solve problems involving the addition and subtraction of related fractions</li> <li>calculate a simple fraction of a quantity</li> <li>calculate common percentage discounts on sale items, with and without the use of digital technology</li> <li>make connections between the powers of 10 and the multiplication and division of decimals</li> <li>add, subtract, and multiply decimals and divide decimals where the result is rational</li> <li>write number sentences using brackets and order of operations</li> </ul>

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•	specify the rules used to	
	generate sequences of	
	whole numbers,	
	fractions, and decimals	
•	locate an ordered pair in	
	any one of the four	
	quadrants on the	
	Cartesian plane.	

# Scope and sequence

Sub-strand	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Number and place	Establish understanding of the	Develop confidence with	Investigate number	Investigate the conditions	Investigate and use the	Identify and describe factors and	Identify and describe
value	language and processes of	number sequences to and	sequences, initially those	required for a number to be	properties of odd and even	multiples of whole numbers and	properties of prime,
	counting. Do this by naming	from 100 by ones from any	increasing and decreasing by	odd or even and identify odd	numbers:	use them to solve problems:	composite, square and
	numbers in sequences, initially	starting point. Skip count by	2s, 3s, 5s and 10s from any	and even numbers:			triangular numbers:
	<ul> <li>numbers in sequences, initially to and from 20, moving from any starting point:</li> <li>read stories from other cultures featuring counting in sequence to assist students to recognise ways of counting in local languages and across cultures</li> <li>identify the number words in sequence, backwards and forwards, and reasoning with the number sequences. This, establishes the language on which subsequent counting experiences can be built</li> <li>develop fluency with forwards and backwards counting in meaningful contexts, including stories and rhymes</li> </ul>	<ul> <li>starting point. Skip count by</li> <li>2s, 5s and 10s starting from 0:</li> <li>use the popular Korean counting game (sam-yuk-gu) for skip counting</li> <li>develop fluency with forwards and backwards counting in meaningful contexts such as circle games.</li> </ul>	<ul> <li>2s, 3s, 5s and 10s from any starting point, then moving to other sequences:</li> <li>develop fluency and confidence with numbers and calculations by saying number sequences</li> <li>recognise patterns in number sequences, such as adding 10 always results in the same final digit.</li> </ul>	<ul> <li>and even numbers:</li> <li>identify even numbers using skip counting by 2s or by grouping even collections of objects in 2. Repeat for odd numbers</li> <li>explain why all numbers that end in the digits 0, 2, 4, 6 and 8 are even and that numbers ending in 1, 3, 5, 7 and 9 are odd.</li> </ul>	<ul> <li>use the four operations with:         <ul> <li>pairs of odd numbers</li> <li>pairs of even numbers</li> <li>one odd and one even number</li> </ul> </li> <li>use the relationships established to check the accuracy of calculations.</li> </ul>	<ul> <li>explore factors and multiples using number sequences</li> <li>use simple divisibility tests.</li> </ul>	<ul> <li>understand that some numbers have special properties and that these properties can be used to solve problems</li> <li>represent composite numbers as a product of their prime factors. Use this form to simplify calculations by cancelling common primes</li> <li>understand that if a number is divisible by a composite number then it is also divisible by the prime factors of that number. For example 112 is divisible by 8 and hence 112 is also divisible by 2 and 7.</li> </ul>
	• understand that						
	particular order and						
	there are patterns in						
	the way we say them.						
	Connect number names,	Recognise, model, read, write	Recognise, model, represent	Recognise, model, represent	Recognise, represent and	Use estimation and rounding to	
	numerals and quantities,	and order numbers to at least	and order numbers to at least	and order numbers to at least	order numbers to at least tens	check the reasonableness of	
	including 0, initially up to 10 and	100. Locate these numbers on	1000:	10 000:	of thousands:	answers to calculations:	
	then beyond:	a number line:	• <b>recognise</b> there are	• place four-digit	Use place value to	• recognise the	
	<ul> <li>understand that:</li> <li>each object must be counted only once</li> <li>the arrangement of objects does not affect how many there are</li> </ul>	<ul> <li>model numbers with a range of material and images</li> <li>identify numbers that are represented on a number line and place numbers on a</li> </ul>	<ul> <li>recognise there are different ways of representing numbers and identifying patterns going beyond 100</li> <li>develop fluency with writing numbers in</li> </ul>	<ul> <li>prace rour-uight numbers on a number line using an appropriate scale</li> <li>reproduce numbers in words using their numerical representations and</li> </ul>	<ul> <li>Ose place value to recognise and order numbers</li> <li>reproduce five-digit numbers in words using their numerical representations, and vice versa.</li> </ul>	<ul> <li>recognise the usefulness of estimation to check calculations</li> <li>apply mental strategies to estimate the result of calculations, such as estimating the cost of a</li> </ul>	

Sub-strand	Reception	Year 1	Year 2	Year 3	Year 4	Year 5
	<ul> <li>the last number counted answers the 'how many' question</li> <li>use scenarios to help students recognise that other cultures count in a variety of ways, such as the Wotjoballum number systems.</li> </ul>	prepared number line.				sı lo
	<ul> <li>Subitise small collections of objects:</li> <li>use subitising as the basis for ordering and comparing collections of numbers.</li> </ul>	<ul> <li>Count collections to 100 by partitioning numbers using place value:</li> <li>understand partitioning of numbers and the importance of grouping in tens</li> <li>understand two-digit numbers as comprised of tens and ones/units.</li> </ul>	<ul> <li>Group, partition and rearrange collections up to 1000 in hundreds, tens and ones to facilitate more efficient counting:</li> <li>use an abacus to model and represent numbers</li> <li>understand three-digit numbers as comprised of hundreds, tens and ones/units</li> <li>demonstrate and using models such as linking blocks, sticks in bundles, place-value blocks and Aboriginal bead strings and explaining reasoning.</li> </ul>	<ul> <li>Apply place value to partition, rearrange and regroup numbers to at least 10 000 to assist calculations and solve problems:</li> <li>recognise that 10 000 equals 10 thousands, 100 hundreds, 1000 tens and 10 000 ones</li> <li>justify choices about partitioning and regrouping numbers in terms of their usefulness for particular calculations</li> <li>partition numbers using place value</li> <li>introduce ascending and descending and arrange numbers from 'smallest to biggest' and 'biggest to smallest'.</li> </ul>	<ul> <li>Apply place value to partition, rearrange and regroup numbers to at least tens of thousands to assist calculations and solve problems:</li> <li>use place value to demonstrate the addition and subtraction of numbers</li> <li>recognise and demonstrating that the place-value pattern is built on the operations of multiplication or division of tens.</li> </ul>	
	<ul> <li>Compare, order and make correspondences between collections, initially to 20, and explain reasoning:</li> <li>compare and order items of like and unlike characteristics using the words 'more', 'less', 'same as' and 'not the same as' and giving reasons for these answers</li> <li>understand and using terms such as 'first' and 'second' to indicate ordinal position in a sequence</li> <li>use objects which are personally and</li> </ul>	<ul> <li>Represent and solve simple addition and subtraction problems using a range of strategies including counting on, partitioning and rearranging parts:</li> <li>develop a range of mental strategies for addition and subtraction problems.</li> </ul>	<ul> <li>Explore the connection between addition and subtraction:</li> <li>become fluent with partitioning numbers to understand the connection between addition and subtraction</li> <li>use counting on to identify the missing element in an additive problem.</li> </ul>	<ul> <li>Recognise and explain the connection between addition and subtraction:         <ul> <li>demonstrate the connection between addition and subtraction using partitioning or by writing equivalent number sentences.</li> </ul> </li> <li>Recall addition facts for single-digit numbers and related subtraction facts to develop increasingly efficient mental strategies for computation:         <ul> <li>recognise that certain single-digit number</li> </ul> </li> </ul>	<ul> <li>Investigate number sequences involving multiples of 3, 4, 6, 7, 8, and 9:</li> <li>investigate multiples and patterns in number sequences</li> <li>recognise that number sequences can be extended indefinitely, and determining any patterns in the sequences.</li> </ul>	

