Mathletics

Australian Curriculum

Understanding Practice and Fluency (UPF)

Years 3 – 6

September, 2021

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Contents

Part I

Year 3

1 Number and Algebra

1.1 Number and place value

ACMNA051 Investigate the conditions required for a number to be odd or even and identify odd and even numbers			
Quest: Odd and even numbers			
Learning Journey	Steps	Content	Description
Identifying odd and even numbers	1	Investigating odd and even numbers	• model odd and even numbers of up to 2 digits using arrays with 2 rows
			• compare and describe the difference between models of even numbers and models of odd numbers
			• recognise the connection between even numbers and the multiplication facts for 2
	2	Identifying odd and even numbers up to and including 4 digits	• recognise the significance of the final digit of a whole number in determining whether a given number is even or odd
			• identify even or odd numbers up to and including 4 digits
	3	Identifying odd and even number patterns (add in number lines and number charts)	• model even and odd numbers of up to 20 using arrays with 2 rows
			• compare and describe the difference between the models of odd and even numbers
			• recognise the connection between even numbers, doubles and the 2 times-tables; demonstrate the connection with words, models or numerals
			• use the final digit of a whole number to determine whether a given number is even or odd (up to four digits)

ACMNA052 Recognise, model, represent and order numbers to at least 10 000			
Quest: Numbers to 10 000			
Learning Journey	Steps	Content	Description
Identifying and counting numbers up to 4 digits	1	Identifying numbers before and after up to 4-digit numbers (within 10 000)	• identify the number that comes before a given 2-, 3- or 4-digit number up to 10 000; describe this number as ‘one more than’
			• identify the number that comes after a given 2-, 3- or 4-digit number up to 10 000; describe this number as ‘one less than’

Learning Journey	Step	Content	Description
			• identify the number that comes before or after a given 2-, 3- or 4-digit number up to 10 000; describe this number as 'one more than' or 'one less than'
	2	Counting by tens and hundreds using models, number lines and charts	• count forwards and backwards in tens, on and off the decade, with 2-digit, 3-digit and 4-digit numbers using number lines and number charts
			• count forwards and backwards in hundreds, on the decade, with 3-digit and 4-digit numbers using number lines and number charts
			• count forwards and backwards in hundreds, on and off the decade, with 3-digit and 4-digit numbers using number lines and number charts
	3	Counting by tens and hundreds	• count forwards and backwards in tens, on and off the decade, with 2-digit, 3-digit and 4-digit numbers
			• count forwards and backwards in hundreds, on the decade, with 3-digit and 4-digit numbers
			• count forwards and backwards in hundreds, on and off the decade, with 3-digit and 4-digit numbers
	4	Finding numbers 10 or 100 before and after up to 1000	• find the number '10 before' or '10 after' a given 2-digit, 3-digit or 4-digit number on or off the decade using number lines and number charts
			• find the number '100 before' or '100 after' a given 3-digit or 4-digit number on or off the decade using number lines and number charts
Reading and representing numbers up to 4 digits	1	Reading and writing 4-digit numbers using words and numerals	• write a given 4-digit number in words, eg 4567 as four thousand, four hundred and sixty-seven
			• write the numerals for a 4-digit number given in words
	2	Representing 4-digit numbers using words, numerals and objects	• model a given 4-digit number using concrete materials, pictures or drawings
			• write the numerals in words, eg 'seven thousand, three hundred and fifty-three' for a 4-digit number represented using place value equipment or using pictures, drawings
Comparing and ordering numbers to 10 000	1	Comparing numbers to 10 000 using models and inequality symbols	• model and compare two 4-digit numbers using place value equipment
			• compare two numbers of up to 4 digits and describe using the terms and symbols: greater than (>) or less than (<); explain the comparison using place value reasoning

Learning Journey	Step	Content	Description
	2	Ordering numbers to 10 000	• order up to 4 consecutive 2-digit, 3-digit or 4-digit numbers within 10 000 in ascending order or descending order; explain the reason for the order given
			• order up to 4 non-consecutive 2-digit, 3-digit or 4-digit numbers within 1000 in ascending or descending order; explain the reason for the order given using place value reasoning

ACMNA053 Apply place value to partition, rearrange and regroup numbers to at least 10 000 to assist calculations and solve problems			
Quest: Place value and partitioning			
Learning Journey	Steps	Content	Description
Place value up to 4-digits	1	Using place value to partition 4-digit numbers	• use place value equipment to partition a given 4-digit number into thousands, hundreds, tens and ones
			• describe a 4-digit number using words, eg 9523 as '9 thousands, 5 hundreds, 2 tens and 3 ones'
			• write a 4-digit number in expanded notation, eg 7523 as 7000 + 500 + 20 + 3
			• write the numeral for a number represented by expanded notation
			• recognise zero as a placeholder
	2	Identifying the place value of digits in 4-digit numbers	• write the numeral for a 4-digit number modelled using place value equipment
			• identify the digit in the thousands, hundreds, tens or ones column for a given 4-digit number
			• identify, record and model a number using place value clues, eg 'an 8 in the thousands, 5 in the hundreds and a 2 in the ones' as 8502
			• recognise the role of zero as a placeholder
			• create the smallest and largest numbers possible using 4 digits
	3	Partitioning 4-digit numbers using non-standard partitioning	• use place value equipment to partition a given 4-digit number using non-standard partitioning, eg 2375 as 2 thousands, 1 hundred and 275 ones or 2000 + 100 + 275
			• model and identify a number from non-standard partitioning, eg recognise 3 hundreds, 4 tens and 27 ones or 300 + 40 + 27 as 367
Rounding numbers: 4 digits	1	Rounding numbers up to 10 000 to the nearest 1000	• model a 4-digit number and recognise which thousand it is nearer to; explain reasoning

Learning Journey	Step	Content	Description
			• round a 4-digit number to the nearest 1000; recognise the digit in the hundreds column as the key digit
	2	Rounding numbers up to 10 000 to the nearest 10, 100 or 1000	• round a 4-digit number to the nearest 10, 100 or 1000; explain the rounding
			• apply an understanding of place value to read numbers up to 5 digits