	Year 6
permarket trolley ad.	
	<ul> <li>Investigate everyday situations that use integers. Locate and represent these numbers on a number line:</li> <li>understand that integers are3, -2, -1, 0, 1, 2, 3,</li> <li>use number lines to show the operations of addition, subtraction, multiplication and division with whole numbers</li> <li>solve everyday additive problems using a number line</li> <li>investigate everyday situations that use</li> </ul>

Sub-strand	Reception	Year 1	Year 2	Year 3	Year 4	Year 5
Sub-strand	<ul> <li>culturally relevant to students.</li> <li>Represent practical situations to model addition and subtraction: <ul> <li>use a range of practical strategies for adding small groups of numbers, such as visual displays or concrete materials</li> <li>use Aboriginal and Torres Strait Islander methods of adding, including spatial patterns and reasoning.</li> </ul> </li> </ul>		<ul> <li>Solve simple addition and subtraction problems using a range of efficient mental and written strategies:</li> <li>become fluent with a range of mental strategies for addition and subtraction problems, such as commutativity for addition, building to 10, doubles, 10 facts and adding 10</li> <li>model and representing simple additive situations using materials such as 10 frames, 20 frames and empty number lines</li> <li>Use partitioning as a strategy for addition.</li> </ul>	<ul> <li>combinations always result in the same answer for addition and subtraction, and using this knowledge for addition and subtraction of larger numbers</li> <li>combine knowledge of addition and subtraction facts and partitioning to aid computation (for example 57 + 19 = 57 + 20 - 1) establish column addition and column subtraction</li> <li>establish words for addition such as plus, add, how many, sum, increase, total,</li> <li>establish words for subtraction such as subtract, less, decrease, difference, takeaway, minus, from, deduct</li> <li>solve worded problems.</li> </ul>		Year 5
			<ul> <li>Recognise and represent multiplication as repeated addition, groups and arrays:</li> <li>represent array problems with available materials and explain reasoning</li> <li>visualise a group of objects as a unit and use this to calculate the number of objects in several identical groups.</li> </ul>	<ul> <li>Recall multiplication facts of 2, 3, 5 and 10 and related division facts:</li> <li>establish multiplication facts using number sequences.</li> </ul>	<ul> <li>Recall multiplication facts up to 10 × 10 and related division facts:</li> <li>known multiplication facts to calculate related division facts</li> <li>establish words for multiplication such as multiply, by, times, lots of, and product.</li> </ul>	
			Recognise and represent division as grouping into equal sets and solve simple problems using these representations: divide the class or a collection of objects	Recognise and represent division as grouping into equal sets and solve simple problems using these representations: • use diagrams or counters to share	<ul> <li>Recognise and represent</li> <li>division as grouping into equal</li> <li>sets and solve problems using</li> <li>these representations:</li> <li>use diagrams or</li> <li>counters to share</li> </ul>	Solve proble division by a including the remainder: • use equicate

	Year 6	
		integers, such as
		temperatures
	•	<b>use</b> number lines to
		position and order
		integers around zero.
abloms involving		
by a one digit number,		
g mose mat result in a		
er:		
use the fact that		
equivalent division		
calculations result if		

Sub-strand	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			<ul> <li>into equal-sized groups</li> <li>identify the difference between dividing a set of objects into 3 equal groups and dividing the same set of objects into groups of 3.</li> </ul>	equally to groups in problems • recognise the ÷ symbol as divide • solve division questions and worded problems.	equally to groups in problems • recognise the ÷ symbol as divide • solve division questions and worded problems.	<ul> <li>both numbers are divided by the same factor</li> <li>interpret and represent the remainder in division calculations sensibly for the context.</li> </ul>	
				<ul> <li>Represent and solve problems involving multiplication using efficient mental and written strategies and appropriate digital technologies:</li> <li>write simple word problems in numerical form and vice versa</li> <li>use a calculator to check the solution and reasonableness of the answer.</li> </ul>	<ul> <li>Develop efficient mental and written strategies and use appropriate digital technologies for multiplication and for division where there is no remainder:</li> <li>use known facts and strategies, such as commutativity, doubling and halving for multiplication, and connecting division to multiplication when there is no remainder.</li> </ul>	Use efficient mental and written strategies and apply appropriate digital technologies to solve problems: • use calculators to check the reasonableness of answers. Recognise, represent and order numbers to at least hundreds of thousands. Solve problems involving multiplication of large numbers by one- or two-digit numbers using efficient mental, written strategies and appropriate digital technologies: • explore techniques for multiplication such as the area model, the Italian lattice method or the partitioning of numbers • apply the distributive law and explain calculation strategies	<ul> <li>Select and apply efficient mental and written strategies and appropriate digital technologies to solve problems involving all four operations with whole numbers. Make estimates for these computations:</li> <li>apply strategies already developed for solving problems involving small numbers to those involving large numbers. Look for key words, to suggest addition, subtraction, multiplication or division</li> <li>apply a range of strategies to solve realistic problems and comment on the efficiency of different strategies.</li> </ul>
Fractions and		Recognise and describe one-	Recognise and interpret	Model and represent unit	Investigate equivalent	Compare and order common	Compare fractions with
decimals		<ul> <li>half as 1 of 2 equal parts of a whole:</li> <li>share a collection of readily available</li> </ul>	common uses of halves, quarters and eighths of shapes and collections: • <b>recognise</b> that sets of objects can be	<ul> <li>fractions including ½, ¼, ¼, ¼, and their multiples to a complete whole:</li> <li>partition areas, lengths and</li> </ul>	<ul> <li>fractions used in contexts:</li> <li>use the terminology numerator, and denominator</li> <li>recognise the rolationship between</li> </ul>	unit fractions. <b>Locate</b> and <b>represent</b> them on a number line:	related denominators. Locate and represent them on a number line: • recognise the relationship between