ACMNA054 Recognise and explain the connection between addition and subtraction			
Quest: Addition and subtraction			
Learning Journey	Steps	Content	Description
Relationship between addition and subtraction	1	Recognising and using the inverse relationship between addition and subtraction	• determine, through investigation, the inverse relationship between addition and subtraction
			• determine the missing number in addition and subtraction equations using a variety of tools and strategies, such as the inverse relationship between addition and subtraction (up to 2 digit with 2-digit addition or subtraction)
	2	Recognising equivalent number sentences with 1-digit and 2-digit numbers	• complete number sentences involving addition and subtraction by calculating missing numbers using a variety of tools and strategies
			• use inverse operations to complete number sentences
			• justify solutions when completing number sentences
	3	Judging the reasonableness of addition and subtraction answers (up to 3-digit answers)	• use benchmarks of 'more than or less than' to help judge the reasonableness of answers

ACMNA055 Recall addition facts for single-digit numbers and related subtraction facts to develop increasingly efficient mental strategies for computation			
Quest: Addition & subtraction facts/strategies			
Learning Journey	Steps	Content	Description
Add/subtract: 2 and 3 numbers within 1000	1	Recalling number bonds to 30	• use known facts and number patterns to recall bonds to 30 eg 18 + 2 = 20 so 28 + 2 = 30
	2	Adding 3 or more single-digit numbers	• use appropriate strategies to add 3 or more single-digit numbers; including changing the order, doubles if appropriate, bridging to a ten
			• explain and justify strategies used
	3	Adding and subtracting 3 or more single-digit numbers using compatible numbers	• use compatible numbers , eg 4 + 2 + 8 – 6 as 6 + 8 – 6 = 8
	4	Creating and solving addition and subtraction word problems (within 1000)	• represent a word problem as an addition or subtraction number sentence

Learning Journey	Step	Content	Description
			• solve simple addition and subtraction word problems in context including find the difference, find the sum, change unknown, start unknown
			• explain and compare strategies used to solve addition and subtraction word problems
			• create problems in contexts that involve addition and subtraction
Add/subtract: 2- & 3-digit using jump strategy	1	Adding 2-digit and 3-digit numbers using place value partitioning on a number line (jump strategy)	• model and solve the addition of a 2-digit and 3-digit number using an empty number line, eg 823 + 56 as 823 + 50 = 873, 873 + 6 = 879
	2	Subtracting a 2-digit number from a 3-digit number using place value partitioning on a number line (jump strategy)	• model and solve the subtraction of a 2-digit number from a 3-digit number using an empty number line, eg 823 – 56 as 823 – 50 = 773, 773 – 6 = 767
	3	Adding and subtracting a 2-digit and 3-digit number using place value partitioning on a number line (jump strategy)	• model and solve the addition or subtraction of a 2-digit number from a 3-digit number using an empty number line, eg 823 – 56 as 823 – 50 = 773, 773 – 6 = 767
Add/subtract: 2- & 3-digit using place value	1	Adding 2-digit and 3-digit numbers mentally using place value understanding (jump strategy)	• mentally solve addition problems involving 2-digit and 3-digit numbers using a jump strategy, eg 823 + 56 as 823 + 50 = 873, 873 + 6 = 879
			• record and explain the use of the strategy
			• check calculations using the inverse operation
	2	Subtracting a 2-digit number from a 3-digit number mentally using place value understanding (jump strategy)	• mentally solve subtraction problems involving 2-digit and 3- digit numbers using place value partitioning, eg 823 – 56 as 823 – 50 = 773, 773 – 6 = 767
			• record and explain the use of the strategy
			• check calculations using the inverse operation
	3	Adding and subtracting a 2-digit and 3-digit number mentally using place value understanding (jump strategy)	• mentally solve addition and subtraction problems involving 2-digit and 3- digit numbers using place value partitioning, eg 823 – 56 as 823 – 50 = 773, 773 – 6 = 767
Add/subtract: 2- & 3-digit using bridging to 10	1	Bridging to ten to add two 2-digit numbers using models for support	• add to the nearest ten first then add the rest, using models for support, eg 28 + 17 as 28 + 2 = 30 and 30 + 15 = 45
			• record and explain the use of the strategy

Learning Journey	Step	Content	Description
		Adding 2 numbers up to 3-digits using bridging to ten	• add up to two 3-digit numbers where the first number has a 7, 8, or 9 in the ones columns, by first adding to the nearest ten and then adding the rest, eg 368 + 25 as 368 + 2 + 23
			• record and explain the strategy using numerals, models and/or diagrams
	2	Bridging to ten to subtract two 2-digit numbers using models for support	• subtract to the nearest ten first then subtract the rest using models for support, eg 33 – 18 as 33 – 3 – 10 – 5
			• record and explain the use of the strategy
		Subtracting 2 numbers up to 3-digits using bridging to ten	• subtract two numbers (up to 3-digits) where the first number has a 1, 2 or 3 in the ones columns, by first subtracting to the nearest ten and then subtracting the rest, eg 362 – 25 as 362 – 2 – 23
			• record and explain the strategy using numerals, models and/or diagrams
	3	Bridging to ten to mentally add and subtract two 2-digit numbers	• add or subtract to the nearest ten first then add or subtract the rest, using models for support, eg 28 + 17 as 28 + 2 = 30 and 30 + 15 = 45
			• check calculations using the inverse operation
		Adding and subtracting 2 numbers up to 3-digits using bridging to ten	• add or subtract two numbers (up to 3-digits) where the first number has a 7, 8, or 9 in the ones columns, by first adding to the nearest ten and then adding the rest, eg 368 + 25 as 368 + 2 + 23, or 362 – 25 as 362 – 2 – 23
			• record and explain the strategy using numerals, models and/or diagrams
Add/subtract: bridging with unknowns	1	Using a bridging strategy with start unknown or change unknown problems	• use a bridging strategy to solve addition and subtraction problems where the change is unknown, eg 29 + ? = 81
			• use a bridging strategy to solve addition and subtraction problems where the start is unknown, eg ? + 29 = 81 becomes 29 + ? = 81
Add/subtract: 3-digits using partitioning	1	Adding two 3-digit numbers using place value partitioning on a number line (jump strategy)	• model and solve the addition of two 3-digit numbers using an empty number line, eg 823 + 356 as 823 + 300 = 1123, 1123 + 50 = 1173, 1173 + 6 = 1179