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Sub-strand	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		<ul> <li>materials into 2 equal portions</li> <li>split an object into 2 equal pieces and describe how the pieces are equal.</li> </ul>	<ul> <li>partitioned in different ways to demonstrate fractions</li> <li>relate the number of parts to the size of a fraction.</li> </ul>	<ul> <li>collections to create ½, ½, ¼ and ½. For example folding the same sized sheets of paper to illustrate different unit fractions and comparing the number of parts with their sizes</li> <li>locate unit fractions on a number line</li> <li>establish the terminology numerator, and denominator</li> <li>Establish the relationship between the numerator and denominator in a fraction</li> <li>recognise that in English the term '½' is used (order: numerator, denominator). In other languages like Japanese this concept may be expressed as 'three parts, one of them' (order: denominator, numerator)</li> <li>explore equal fractions.</li> </ul>	the concept of division and the line between the numerator and denominator in a fraction • explore the relationship between families of fractions (½s, ¼s and ¼s or ⅓s and ¼s) by folding a series of paper strips to construct a fraction wall.	<ul> <li>use the terminology numerator, and denominator</li> <li>recognise the relationship between the concept of division and the line between the numerator and denominator in a fraction</li> <li>recognise the connection between the order of unit fractions and their denominators</li> <li>write fractions in the simplest form</li> <li>order fractions with different denominators</li> <li>use and record proper fractions and mixed numbers.</li> </ul>	<ul> <li>the concept of division and the line between the numerator and denominator in a fraction</li> <li>write fractions in the simplest form</li> <li>order fractions with different denominators</li> <li>use and record proper fractions, improper fractions and mixed numbers</li> <li>demonstrate equivalence between fractions using drawings and models.</li> </ul>
					<b>Count</b> by quarters, halves and	Investigate strategies to solve	Solve problems involving
					mixed numerals. I ocate and	subtraction of fractions with the	fractions with the same or
					represent these fractions on a	same denominator:	related denominators:
					number line:	• <b>model</b> and solve addition	• <b>explain</b> using manipulative
					• <b>convert</b> mixed	and subtraction problems	materials to learn parts of
					numbers to improper	involving fractions:	wholes to add and subtract fractions
					versa	number line	Investigate fractions with
					• investigate the use of	o making diagrams of	the same or related
					fractions and sharing	shapes	<ul> <li>understand the processes</li> </ul>
					Country. For example	• <b>use</b> manipulative	for adding and subtracting
					take no more than	materials to represent the	fractions with related
					half the eggs from a	addition and subtraction	denominators and fractions as an operator
							nactions as an operator.

Sub-strand	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
					nest to protect future bird populations.		<ul> <li>This is preparation for calculating with all fractions</li> <li>solve realistic additive (addition and subtraction) problems involving fractions to develop an understanding of equivalent fractions and the use of fractions as operators</li> <li>explore multiplying or dividing fractions</li> <li>model and solve additive problems involving fractions:         <ul> <li>using methods such as jumps on a number line,</li> <li>making diagrams of fractions as parts of shapes</li> </ul> </li> </ul>
					Recognise that the place value system can be extended to tenths and hundredths. Make connections between fractions and decimal notation: • explore place value to see the links between numbers, fractions and decimals • use division by 10 to extend the place- value system • use manipulatives to demonstrate knowledge of fractions to establish equivalences between fractions and decimal notation.	<ul> <li>Recognise that the place value system can be extended beyond hundredths:</li> <li>explore place value to see the links between numbers, fractions and decimals</li> <li>use knowledge of place value and division by 10 to extend the number system to thousandths and beyond</li> <li>recognise the equivalence of one thousandths and 0.001.</li> </ul>	<ul> <li>Find a simple fraction of a quantity where the result is a whole number, with and without digital technologies:</li> <li>recognise that finding one third of a quantity is the same as dividing by 3.</li> </ul>

Sub-strand	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
						Compare, order and represent	Add and subtract decimals,
						decimals:	with and without digital
						· · · ·	technologies. Use estimation
						locate decimals on a	and rounding to check the
						number line. Consider	reasonableness of answers:
						10 equal divisions and	
						<ul> <li>explore rounding</li> </ul>	• Place decimals on a
						decimals using the	number line
						number line	number strategies to
						• relate to everyday	explore and develop
						measures such as	meaningful written
						measure, and other	strategies for
						measuring tools.	addition and
						5	subtraction of
							thousandths
							• <b>explore</b> and practice
							efficient methods for
							solving problems
							requiring operations
							on decimals. Do this
							to gain fluency in
							decimals and in
							recognising
							appropriate
							operations.
							Multiply decimals by whole
							numbers and perform
							divisions by non-zero whole
							numbers where the results are
							terminating decimals, with
							and without digital
							technologies:
							Ŭ l
							• interpret the results
							of calculations to
							provide an answer
							appropriate to the
							Multiply and divide
							decimals by powers
							of 10.
							Make connections between
							equivalent fractions, decimals
							and percentages:
							• <b>connect</b> fractions.
							decimals and
							percentages as
							different