Learning Journey	Step	Content	Description
	2	Subtracting two 3-digit numbers using place value partitioning on a number line (jump strategy)	• model and solve the subtraction of two 3-digit numbers using an empty number line, eg 823 – 356 as 823 – 300 = 523, 523 – 50 = 473, 473 – 6 = 467
	3	Adding and subtracting two 3-digit numbers using place value partitioning on a number line (jump strategy)	• model and solve the addition or subtraction of two 3-digit numbers using an empty number line, eg 823 – 356 as 823 – 300 = 523, 523 – 50 = 473, 473 – 6 = 467
	4	Adding and subtracting multi-digit numbers using place value partitioning	• partition the second number to add two multi-digit numbers (up to 4 digits), eg 1546 + 625 as 546 + 600 + 20 + 5; use standard or non-standard partitioning
			• partition the second number to subtract two multi-digit numbers (up to 4 digits), eg 1546 – 625 as 546 – 600 – 20 – 5; use standard or non-standard partitioning
Add/subtract: 3-digits using place value	1	Adding up to 3-digit numbers mentally using place value understanding (jump strategy)	• solve the addition of two 3-digit numbers using a jump strategy, eg 823 + 356 as 823 + 300 = 1123, 1123 + 50 = 1173, 1173 + 6 = 1179
			• explain and justify the use of the strategy
	2	Subtracting up to 3-digit numbers mentally using place value understanding (jump strategy)	• solve the subtraction of two 3-digit numbers using a jump strategy, eg 823 – 356 as 823 – 300 = 523, 523 – 50 = 473, 473 – 6 = 467
			• explain and justify the use of the strategy
	3	Adding or subtracting up to 3-digit numbers mentally using place value understanding (jump strategy)	• solve the addition or subtraction of two 3-digit numbers using a jump strategy, eg 823 – 356 as 823 – 300 = 523, 523 – 50 = 473, 473 – 6 = 467
Add/subtract: 2- & 3-digit using split strategy	1	Adding a 2-digit and 3-digit number using place value models (split strategy)	• model the addition of a 2-digit and 3-digit number using a split strategy with or without crossing tens; use place value equipment, money or diagrams
			• solve addition problems using a split strategy, eg 265 + 27 as 260 + 20 and 5 + 7, 280 + 12 = 292
			• record and explain the use of the strategy
		Adding up to two 3-digit numbers mentally using place value understanding (split strategy)	• solve addition problems using a split strategy, eg 265 + 327 as 200 + 300, 60 + 20 and 5 + 7, 500 + 80 + 12 = 592
			• record and explain the strategy using numerals, models and/or diagrams

Learning Journey	Step	Content	Description
	2	Subtracting a 2-digit number from a 3-digit number using place value models (split strategy)	• model the subtraction of a 2-digit and 3-digit number using a split strategy; place value equipment, money or diagrams
			• solve subtraction problems using a split strategy, eg 265 – 21 as 260 – 20 and 5 – 1, 240 + 4 = 244
			• record and explain the use of the strategy
		Subtracting two 3-digit numbers mentally using place value understanding (split strategy)	• record and explain the strategy using numerals, models and/or diagrams
			• solve addition and subtraction problems using a split strategy, eg 265 + 327 as 200 + 300, 60 + 20 and 5 + 7, 500 + 80 + 12 = 592
	3	Adding and subtracting 2-digit and 3-digit numbers using place value models (split strategy)	• model the addition or subtraction of a 2-digit and 3-digit number using a split strategy; place value equipment, money or diagrams
			• solve addition and subtraction problems using a split strategy, eg 265 – 21 as 260 – 20 and 5 – 1, 240 + 4 = 244
			• record and explain the strategy using numerals, models and/or diagrams
			• check calculations using the inverse operation
		Adding and subtracting two 3-digit numbers mentally using place value understanding (split strategy)	• solve addition and subtraction problems using a split strategy, eg 265 + 327 as 200 + 300, 60 + 20 and 5 + 7, 500 + 80 + 12 = 592
			• record and explain the strategy using numerals, models and/or diagrams
			• check calculations using the inverse operation
Add/subtract: rounding & compensation	1	Introducing addition using rounding and compensating with two 2-digit numbers	• add two 2-digit numbers where 1 number is close to a ten (digit in the ones column is 7, 8 or 9)
			• round 1 number to the next 10, carry out the addition and adjust the answer to compensate for the original rounding, eg 35 + 29 as 35 + 30 – 1
			• record the strategy using numerals, models and/or diagrams and explain the need to compensate
		Adding up to two 3-digit numbers using rounding and compensating	• add up to two 3-digit numbers where 1 number is close to a hundred (ends in 97, 98 or 99)

Learning Journey	Step	Content	Description
			• round 1 number to the next 100, carry out the addition and adjust the answer to compensate for the original rounding, eg 398 + 23 as 400 + 23 – 2
	2	Introducing subtraction using rounding and compensating with two 2-digit numbers	• subtract two 2-digit numbers where 1 number is close to a ten
			• round 1 number to the next 10, carry out the subtraction and adjust the answer to compensate for the original rounding, eg 33 – 19 as 33 – 20 + 1 or 81 – 35 as 80 – 35 + 1
			• record the strategy using numerals, models and/or diagrams and explain the need to compensate
		Subtracting up to two 3-digit numbers using rounding and compensating	• record the strategy using numerals, models and/or diagrams and explain the need to compensate
			• subtract up to two 3-digit numbers where 1 number is close to a hundred (ends in 97, 98 or 99)
			• round 1 number to the next 100, carry out the subtraction and adjust the answer to compensate for the original rounding, eg 398 – 23 as 400 – 23 + 2
			• record the strategy using numerals, models and/or diagrams and explain the need to compensate
	3	Introducing addition and subtraction using rounding and compensating with two 2-digit numbers	• add or subtract two 2-digit numbers where 1 number is close to a ten (digit in the ones column is 7, 8 or 9)
			• round 1 number to the next 10, carry out the addition or subtraction and adjust the answer to compensate for the original rounding, eg 33 + 19 as 33 + 20 - 1 or 81 + 35 as 80 + 35 + 1
			• check calculations using the inverse operation
		Adding and subtracting up to two 3-digit numbers using rounding and compensating	• add or subtract up to two 3-digit numbers where 1 number is close to a hundred (ends in 97, 98 or 99)
			• round 1 number to the next 100, carry out the addition or subtraction and adjust the answer to compensate for the original rounding, eg 398 + 23 as 400 + 23 – 2
			• use place value equipment to model pairs that add to 100, eg 63 and 37
			• recognise that the ones make an extra ten when added

Learning Journey	Step	Content	Description
	4	Introducing addition using rounding and compensating when the change or start is unknown	• model with number lines and solve addition problems with two 2-digit numbers where the digits in the ones column for the known addend and result are close together, eg 23 + ? = 81 becomes 23 + 60 – 2
			• explain and justify the use of the strategy
Add/subtract: to and from 100	1	Modelling pairs that add to 100	• use place value equipment to model pairs that add to 100, eg 63 and 37
			• recognise that the ones make an extra ten when added
	2	Adding to make 100	• find pairs of numbers that add to 100 (multiples of 5), eg 45 and 55
			• find pairs of numbers that add to 100, eg 42 and 58
	3	Subtracting from 100	• subtract 1 number from 100 (multiple of 5), eg 100 – 35 = 65
			• subtract 1 number from 100, eg 100 – 29 = 71
Add/subtract: multiples of 100, 1000 & 10 000	1	Adding multiples of 100, 1000 and 10 000	• model the addition of hundreds and/or thousands using place value equipment or play money; relate these additions to adding ones, eg 4 + 3 = 7 so 4 thousands + 3 thousands = 7 thousands or 4000 + 3000 = 7000
			• use known basic facts, eg 5 + 3 to add multiples of 100, 1000 or 10 000 using place value knowledge and pattern identification, eg 5 + 3 = 8, so 500 + 300 = 800, 5000 + 3000 = 8000 and 50 000 + 30 000 = 80 000
	2	Subtracting multiples of 100, 1000 and 10 000	• model the subtraction of hundreds and/or thousands using place value equipment or play money; relate these additions to subtracting ones, eg 8 – 3 = 5 so 8 thousands – 3 thousands = 5 thousands or 8000 – 3000 = 5000
			• use known basic facts, eg 9 - 5 to subtract multiples of 100, 1000 or 10 000 using place value knowledge and pattern identification, eg 9 – 5 = 4, so 900 – 500 = 400, 9000 – 5000 = 4000 and 90 000 – 50 000 = 40 000
	3	Adding multiple single-digit numbers	• use the associative property of addition to make easier additions when possible, eg doubles or near doubles, pairs that add to a ten
Add/subtract: using non-standard partitioning	1	Adding two 3-digit numbers using non-standard partitioning	• partition the second number using non-standard partitioning to add two 3-digit numbers, eg 1546 + 625 as 546 + 500 + 100 + 20 + 5

Learning Journey	Step	Content	Description
			• record and explain the strategy using numerals, models and/or diagrams
	2	Subtracting two 3-digit numbers using non-standard partitioning	• partition the second number using non-standard partitioning to subtract two 3-digit numbers, eg 1546 – 625 as 1546 – 500 – 100 – 20 – 5
			• record and explain the strategy using numerals, models and/or diagrams
Add/subtract: choosing efficient strategies	1	Choosing efficient addition strategies when adding 2-digit and 3-digit numbers	• solve 2-digit and 3-digit addition problems using efficient and effective strategies depending on the numbers in the problem, eg use rounding and compensating, jump strategies, split strategies, place value strategies or bridging strategies
			• record and explain the strategy using numerals, models and/or diagrams
			• check the solution using a different strategy; compare with own and others' strategies, discuss and compare the efficiency of strategies
	2	Choosing efficient subtraction strategies when subtracting 2-digit and 3-digit numbers	• solve 2-digit and 3-digit subtraction problems using efficient and effective strategies depending on the numbers in the problem, eg use rounding and compensating, jump strategies, split strategies, place value strategies or bridging strategies
			• record and explain the strategy using numerals, models and/or diagrams
			• check the solution using a different strategy; compare with own and others' strategies, discuss and compare the efficiency of strategies
	3	Choosing efficient addition and subtraction strategies when adding or subtracting 2-digit and 3-digit numbers	• solve 2-digit and 3-digit addition and subtraction problems using efficient and effective strategies depending on the numbers in the problem, eg use rounding and compensating, jump strategies, split strategies, place value strategies or bridging strategies
			• record and explain the strategy using numerals, models and/or diagrams
			• check the solution using a different strategy; compare with own and others' strategies, discuss and compare the efficiency of strategies

Learning Journey	Step	Content	Description
Add/subtract: estimating	1	Estimating additions using rounding with 3-digit numbers	• round numbers to the nearest multiple of 100 to estimate additions, eg 546 + 789 as 500 + 800
			• round numbers to the nearest multiple of 10 or 100 to estimate additions, eg 546 + 789 as 540 + 800
			• explain the reason for the estimation used and whether the estimation is higher or lower than the actual answer
	2	Estimating subtractions using rounding with 3-digit numbers	• round numbers to the nearest multiple of 100 to estimate subtractions, eg 546 – 189 as 500 – 200
			• round numbers to the nearest multiple of 10 or 100 to estimate subtractions, eg 746 – 389 as 740 – 400
			• explain the reason for the estimation used and whether the estimation is higher or lower than the actual answer

ACMNA056 Recall multiplication facts of two, three, five and ten and related division facts			
Quest: Skip counting			
Learning Journey	Steps	Content	Description
Skip counting by 10 to 1000	1	Counting by skip counting forwards by 10s from any multiple of 10 to 1000	• use concrete materials, models, drawings, number lines/charts to skip count forwards by 10s from any multiple of 10 up to 1000
			• skip count forwards by 10s from any multiple of 10 by memory and an understanding of the number sequence
			• recognise an error in the skip counting sequence
	2	Counting by skip counting backwards by 10s from any multiple of 10 up to 1000	• use concrete materials, models, drawings, number lines/charts to skip count backwards by 10s from any multiple of 10 up to 1000
			• skip count backwards by 10s from any multiple of 10 by memory and an understanding of the number sequence
			• recognise an error in the skip counting sequence
	3	Counting by skip counting forwards or backwards by 10s from any multiple of 10 up to 1000	• use concrete materials, models, drawings, number lines/charts to skip count forwards or backwards by 10s from any multiple of 10 up to 1000
			• skip count forwards or backwards by 10s from any multiple of 10 by memory and an understanding of the number sequence
			• recognise an error in the skip counting sequence