Sub-strand	Reception	Vear 1	Vear 2	Vear 3	Vear A	Voar 5	Vear 6
Sub-strand	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	<ul> <li>representations of the same number. Move fluently between representations and choose the appropriate one for the problem being solved</li> <li>convert between decimals and fractions.</li> </ul>
Real numbers	This sequence starts at year 7						
Money and financial mathematics	Represent simple, everyday financial situations involving money.	<ul> <li>Recognise, describe and order Australian coins according to their value:</li> <li>show that coins are different in other countries by comparing Asian coins to Australian coins</li> <li>understand that the value of Australian coins is not related to the size</li> <li>describe the features of coins that make it possible to identify them.</li> </ul>	<ul> <li>Count and order small collections of Australian coins and notes according to their value:</li> <li>identify equivalent values in collections of coins or notes, such as 2 5-cent coins having the same value as 1 10-cent coin</li> <li>count collections of coins or notes to make up a particular value, such as that shown on a price tag.</li> </ul>	<ul> <li>Represent money values in multiple ways and count the change required for simple transactions to the nearest 5 cents:</li> <li>discuss the coins and notes in Australian currency</li> <li>use coins to practice addition, subtraction, multiplication and division</li> <li>solve simple worded problems with currency</li> <li>recognise the relationship between dollars and cents. Recognise that not all countries use these denominations and divisions (for example Japanese Yen).</li> </ul>	<ul> <li>Solve problems involving purchases and the calculation of change to the nearest 5 cents, with and without digital technologies:</li> <li>discuss the coins and notes in Australian currency</li> <li>solve simple worded problems related to currency</li> <li>recognise that not all countries use dollars and cents (for example India uses rupees)</li> <li>carry out calculations in another currency as well as in dollars and cents, and identify both as decimal systems.</li> </ul>	<ul> <li>Create simple financial plans:</li> <li>create a simple budget for a class fundraising event</li> <li>identify the GST component of invoices and receipts</li> <li>solve written problems relating to money and budgeting.</li> </ul>	Investigate and calculate percentage discounts of 10%, 25% and 50% on sale items, with and without digital technologies: <ul> <li>explore percentage as a fraction out of 100</li> <li>convert between percentages and fractions</li> <li>convert between percentages and decimals</li> <li>find the percentage of a quantity by converting the percentage to a decimal</li> <li>express one quantity as a percentage of another</li> <li>find the percentages of a quantity</li> <li>use authentic information to calculate prices on sale goods.</li> </ul>
Patterns and algebra	<ul> <li>Sort and classify familiar objects and explain the basis for these classifications. Copy, continue and create patterns with objects and drawings:</li> <li>observe natural patterns in the world around us</li> </ul>	Investigate and describe number patterns formed by skip-counting and patterns with objects:	<ul> <li>Describe patterns with numbers and identify missing elements:</li> <li>describe a pattern created by skip counting and representing the pattern on a number line</li> </ul>	<ul> <li>Describe, continue, and create number patterns resulting from performing addition or subtraction:</li> <li>identify and write the rules for number patterns</li> </ul>	<ul> <li>Explore and describe number patterns resulting from performing multiplication:</li> <li>recall number patterns and look for patterns in number sequences</li> <li>identify examples of number patterns in evenuelar life</li> </ul>	<ul> <li>Describe, continue and create patterns with fractions, decimals and whole numbers resulting from addition and subtraction:</li> <li>use a number line, diagrams or materials to create patterns involving fractions or decimals</li> </ul>	<ul> <li>Continue and create</li> <li>sequences involving whole</li> <li>numbers, fractions, and</li> <li>decimals. Describe the rule</li> <li>used to create the sequence:</li> <li>identify and generalise</li> <li>number patterns</li> <li>identify sequences</li> <li>involving fractions</li> </ul>

Sub-strand	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	<ul> <li>create and describe patterns using materials, sounds, movements or drawings.</li> </ul>	<ul> <li>use place-value patterns beyond the teens to generalise the number sequence and predict the next number</li> <li>investigate patterns in the number system, such as the occurrence of a particular digit in the numbers to 100.</li> </ul>	• investigate features of number patterns resulting from adding 2s, 5s or 10s.	• <b>describe</b> a rule for a number pattern, then create the pattern.		<ul> <li>explore:         <ul> <li>number sequences</li> <li>sequences involving fractions</li> <li>sequences involving decimals.</li> </ul> </li> </ul>	<ul> <li>identify sequences involving decimals</li> <li>investigate additive and multiplicative patterns such as:         <ul> <li>the number of tiles in a geometric pattern</li> <li>looking for patterns in the way the numbers increase or decrease</li> </ul> </li> <li>explore finding a rule to describe a pattern.</li> </ul>
			<ul> <li>Solve problems by using number sentences for addition or subtraction:</li> <li>represent a word problem as a number sentence</li> <li>write a word problem to represent a number sentence.</li> </ul>	<ul> <li>Solve word problems by using number sentences:</li> <li>represent a word problem as a number sentence</li> <li>write a word problem to represent a number sentence.</li> </ul>	<ul> <li>Solve word problems by using number sentences involving multiplication or division where there is no remainder:</li> <li>represent a word problem as a number sentence</li> <li>write a word problem using a given number sentence</li> <li>illustrate possible solutions to a word problem.</li> <li>Find unknown quantities in number sentences involving addition and subtraction.</li> <li>Identify equivalent number sentences to represent and answer questions such as 'When a number is added to 23 the answer is the same as 57 minus 19. What is the number?'</li> <li>use partitioning to find unknown</li> </ul>	Find unknown quantities in number sentences involving multiplication and division. Identify equivalent number sentences involving multiplication and division: • use relevant problems to develop number sentences.	<ul> <li>Explore the use of brackets and order of operations to write number sentences:</li> <li>appreciate the need for rules to complete multiple operations within the same number sentence</li> <li>establish the order of operations.</li> </ul>
Linear and non-	This sequence starts at year 7				sentences.		

## Achievement standards

#### Strand: Measurement and geometry

Measurement and geometry are presented together to emphasise their relationship to each other, enhancing their practical relevance. Students develop an increasingly sophisticated understanding of size, shape, relative position and movement of two-dimensional figures in the plane and three-dimensional objects in space. They investigate properties and apply their understanding of them to define, compare and construct figures and objects. They learn to develop geometric arguments. They make meaningful measurements of quantities, choosing appropriate metric units of measurement. They build an understanding of the connections between units and calculate derived measures such as area, peed and density.

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<ul> <li>By the end of reception, students:</li> <li>compare lengths, masses, and capacities of familiar objects</li> <li>explain the order and duration of events</li> <li>match days of the week to familiar events</li> <li>identify shapes in their environment</li> <li>sort shapes by their common and distinctive features</li> <li>describe position and movement.</li> </ul>	<ul> <li>By the end of year 1, students:</li> <li>use informal units of measurement to order objects based on length and capacity</li> <li>tell time to the half-hour and explain time durations</li> <li>describe two-dimensional shapes and three-dimensional objects</li> <li>use the language of distance and direction to move from place to place</li> </ul>	<ul> <li>By the end of year 2, students:</li> <li>order shapes and objects using informal units</li> <li>tell time to the quarter hour</li> <li>identify the date, days, weeks, months, and seasons using a calendar</li> <li>draw two-dimensional shapes and specify their features</li> <li>explain the effects of one-step transformations</li> <li>recognise the features of three-dimensional objects</li> <li>interpret simple maps of familiar locations.</li> </ul>	<ul> <li>By the end of year 3, students:</li> <li>use metric units for length, area, mass and capacity</li> <li>tell time to the nearest minute</li> <li>identify symmetry in natural and built environments</li> <li>use angle size as a measure of turn in everyday situations</li> <li>make models of three- dimensional objects</li> <li>match positions on maps with given information</li> <li>create and interpret simple grid maps.</li> </ul>	<ul> <li>By the end of year 4, students:</li> <li>compare the areas of regular and irregular shapes using informal units</li> <li>solve problems involving time duration</li> <li>use scaled instruments to measure length, angle, area, mass, capacity, and temperature of shapes and objects</li> <li>convert between units of time</li> <li>create symmetrical simple and composite shapes and patterns, with and without the use of digital technology</li> <li>classify angles in relation to a right angle</li> <li>interpret information contained in maps.</li> </ul>	<ul> <li>By the end of year 5, students:</li> <li>choose appropriate units of measurement for length, area, volume, capacity and mass</li> <li>calculate the perimeter and area of rectangles</li> <li>convert between 12 and 24-hour time</li> <li>use a grid reference system to locate landmarks</li> <li>estimate angles</li> <li>use protractors and digital technology to construct and measure angles</li> <li>connect three-dimensional objects with their two-dimensional objects with their two-dimensional representations</li> <li>describe transformations of two-dimensional shapes</li> <li>identify line and rotational symmetry.</li> </ul>	<ul> <li>By the end of year 6, students:</li> <li>relate decimals to the metric system</li> <li>choose appropriate units of measurement to perform a calculation</li> <li>solve problems involving time, length and area</li> <li>make connections between capacity and volume</li> <li>interpret a variety of everyday timetables</li> <li>solve problems using the properties of angles</li> <li>investigate simple combinations of transformations with and without the use of digital technology</li> <li>construct simple prisms and pyramids.</li> </ul>