Learning Journey	Step	Content	Description
Skip counting by 2 to 1000	1	Counting by skip counting forwards by 2s from any multiple of 2 to 1000	• use concrete materials, models, drawings, number lines/charts to skip count forwards by 2s from any multiple of 2 up to 1000
			• skip count forwards by 2s from any multiple of 2 by memory and an understanding of the number sequence
			• recognise an error in the skip counting sequence
	2	Counting by skip counting backwards by 2s from any multiple of 2 up to 1000	• use concrete materials, models, drawings, number lines/charts to skip count backwards by 2s from any multiple of 2 up to 1000
			• skip count backwards by 2s from any multiple of 2 by memory and an understanding of the number sequence
			• recognise an error in the skip counting sequence
Skip counting by 5 to 1000	1	Counting by skip counting forwards by 5s from any multiple of 5 to 1000	• use concrete materials, models, drawings, number lines/charts to skip count forwards by 5s from any multiple of 5 up to 1000
			• skip count forwards by 5s from any multiple of 5 by memory and an understanding of the number sequence
			• recognise an error in the skip counting sequence
	2	Counting by skip counting backwards by 5s from any multiple of 5 up to 1000	• use concrete materials, models, drawings, number lines/charts to skip count backwards by 5s from any multiple of 5 up to 1000
			• skip count backwards by 5s from any multiple of 5 by memory and an understanding of the number sequence
			• recognise an error in the skip counting sequence
	3	Counting by skip counting forwards or backwards by 5s from any multiple of 5 up to 1000	• use concrete materials, models, drawings, number lines/charts to skip count forwards or backwards by 5s from any multiple of 5 up to 1000
			• skip count forwards or backwards by 5s from any multiple of 5 by memory and an understanding of the number sequence
			• recognise an error in the skip counting sequence
Skip counting 0 to 30	1	Counting by skip counting forwards by 3s from zero up to 30	• use concrete materials, models, drawings, number lines/charts to skip count by 3s from zero
			• use rhythmic counting to count in 3s from zero

Learning Journey	Step	Content	Description
			• recognise an error in the skip counting sequence
	2	Counting by skip counting backwards by 3s from 30	• use concrete materials, models, drawings, number lines/charts to skip count backwards by 3s from 30
			• use rhythmic counting to count backwards in 3s from 30
			• recognise an error in the skip counting sequence
	3	Counting by skip counting forwards or backwards by 3s from zero up to 30	• use concrete materials, models, drawings, number lines/charts to skip count by 3s
			• use rhythmic counting to count in 3s
			• recognise an error in the skip counting sequence
Skip counting multiples of 30	1	Counting by skip counting forwards by 3s from any multiple of 3 up to 30	• use concrete materials, models, drawings, number lines/charts to skip count by 3s from any multiple of 3
			• use knowledge of the number sequence to count in 3s from any multiple of 3
			• recognise an error in the skip counting sequence
	2	Counting by skip counting backwards by 3s from any multiple of 3 from 30	• use concrete materials, models, drawings, number lines/charts to skip count backwards by 3s from 30
			• use knowledge of the number sequence to count backwards in 3s from any multiple of 3
			• recognise an error in the skip counting sequence
	3	Counting by skip counting forwards or backwards by 3s from any multiple of 3 from zero to 30	• use concrete materials, models, drawings, number lines/charts to skip count by 3s
			• use knowledge of the number sequence to count forwards or backwards in 3s from any multiple of 3
			• recognise an error in the skip counting sequence
Skip counting by 4 to 40	1	Counting by skip counting forwards by 4s from zero up to 40	• use concrete materials, models, drawings, number lines/charts to skip count by 4s from zero
			• use rhythmic counting to count in 4s from zero
			• recognise an error in the skip counting sequence
Quest: Multiplication & division facts			
Multiplication/division facts for 2	1	Recalling multiplication facts for 2	• recall the 2 multiplication facts
	2	Using multiplication facts for 2	• solve and create multiplication problems in context (using multiplication facts for 2), including word problems

Learning Journey	Step	Content	Description
	3	Recalling the division facts for 2	• recall the division facts for 2
	4	Using division facts for 2	• solve and create division problems in context (using multiplication facts for 2), including word problems
	5	Multiplying and dividing by 2	• recall the multiplication and division facts for 2
			• solve and create multiplication and division problems in context (using multiplication facts for 2), including word problems
Multiplication/division facts for 10	1	Recalling the multiplication facts for 10	• recall the 10 multiplication facts
	2	Using multiplication facts for 10	• solve and create multiplication problems in context (using multiplication facts for 10), including word problems
	3	Recalling the division facts for 10	• recall the division facts for 10
	4	Using division facts for 10	• solve and create division problems in context (using multiplication facts for 10), including word problems
	5	Multiplying and dividing by 10	• recall the multiplication and division facts for 10
			• solve and create multiplication and division problems in context (using multiplication facts for 10), including word problems
Multiplication/division facts for 5	1	Recalling multiplication facts for 5	• recall the 5 multiplication facts
	2	Using multiplication facts for 5	• solve and create multiplication problems in context (using multiplication facts for 5), including word problems
	3	Recalling the division facts for 5	• recall the division facts for 5
	4	Using division facts for 5	• solve and create division problems in context (using multiplication facts for 5), including word problems
	5	Multiplying and dividing by 5	• recall the multiplication and division facts for 5
			• solve and create multiplication and division problems in context (using multiplication facts for 5), including word problems
Multiplication/division facts for 2, 5, 10	1	Multiplying by 2s, 5s and 10s	• recall the multiplication facts for 2s, 5s and 10s
			• solve multiplication problems with 2, 5 or 10, including word problems; use the multiplication symbol
	2	Dividing by 2s, 5s and 10s	• recall the division facts for 2s, 5s and 10s

Learning Journey	Step	Content	Description
			• solve division problems with 2, 5 or 10, including word problems; use the division symbol
	3	Multiplying and dividing by 2s, 5s and 10s	• recall the multiplication facts and related division facts for 2s, 5s and 10s
			• solve multiplication and division problems with 2, 5 or 10, including word problems; use the multiplication symbol
Multiplication/division facts for 3	1	Exploring multiplication by 3	• relate multiplication by 3 to doubles and 1 more group; model and describe, eg '3 groups of 4 is the same as double 4 and one more group of 4'
			• explore patterns of the multiplication facts for 3 on a number chart
			• model the 2 related multiplication facts, eg 3 x 4 and 4 x 3
	2	Recalling multiplication facts for 3	• recall the multiplication facts for 3
	3	Using multiplication facts for 3	• solve and create multiplication problems in context (using multiplication facts for 3), including word problems
	4	Dividing by 3	• model and describe the related multiplication and division facts for 3 using models, drawings or manipulatives, eg 5 x 3 = 15 and 15 divided by 3 = 5
			• relate division to how many (whole) times the divisor goes into the dividend
	5	Recalling the division facts for 3 up to 30	• recall the division facts for 3
	6	Using division facts for 3	• solve and create division problems in context (using multiplication facts for 3), including word problems
	7	Multiplying and dividing by 3	• recall the multiplication facts and related division facts for 3
			• solve multiplication and division problems with 3, including word problems

ACMNA057 Represent and solve problems involving multiplication using efficient mental and written strategies and appropriate digital technologies			
Quest: Multiplication word problems			
Learning Journey	Steps	Content	Description
Writing & solving multiplication word problems	1	Writing and solving simple multiplication word problems (within 100)	• pose appropriate multiplication problems (up to 10 x 10)
			• solve multiplication word problems and explain using language, action, drawings, models
			• compare their own and others' methods of solution

Learning Journey	Step	Content	Description
	2	Solving multiplication problems using fair shares or equal grouping (within 100)	• solve fair share multiplication or division problems (with unknown in any position), eg '20 flowers are to be placed in 4 bunches, how many flowers will be in each bunch?'
			• solve equal grouping multiplication or division problems (with unknown in any position), eg 'There are 9 tables in a cafeteria. Each table has 5 chairs. What is the total number of chairs in the cafeteria?'
			• write equations using a symbol, eg a box or a blank, to represent the unknown number
			• compare their own and others' methods of solution
	3	Solving multiplication and division problems involving arrays (within 100)	• solve multiplication and division problems (with the unknown in any position) involving arrays, eg 'A rectangular egg carton has 3 rows and 4 columns of eggs. How many eggs are there?'
			• write equations using a symbol, eg a box or a blank, to represent the unknown number
			• compare their own and others' methods of solution
	4	Solving multiplication and division problems involving comparisons (within 100)	• solve multiplication and division problems involving comparisons eg 'Anna has 3 times as much money as David. David has $6. How much money does Anna have?'
			• write equations using a symbol, eg a box or a blank, to represent the unknown number
			• compare their own and others' methods of solution
Word problems and missing numbers	1	Finding the missing number to make a multiplication number sentence true (2, 5, 10 facts)	• complete number sentences involving 1 operation of multiplication by finding the missing number using a variety of tools, equipment and strategies, eg 3 x ? = 30 or ? x 2 = 18 or 5 x 3 = ?
	2	Finding the missing number to make a division number sentence true (2, 5, 10 facts)	• complete number sentences involving 1 operation of division by finding the missing number using a variety of tools, equipment and strategies eg 40 ÷ 10 = ?, or 35 ÷ ? = 7 or ? ÷ 2 = 9
	3	Solving simple two-step word problems with addition and subtraction (max sum of 100)	• read and represent a two-step word problem using a letter for the unknown quantity
			• solve the problem using a variety of tools, models and strategies

Learning Journey	Step	Content	Description
	4	Solving two-step word problems with the four operations (2, 5, 10 multiplication facts)	• use the four operations to solve two-step word problems
			• represent an unknown quantity with a letter
			• solve the problem using a variety of tools, models and strategies

1.2 Fractions and decimals

ACMNA058 Model and represent unit fractions including $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{5}$ and their multiples to a complete whole			
Quest: Fractions			
Learning Journey	Steps	Content	Description
Using fractions: halves, quarters & eighths	1	Finding halves and quarters of objects, shapes or sets (symbols used)	• find halves and quarters of objects and shapes
			• find halves and quarters of sets
			• find the whole from a part
			• find halves and quarters of uneven partitioned shapes
			• use language 'one half', 'two halves', 'one quarter', 'two quarters' and so on
			• use symbols to represent fractions: $\frac{1}{2}$, $\frac{2}{2}$, $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$, $\frac{4}{4}$
	2	Counting up to 10 in halves and quarters (symbols used)	• count up to 10 from any starting point in halves and quarters
			• use the number line to count with halves and quarters
	3	Finding halves, quarters and eighths of objects or shapes	• recognise equivalence
			• estimate the size of a fractional part before using, eg paper folding to check or estimate the size of the whole from the part
			• find the whole from a part
			• find halves, quarters and eighths of uneven partitioned shapes
			• use symbols for halves, quarters and eighths
			• recognise larger denominator = smaller parts
Numerator and denominator	1	Introducing the terms numerator and denominator	• read and write symbols to represent fractions
			• use the terms denominator and numerator to describe a fraction
Using fractions: halves, thirds & quarters	1	Introducing thirds	• find thirds of objects, shapes and lengths
			• find thirds of sets
			• estimate the size of a fractional part before using eg paper folding to check or estimate the size of the whole from the part
			• find the whole from a part
			• use language 'one third', 'two thirds', 'three thirds'
			• use symbols to represent: $\frac{1}{3}$, $\frac{2}{3}$, $\frac{3}{3}$
	2	Finding halves, thirds or quarters of shapes using partitioning	• recognise that equal shares are not always the same shape
Using fractions: thirds & sixths	1	Introducing sixths	• find sixths of objects and shapes
			• find sixths of sets