V1.0

# Scope and sequence

Sub-strand	Recention	Vear 1	Vear 2	Vear 3	Vear 4	Vear 5	Vear 6
Using units of	Use direct and indirect	Measure and compare the	Compare and order several	Measure, order and compare	Use scaled instruments to	<b>Choose</b> appropriate units of	Connect decimal
measurement	comparisons to <b>decide</b> which	lengths and capacities of pairs	shapes and objects based on	objects using familiar metric	measure and compare lengths.	measurement for length, area.	representations to the metric
	is longer, heavier or holds	of objects using uniform	length area volume and	units of length mass and	masses capacities and	volume capacity and mass:	system:
	more and <b>explain</b> reasoning in	informal units:	capacity using appropriate	capacity:	temperatures:		System
	everyday language:		uniform informal units:			• <b>recognise</b> that some	• <b>recognise</b> the
		• <b>understand</b> that in		• <b>recognise</b> the	• establish the units of	units of measurement	equivalence of
	• compare objects	order to compare	• compare lengths	importance of using	measure millimetre,	are better suited for	measurements such
	directly, by placing	objects, the unit of	using finger length,	common units of	centimetre, metre.	some tasks than	as 1.25 metres and
	one object against	measurement must be	hand span or a piece	measurement	Use rulers and other	others. For example	125 centimetres.
	another to determine	the same size.	of string	establish terminology	measurement tools	Kilometres rather than	
	which is longer or by		• compare areas using	related to length,	effectively	distance between two	
	pouring from one		the palm of the hand	neight, and width,	<ul> <li>read and interpreting the graduated scales</li> </ul>	towns	
	container into the		or a stone	tall wide parrow	on a range of	<ul> <li>identify and use the</li> </ul>	
	one holds more		compare capacities	low, and high	measuring	correct operations	
			using a range of	<ul> <li>recognise and use</li> </ul>	instruments to the	when converting units	
	associated with		containers.	centimetres and	nearest graduation	related to length, area,	
	measurement			metres, grams and	• estimate and	volume, capacity and	
	attributes, such as			kilograms, and	measure lengths,	mass	
	'tall' and 'taller',			millilitres and litres	mass, capacity and	investigate alternative	
	'heavy' and 'heavier',			convert between	temperature	measures of scale to	
	'holds more' and			centimetre and	convert between	demonstrate that	
	'holds less'.			metre.	millimetre,	countries and change	
				Units of measurement for	metre	over time. For	
				mass:	inclic.	example, temperature	
				• establish the concept	Units of measurement for	measurement in	
				of mass	mass	Australia, Indonesia,	
				• <b>become</b> familiar with	• establish the concept	Japan and USA.	
				the naming	of mass		
				conventions used for	become familiar with		
				measurement such	the naming		
				as grams and	conventions used for		
				• convert between	as grams and		
				gram and kilogram.	kilograms		
					convert between		
				Units of measurement for	gram and kilogram.		
				capacity			
				establish the concept	Units of measurement for		
				of capacity and the	capacity		
				relevant units:	establish the concept		
				o millilitres and	of capacity and the		
				o <b>convert</b> hetween	o millilitres and		
				millilitres and	litres		
				litres.	o <b>convert</b> between		
					millilitres and		
					litres.		

			Year 2	Year 3	Year 4	Year 5	Year 6
C	Compare and order duration	Tell time to the half-hour:	Tell time to the	Tell time to the minute and	Use 'am' and 'pm' notation	Compare 12-hour and	Interpret and use timetables:
0	of events using everyday		quarter-hour, using the	investigate the relationship	and <b>solve</b> simple time	24-hour time systems and	a actual link that
la	anguage of time:	<ul> <li>read time on analogue and digital clocks and</li> </ul>	language of 'past' and 'to':	between units of time:	problems:	convert between them:	establish that     timetables are tables
r f z	<ul> <li>anguage of time:</li> <li>know and identify the days of the week and link specific days to familiar events</li> <li>sequence familiar events</li> <li>sequence familiar events in time order.</li> </ul> Connect days of the week to familiar events and actions: <ul> <li>choose events and actions:</li> <li>choose events and actions with students' everyday family routines.</li> </ul>	<ul> <li>read time on analogue and digital clocks and observe the characteristics of half- hour times.</li> <li>Describe duration using months, weeks, days and hours:         <ul> <li>describe the duration of familiar situations such as 'how long is it until we next come to school?'.</li> </ul> </li> </ul>	<ul> <li>language of 'past' and 'to':</li> <li>describe the characteristics of quarter-past times on an analogue clock, and identify that the small hand is pointing just past the number and the big hand is pointing to the 3.</li> <li>Name and order months and seasons:</li> <li>investigate the seasons used by Aboriginal people, comparing them to those used in Western society. Recognise the connection between seasons and weather patterns.</li> <li>Use a calendar to identify the date and determine the number of days in each month:</li> <li>use calendars to locate specific information: o find a given date on a calendar o say what day it is</li> </ul>	<ul> <li>read times on an analogue clock including the small hand and the big hand</li> <li>discuss clockwise and anticlockwise directions</li> <li>recognise there are 60 minutes in an hour and 60 seconds in a minute.</li> </ul>	<ul> <li>problems:</li> <li>establish telling the time using the am and pm notations and time words</li> <li>calculate the time spent at school during a normal school day</li> <li>calculate the time required to travel between two locations</li> <li>determine arrival time when given a departure time.</li> </ul> Convert between units of time such as seconds, minutes, hours, days, and weeks <ul> <li>identify and use the correct operation for converting units of time.</li> </ul>	<ul> <li>investigate the ways time was and is measured in different Aboriginal country, such as using tidal change</li> <li>use units of time such as hours, minutes and seconds</li> <li>explore analogue time, digital time and time calculations.</li> </ul>	<ul> <li>establish that timetables are tables of information</li> <li>plan a trip involving one or more modes of public transport</li> <li>develop a timetable of daily activities.</li> </ul> Measure, calculate and compare elapsed time.
			<ul> <li>identify personally or</li> </ul>				
			days.				
			, <b>Compare</b> masses of objects		Compare objects using familiar	Calculate perimeter and area of	Convert between common
			using balance scales:		metric units of area and	rectangles using familiar metric	metric units of length, mass
					volume:	units:	and capacity:
			<ul> <li>use balance scales to determine whether the mass of different objects is more, less or about the same.</li> <li>Find out how many marbles are needed to balance a tub of margarine or a carton</li> </ul>		<ul> <li>compare areas using grid paper</li> <li>estimate area</li> <li>establish the units used to measure area</li> <li>compare volume using centicubes</li> </ul>	• <b>explore</b> efficient ways of calculating the perimeters of rectangles such as adding the length and width together and doubling the result	<ul> <li>identify and use the correct operations when converting to a smaller or larger unit:</li> <li>convert length between millimetres, centimetres, metres, or kilometres</li> </ul>