Learning Journey	Step	Content	Description
			• estimate the size of a fractional part before using, eg paper folding to check or estimate the size of the whole from the part
			• find the whole from a part
			• use language 'one sixth', 'two sixths', 'three sixths'
			• use symbols to represent: $\frac{1}{6}$, $\frac{2}{6}$, $\frac{3}{6}$
			• understand the relationship between thirds and sixths
	2	Finding thirds and sixths of objects, shapes and sets	• recognise equivalence
			• find thirds and sixths of objects, shapes and lengths
			• find thirds and sixths of sets (using models)
			• find the whole from a part
			• find thirds and sixths of uneven partitioned shapes
			• use language 'one third', 'two thirds', 'three thirds'
			• use fractional notation
Using fractions: fifths	1	Introducing fifths	• estimate the size of a fractional part before using, eg paper folding to check or estimate the size of the whole from the part
			• find fifths of objects, shapes and lengths
			• find fifths of sets
			• find the whole from a part
			• use language 'one fifth', 'two fifths', 'three fifths' and so on
			• use symbols to represent fractions $\frac{1}{5}$, $\frac{2}{5}$ ...

1.3 Money and financial mathematics

ACMNA059 Represent money values in multiple ways and count the change required for simple transactions to the nearest five cents			
Quest: Money			
Learning Journey	Steps	Content	Description
Making purchases and calculating change	1	Using money to make purchases	• calculate the total cost of purchasing two items given their values and record the value in dollars and cents separately (no decimal point)
			• determine the exact notes and coins needed to purchase two items given their values
	2	Calculating change when making purchases	• determine one or more notes and coins that have enough value to make a purchase of one or more items
			• calculate the change required when making purchases using cash and record values in dollars and cents separately (no decimal point)

1.4 Patterns and algebra

ACMNA060 Describe, continue, and create number patterns resulting from performing addition or subtraction			
Quest: Number patterns			
Learning Journey	Steps	Content	Description
Identifying and creating number patterns	1	Identifying and creating additive number patterns (3s, 4s, 6s, 7s, 8s, 9s, from any starting point within 100)	• identify additive number patterns, eg patterns that increase in 3s, 4s, 6s, 7s, 8s and 9s from any starting point
			• describe the rule for a forwards (additive) number pattern, eg 'It goes up by 3s'
			• continue and create an additive number pattern
	2	Identifying and creating subtractive number patterns (3s, 4s, 6s, 7s, 8s, 9s, from any starting point within 100)	• identify subtractive number patterns, eg patterns that decrease by 3s, 4s, 6s, 7s, 8s and 9s from any starting point
			• describe the rule for a backwards (subtractive) number pattern, eg 'It goes down by 3s'
			• continue and create a subtractive number pattern represented in numbers, on a number line or expressed in words, eg 'make a pattern that starts at 20 and shrinks by subtracting 2 each time'
	3	Identifying and creating additive and subtractive number patterns (3s, 4s, 6s, 7s, 8s, 9s, from any starting point within 100)	• identify additive or subtractive number patterns on a number line, hundreds chart or calendar, eg patterns that increase in 3s, 4s, 6s, 7s, 8s and 9s from any starting point
			• describe the rule for a forwards (additive) or backwards (subtractive) number pattern, eg 'It goes up by 3s'
			• continue and create an additive or subtractive number pattern represented in numbers, on a number line or expressed in words, eg 'make a pattern that starts at 0 and grows by adding 7 each time'

2 Measurement and Geometry

2.1 Using units of measurement

ACMMG061 Measure, order and compare objects using familiar metric units of length, mass and capacity			
Quest: Length, mass and capacity			
Learning Journey	Steps	Content	Description
Comparing, ordering and measuring length	1	Comparing lengths in metres and centimetres	• compare lengths and distances using metres and centimetres
	2	Ordering lengths in metres and centimetres	• order lengths and distances using metres and centimetres
	3	Estimating and measuring to the nearest centimetre	• estimate lengths and check by measuring; explain strategies used to estimate lengths and distances, such as by referring to a known length, eg 'My handspan is 10 cm and my desk is 8 handspans long, so my desk is about 80 cm long'
			• measure lengths and distances to the nearest centimetre using a centimetre ruler
			• record lengths and distances using the abbreviation for centimetres (cm)
	4	Measuring in metres and centimetres	• estimate and measure lengths and distances using metres and centimetres
			• explain strategies used to estimate lengths and distances, such as by referring to a known length, eg 'My handspan is 10 cm and my desk is 8 handspans long, so my desk is about 80 cm long'
			• record lengths and distances using abbreviations for metres and centimetres, eg 1 m 25 cm
	5	Introducing formal units for length: millimetres	• recognise the need for a formal unit smaller than the centimetre to measure length
			• develop a personal reference for the approximate length of 1 mm
			• recognise and model that there are 10 mm in 1 cm, ie 10 mm = 1 cm
			• estimate and use the millimetre as a unit to measure lengths to the nearest millimetre using a ruler
			• record lengths using the abbreviation for millimetres (mm), eg 5 cm 3 mm or 53 mm
			• compare lengths with the same standard unit
Measure & compare units of volume & capacity	1	Introducing formal units for volume and capacity: litres	• recognise and explain the need for formal units to measure volume and capacity

Learning Journey	Step	Content	Description
			• develop a personal reference for one litre and fractions of 1 litre (quarters and halves); relate the litre to familiar everyday containers, eg milk cartons
			• recognise that one-litre containers can be a variety of shapes
			• record volumes and capacities using the abbreviation for litres (L)
	2	Estimating, comparing and measuring in litres	• estimate and measure capacities to the nearest litre
			• compare and order 2 or more containers by capacity measured in litres, including the capacity of commercially packaged objects whose capacity is stated in litres
			• record volumes and capacities using the abbreviation for litres (L)
Using the kilogram to measure mass	1	Introducing formal units for mass: the kilogram	• establish the need for formal units to measure mass and introduce the kilogram
			• develop a sense of the mass of 1 kilogram and identify objects that have mass 'about 1 kilogram', 'less than 1 kilogram', 'greater than 1 kilogram', eg a litre of milk is about 1 kilogram, a standard pack of flour is 1 kilogram
			• identify everyday situations where kilograms are an appropriate unit for measuring the mass
			• introduce the abbreviation 'kg' for recording mass in kilograms
	2	Measuring mass in kilograms	• compare and order 2 or more objects by mass measured to the nearest kilogram using carried scales
			• estimate the number of objects that have a total mass of 1 kilogram and check by measuring
			• estimate mass using a personal reference for a kilogram
			• record mass using the abbreviation 'kg'
			• compare masses using uniform informal units and the symbols >, =, <
			• compare masses using simple scaling by integers, eg 'five times as heavy'