Sub-strand	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
					<ul> <li>establish the units used to measure volume</li> <li>recognise that metric units are not the only units used throughout the world, for example measuring the area of floor space using tatami mats (Japan), using squares for room and house area (Australia).</li> </ul>	• explore efficient ways of finding the areas of rectangles.	<ul> <li>convert weight between milligrams, grams, kilograms or tonnes</li> <li>convert capacity between millilitres, litres, kilolitres, or megalitres</li> <li>recognise the significance of the prefixes in units of measurement.</li> <li>Solve problems involving the comparison of lengths and areas using appropriate units:         <ul> <li>recognise and investigating familiar objects using concrete materials and digital technologies.</li> </ul> </li> <li>Connect volume and capacity and their units of measurement:         <ul> <li>recognise that 1ml is equivalent to 1cm3</li> <li>explore the volume of a rectangular prism</li> <li>convert from volume units to capacity units.</li> </ul> </li> </ul>
Shape	Sort, describe and name familiar two-dimensional	<b>Recognise</b> and <b>classify</b> familiar two-dimensional shapes and three-dimensional objects using	Describe and draw two-dimensional shapes, with	Make models of three-dimensional objects and describe key features:	<b>Compare</b> the areas of regular and irregular shapes by	Connect three-dimensional objects with their nets and other	<b>Construct</b> simple prisms and pyramids:
	three-dimensional objects in	obvious features:	technologies:	recall two-dimensional	• compare areas using	two-dimensional	• <b>consider</b> the history and significance of
	the environment:	• <b>focus</b> on geometric	<ul> <li>identify key features of squares rectangles</li> </ul>	shapes squares, rectangles, triangles.	metric units. For example overlav each	representations:	pyramids from a range of cultural
	<ul> <li>sort and describe squares, circles,</li> </ul>	shapes and objects	triangles, itectarigies, triangles, kites,	kites, rhombuses and circles	area with centimetre square grid paper and	<ul> <li>identify the shape and relative position of</li> </ul>	perspectives including China,
	spheres and cubes.	such as 'corners', 'edges' and 'faces'.	such as: o straight lines		count the number of squares required to	Determine the net of the solid Include	Korea and Indonesia
			o curved lines	<ul> <li>explore three- dimensional objects</li> </ul>	cover each area.	prisms and pyramids	<ul> <li>explore solids and their cross sections,</li> </ul>

Sub-strand	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			<ul> <li>counting the edges and</li> <li>counting the corners.</li> </ul>	<ul> <li>naming the faces, edges and corners</li> <li>explore three- dimensional objects such as:         <ul> <li>cube</li> <li>rectangular prism</li> <li>square based pyramid</li> <li>triangular based pyramid</li> <li>cylinder</li> </ul> </li> <li>explore the creation of three-dimensional objects using origami, including prisms and pyramids.</li> </ul>		<ul> <li>represent two- dimensional shapes such as photographs, sketches and images created by digital technologies.</li> </ul>	<ul> <li>including cylinders, triangular prisms, rectangular prisms, hexagonal prisms, cones, and spheres</li> <li>construct prisms and pyramids from nets, and skeletal models.</li> </ul>
			Describe the features of		Compare and describe		
			three-dimensional objects: • identify geometric features such as the number of faces, corners or edges.		<ul> <li>two-dimensional shapes that result from combining and splitting common shapes, with and without the use of digital technologies:</li> <li>establish properties of shapes</li> <li>identify and create composite shapes that are made up of common two- dimensional shapes</li> <li>create a two- dimensional shapes from verbal or written instructions.</li> <li>Explain and compare the geometric properties of two- dimensional shapes and three- dimensional objects.</li> </ul>		
Location and	Describe position and	Give and follow directions to	Interpret simple maps of	Create and interpret simple	Use simple scales, legends and	<b>Use</b> a grid reference system to	Investigate combinations of
Location and transformation	movement:	Give and tollow directions to familiar locations:	familiar locations and <b>identify</b> the relative positions of key	create and interpret simple grid maps to show position and pathways:	<b>Use</b> simple scales, legends and directions to <b>interpret</b> information contained in basic	<b>use</b> a grid reference system to <b>describe</b> locations. <b>Describe</b> routes using landmarks and	<b>investigate</b> combinations of translations, reflections and rotations, with and without
	<ul> <li>Interpret the everyday language of location and direction         <ul> <li>between</li> <li>near</li> <li>next to</li> <li>forward</li> <li>toward</li> </ul> </li> <li>follow and give simple directions to move around obstacles.</li> </ul>	<ul> <li>understand that people need to give and follow directions to and from a place. This involves turns, direction and distance</li> <li>understand the meaning and importance of these</li> </ul>	<ul> <li>features:</li> <li>understand that we represent objects and their positions on maps to allow us to: <ul> <li>receive directions</li> <li>give directions</li> <li>describe place</li> </ul> </li> </ul>	<ul> <li>identify key features of maps</li> <li>create a map of the classroom or playground.</li> </ul>	<ul> <li>maps:</li> <li>establish the concept of scale and why it is used</li> <li>identify the scale used on maps of: <ul> <li>cities in Australia</li> <li>rural areas in Australia</li> <li>a city in Indonesia</li> </ul> </li> </ul>	<ul> <li>directional language:</li> <li>compare aerial views of country, desert paintings and maps with grid references</li> <li>create a grid reference system for the classroom. Use it to locate objects and</li> </ul>	<ul> <li>Identify lines of symmetry</li> <li>Identify rotational symmetry</li> <li>perform combination of translations one after the other</li> </ul>

Sub-strand	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		<ul> <li>words when giving or following instructions:</li> <li>clockwise</li> <li>anticlockwise</li> <li>forward</li> <li>under</li> <li>interpret and following directions around familiar locations.</li> </ul>	construct arrangements of objects from a set of directions.		<ul> <li>describe the different scales</li> <li>use directions to find features on a map and explore map references.</li> </ul>	describe routes from one object to another.	<ul> <li>design a school or brand logo using transformation of one or more shapes</li> <li>understand that translations, rotations and reflections can change the position and orientation but not shape or size.</li> </ul>
			<ul> <li>Investigate the effect of one- step slides and flips with and without digital technologies:         <ul> <li>understand that objects can be moved but changing the position does not alter an object's size or features</li> </ul> </li> <li>Identify and describe half and quarter turns:         <ul> <li>predict and reproduce a pattern based around half and quarter turns of a shape. Sketch the next element in the pattern.</li> </ul> </li> </ul>	<ul> <li>Identify symmetry in the environment:</li> <li>identify symmetry in Aboriginal rock carvings or art</li> <li>identify symmetry in the natural and built environment.</li> </ul>	<ul> <li>Create symmetrical patterns, pictures and shapes with and without digital technologies:</li> <li>establish line symmetry and patterns</li> <li>use stimulus materials like: <ul> <li>the motifs in Central Asian textiles</li> <li>Tibetan artefacts</li> <li>Indian lotus designs</li> <li>Yolngu or Central and Western Desert art.</li> </ul> </li> </ul>	<ul> <li>Describe translations, reflections and rotations of two- dimensional shapes. Identify line and rotational symmetries:</li> <li>identify and describe the line and rotational symmetry of a range of two-dimensional shapes. Use techniques like:         <ul> <li>cutting</li> <li>folding</li> <li>turning</li> <li>using digital technologies</li> </ul> </li> <li>identify the effects of transformations on two- dimensional shapes by:         <ul> <li>flipping</li> <li>sliding</li> <li>turning</li> <li>using digital technologies</li> </ul> </li> </ul>	<ul> <li>Introduce the Cartesian         coordinate system using all         four quadrants:         <ul> <li>understand that the                 Cartesian plane                 provides a graphical                 or visual way of                 describing location</li> <li>explore map                 references using                 numbers on the                 x-axis and y-axis</li> <li>establish the origin                 and its coordinates</li> <li>describe a point using                 coordinates</li> <li>plot points on a set of                 axes                 extend the axes                 (number lines) to                 include negative                 numbers</li> </ul> </li> </ul>
						<ul> <li>Apply the enlargement transformation to familiar two- dimensional shapes and compare the properties of the original and enlarged shapes:</li> <li>use digital technologies to enlarge shapes</li> <li>use a grid system to enlarge a favourite image or cartoon.</li> </ul>	

Geometric			Identify angles as measures of	Compare angles and classify	Estimate, I
reasoning			turn and compare angle sizes	them as equal to, greater	angles usir
Ū			in everyday situations:	than, or less than, a right	angles usir
				angle:	
			<ul> <li>open doors partially and fully and compare the size of the angles created</li> <li>recognise that analogue clocks use the turning of arms to indicate time. Compare the size of the angles between the arms in familiar times</li> <li>discuss hands on the clock with quarter turn, half turn and full turn.</li> </ul>	<ul> <li>establish the concept of a right angle in degrees</li> <li>compare angles that are less than, equal to, or greater than a right angle</li> <li>create angles and compare them to a right angle using digital technologies.</li> </ul>	<ul> <li>n</li> <li>a</li> <li>a</li> <li>r</li> <li>h</li> <li>v</li> <li>Recognise</li> <li>angle is th</li> <li>required t</li> <li>the other.</li> </ul>
Pythagoras and	This sequence starts at year	9			
trigonometry					

measure and compare ng degrees. Construct ng a protractor:

measure and construct angles using both 180° and 360° protractors recognise that angles have arms and a vertex.

e that the size of an he amount of turn to get from one arm to Investigate angles on a straight line, angles at a point, and vertically opposite angles with and without digital technologies. Use the results to find unknown angles:

- identify that an angle is made up of a vertex and two arms
- identify the size of a right angle as 90°.
   Define acute, obtuse, straight and reflex angles
- measure, estimate and compare angles in degrees. Classify angles according to their sizes
- identify that all angles at a point add up to 360 degrees
- **identify** vertically opposite angles
- **investigate** the use of rotation and symmetry in the diagrammatic representations of kinship relationships of Central and Western Desert people

## Achievement standards

#### Strand: Statistic and probability

Statistics and probability initially develop in parallel and the curriculum then progressively builds the links between them. Students recognise and analyse data and draw inferences. They represent, summarise and interpret data and undertake purposeful investigations involving the collection and interpretation of data. They assess likelihood and assign probabilities using experimental and theoretical approaches. They develop an increasingly sophisticated ability to critically evaluate chance and data concepts and make reasoned judgements and decisions, as well as building skills to critically evaluate statistical information and develop intuitions about data.

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<ul> <li>By the end of reception, students:</li> <li>answer simple questions to collect information</li> <li>make simple inferences about collected information.</li> </ul>	<ul> <li>By the end of year 1, students:</li> <li>describe data displays</li> <li>ask questions to collect data</li> <li>draw simple data displays</li> <li>make simple inferences about collected data</li> <li>classify the outcomes of simple familiar events.</li> </ul>	<ul> <li>By the end of year 2, students:</li> <li>collect data from relevant questions to create lists, tables and picture graphs with and without the use of digital technology</li> <li>make simple inferences about collected data</li> <li>use everyday language to describe outcomes of familiar events.</li> </ul>	<ul> <li>By the end of year 3, students:</li> <li>carry out simple data investigations using categorical variables</li> <li>interpret and compare data displays</li> <li>conduct chance experiments, list possible outcomes, and recognise variations in actual results.</li> </ul>	<ul> <li>By the end of year 4, students:</li> <li>describe different methods for data collection and representation, then evaluate their effectiveness</li> <li>construct data displays from given or collected data, with and without the use of digital technology</li> <li>list the probabilities of everyday events</li> <li>identify dependent and independent events.</li> </ul>	<ul> <li>By the end of year 5, students:</li> <li>pose questions to gather data</li> <li>construct various displays that are appropriate for the data, with and without the use of digital technology</li> <li>compare and interpret different data sets</li> <li>list outcomes of chance experiments with equally likely outcomes</li> <li>assign probabilities as a number from 0 to 1.</li> </ul>	<ul> <li>By the end of year 6, students:</li> <li>interpret and compare a variety of data displays including those for two categorical variables</li> <li>analyse and evaluate data from secondary sources</li> <li>compare observed and expected frequencies of events</li> <li>specify, list and communicate the probability of events using simple ratios, fractions, decimals and percentages.</li> </ul>

# Scope and sequence

Sub-strand	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Chance		Identify outcomes of familiar	Identify practical activities and	Conduct chance experiments,	Describe possible everyday	List outcomes of chance	Describe probabilities using
		events involving chance.	everyday events that involve	identify and describe possible	events and order their	experiments involving equally	fractions, decimals and
		Describe them using everyday	chance. Describe outcomes as	outcomes and <b>recognise</b>	chances of occurring:	likely outcomes and represent	percentages:
		language such as 'will happen',	'likely' or 'unlikely' and	variation in results:		probabilities of those outcomes	
		'won't happen' or 'might	identify some events as		Use lists of events     familiar to students	using fractions:	<ul> <li>record the probabilities of</li> </ul>
		happen': • justify that some events are certain or impossible.	<ul> <li>'certain' or 'impossible':</li> <li>classify a list of everyday events according to how likely they are to happen. Use the language of chance and explaining reasoning.</li> </ul>	<ul> <li>use outcome terminology such as 'likely', 'unlikely', 'certain' or 'impossible'</li> <li>conduct repeated trials of chance experiments such as tossing a coin or drawing a ball from a bag. Identify the variations between trials.</li> </ul>	familiar to students and order them from 'least likely' to 'most likely' to occur • investigate the chances of events occurring and assign probabilities such as 50%.	<ul> <li>comment on the likelihood of winning simple games of chance. Consider the number of possible outcomes and the chance of winning. Use simple games of chance such as jan- ken-pon (rock-paper- scissors).</li> </ul>	<ul> <li>probabilities of outcomes between 0 and 1. Establish that all outcomes of an event added together equal 1</li> <li>establish the probability of certain events and impossible events</li> <li>investigate games of chance popular in different cultures. Evaluate the relative benefit to the organisers and participants (for example Pachinko)</li> <li>calculate the probabilities where possible outcomes</li> </ul>
					Identify everyday events	Recognise that probabilities	Conduct chance experiments
					where one cannot happen if	range from 0 to 1:	with both small and large
					the other happens:		numbers of trials using
					• <b>use</b> examples such as weather which cannot be dry and wet at the same time.	<ul> <li>investigate the probabilities of all outcomes for a simple chance experiment. Verify that the sum of all probabilities equals 1.</li> </ul>	<ul> <li>appropriate digital technologies:</li> <li>conduct repeated trials of chance experiments, identifying the variation between trials. Realise that the results tend to the prediction with larger numbers of trials.</li> </ul>

Sub-strand	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
					Identify events where the		Compare observed
					chance of one will not be		frequencies across
					affected by the occurrence of		experiments with expected
					the other:		frequencies:
					• explain why the		• predict likely
					probability of a new		outcomes from a run
					baby being either a		of chance events.
					boy or a girl does not		Distinguish these
					depend on the sex of		from surprising
Data representation	Answer yes or no questions to	Chases simple questions gether	Identify a question of interest	Identify questions or issues for	the previous baby.	Pero questions and collect	results.
Data representation	Answer yes of no questions to	choose simple questions, gather	Identity a question of interest	Identify questions of issues for	select and that methods for	Pose questions and collect	construct, interpret and
and interpretation	collect information and make	responses, and make simple	based on one categorical	categorical variables. Identify	data collection, including	categorical or numerical data by	compare a range of data
	simple inferences:	inferences:	variable. Gather data relevant	data sources and plan	survey questions and	observation or survey:	displays, including side-by-side
	• noce questions shout	• determine which	to the question:	methods of data collection	recording sheets:	• establish the two types of	column graphs for two
	themselves familiar	guestions will gather	• dotorming the vericty	and recording:	a introduce the	data:	categorical variables:
	objects, and events	appropriate responses	• uetermine the variety		• introduce the	o categorical data	a catablish the twees of
	represent question	for a simple	playground and use a	<ul> <li>pidn investigations</li> </ul>	recoding data and	o numerical data	- establish the types of
	responses using	investigation.	prepared table to	collecting data and	using a table	• <b>pose</b> questions about	o categorical data
	simple displays, like		record observations.	refine the questions.	• compare the	insect diversity in the	o numerical data
	grouping students			For example	effectiveness of	playground. Collect data	• compare different
	according to their			narrowing the focus	different methods of	by taping a one-metre-	student-generated
	answers			of a question from	collecting data	square piece of paper to	diagrams, tables and
	• <b>use</b> data displays to			'which is the most	• establish ways to	the playground and	graphs. Describe their
	answer simple			popular breakfast	record data that is	number of insects on it	similarities and
	questions such as			cereal? to which is	collected	over time.	differences and comment
	answered 'ves' to			breakfast cereal from	effective way to		representation for
	having brown hair?'			the following options	collect data for a		interpreting that specific
					given investigation.		data
					6 6		<ul> <li>understand that data can</li> </ul>
							be represented in
							different ways, sometimes
							with one symbol
							representing more than
							one piece of data.
							Understand that it is
							important to read all the
							information about a
							representation before
							e establish the mean or
							establish the mean of     average in a set of data
							<ul> <li>Fstablish the meanings in</li> </ul>
							different situations

Sub-strand	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Organise the answers to yes or no questions into simple data displays that use objects and drawings.	<ul> <li>Represent data with objects and drawings where one object or drawing represents one data value. Describe the displays:</li> <li>understand one-to-one correspondence</li> <li>describe displays by identifying categories with the greatest or least number of objects.</li> </ul>	<ul> <li>Collect, check and classify data:</li> <li>recognise the usefulness of tally marks</li> <li>identify categories of data and use them to sort data.</li> </ul>	<ul> <li>Collect data, organise it into categories and create displays using lists, tables, picture graphs and simple column graphs. Do this with and without the use of digital technologies:</li> <li>explore meaningful and increasingly efficient ways to record data. Represent and report the results of investigations</li> <li>collect data to investigate features in the natural environment.</li> </ul>	<ul> <li>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:</li> <li>introduce the importance of labelling graphs</li> <li>explore ways of presenting data and showing the results of investigations</li> <li>investigate data displays using many- to-one correspondence.</li> </ul>	<ul> <li>Construct displays that are appropriate for the data, with and without the use of digital technologies. Include column graphs, dot plots, and tables:</li> <li>identify the best method of presenting data to illustrate the results of an investigation. Justify the choice of representation.</li> </ul>	<ul> <li>Interpret secondary data presented in digital media and elsewhere:</li> <li>investigate and discuss data representations in the media and consider what the author wanted to convey</li> <li>identify potentially misleading data representations in the media like: <ul> <li>graphs with broken axes</li> <li>non-linear scales</li> <li>graphics not drawn to scale</li> <li>claims made using data that is not related to the claim.</li> </ul> </li> </ul>
			<ul> <li>Create displays of data using lists, tables, and picture graphs, then interpret them:</li> <li>create picture graphs to represent data using one-to-one correspondence</li> <li>compare the usefulness of different data displays.</li> </ul>	Interpret and compare data displays: • compare various student-generated data representations and describe their similarities and differences.	<ul> <li>Evaluate the effectiveness of different displays in illustrating data features including variability:</li> <li>interpret data representations in the media and other forums in which symbols represent more than one data value</li> <li>suggest questions that can be answered by a given data display. Use the display to answer questions</li> </ul>	<ul> <li>Describe and interpret different data sets in context:</li> <li>use and comparing data representations for different data sets to help decision making.</li> </ul>	Pose and refine questions to collect categorical or numerical data by observation or survey.