ACMMG062 Tell time to the minute and investigate the relationship between units of time			
Quest: Telling time			
Learning Journey	Steps	Content	Description
Telling time to the minute	1	Telling time to the minute (analogue)	• read time on analogue clocks to the minute using the terms 'o'clock', 'past' and 'to', including 'half-past', 'quarter past' and 'quarter to'
			• observe and describe the position or draw the hands of an analogue clock when reading time to the minute, including the hour hand, minute hand and second hand
			• position or draw the hands on an analogue clock to show time to the minute where the time is given using the terms 'o'clock', 'past' and 'to', including 'half-past', 'quarter past' and 'quarter to'
	2	Telling time to the minute (digital)	• read time on 12-hour digital clocks to the minute using the terms 'o'clock', 'past' and 'to', including 'half-past', 'quarter past' and 'quarter to' and write in words
			• record times on analogue clocks to the minute in 12-hour digital format
			• position or draw the hands on an analogue clock to show time to the minute where the time is given in 12-hour digital format
			• connect 12-hour digital displays for times, to the minute, to their corresponding display on an analogue clock
Quest: Relationship between units of time			
Understanding relationship between units of time	1	Recalling relationships between units of time	• know and recall that 1 hour = 60 minutes, 1 minute = 60 seconds
			• know and recall that 1 day = 24 hours
			• know and recall that 1 year = 365 days and that 1 leap year = 366 days and relate this to the rotation of the earth
			• know and recall that 1 week = 7 days, 1 fortnight = 2 weeks
			• solve problems relate to the relationship between units of time

2.2 Shape

ACMMG063 Make models of three-dimensional objects and describe key features			
Quest: 3D objects			
Learning Journey	Steps	Content	Description
Exploring prisms and nets	1	Introducing rectangular prisms	• manipulate and describe the attributes of rectangular prisms
			• recognise that a cube is a special kind of rectangular prism
			• recognise rectangular prisms in the environment and drawings
	2	Exploring prisms	• manipulate and describe the attributes of prisms
			• recognise that a cube is a special kind of prism
			• recognise prisms in the environment and drawings
	3	Comparing, sorting and naming prisms and pyramids	• compare and sort prisms and pyramids by their geometric properties, eg number of edges, number of vertices
			• describe and name prisms and pyramids by the shape of their base
		Comparing three-dimensional objects including pyramids, prisms, cones, spheres and cylinders	• describe similarities and differences between prisms (including cubes), pyramids, cylinders, cones and spheres, eg surfaces, faces, edges and vertices
			• recognise and describe the use of three-dimensional objects in a variety of contexts, eg buildings, packaging
			• identify and name three-dimensional objects as prisms (including cubes), pyramids, cylinders, cones and spheres
	4	Making basic models of three-dimensional objects	• use a variety of materials to make models of prisms (including cubes), pyramids, cylinders, cones and spheres, given a three-dimensional object, picture or photograph to view
			• identify and describe the two-dimensional shapes that can be found in a three-dimensional object, eg build a structure using concrete materials and describe it using geometric terms so that a partner will be able to build it
Rectangular prism nets	1	Introducing nets of rectangular prisms	• deconstruct everyday packages that are prisms (including cubes) to create nets, eg cut up tissue boxes
			• make connections between nets and the two-dimensional shapes of the faces

Learning Journey	Step	Content	Description
			• recognise that a net requires each face to be connected to at least 1 other face
			• investigate, make and identify the variety of nets that can be used to create a particular prism, such as the variety of nets that can be used to make a cube
	2	Introducing nets of prisms	• deconstruct everyday packages that are prisms (including cubes) to create nets, eg cut up tissue boxes
			• make connections between nets and the two-dimensional shapes of the faces
			• recognise that a net requires each face to be connected to at least 1 other face
			• investigate, make and identify the variety of nets that can be used to create a particular prism, such as the variety of nets that can be used to make a cube
			• compare two-dimensional shapes to parts of three-dimensional objects in the environment

2.3 Geometric reasoning

ACMMG064 Identify angles as measures of turn and compare angle sizes in everyday situations			
Quest: Identifying and comparing angles			
Learning Journey	Steps	Content	Description
Identifying and comparing angles	1	Introducing right angles	• identify right angles on two-dimensional shapes and three-dimensional objects
			• identify right angles in pictures, designs and the environment
			• identify right angles in line diagrams
			• use and interpret the symbol □ in diagrams to represent a right angle
			• define perpendicular lines and identify them in pictures, designs and the environment
			• recognise that a pair of perpendicular lines form 4 right angles
	2	Comparing angles informally	• compare angles directly by placing 1 angle over another
			• compare angles indirectly by using a hinged angle measurer
Introducing angles	1	Introducing the concept of angles up to 180°	• understand and describe angles as an amount of turning, openings
			• identify angles in everyday situations, eg door openings, designs, between the arms of a clock
			• recognise that angles are formed whenever 2 lines meet or when 2 rays meet at a common endpoint

2.4 Location and transformation

ACMMG065 Create and interpret simple grid maps to show position and pathways			
Quest: Grid referenced maps			
Learning Journey	Steps	Content	Description
Interpreting and creating grid referenced maps	1	Interpreting grid-referenced maps	• establish that grid referencing on maps allows for more accurate description of features/locations
			• understand the structure (letter then number, horizontal then vertical) and meaning of grid references (everything in that grid square)
			• use grid references to describe features/locations on maps
			• identify features/locations on maps given their grid reference
	2	Drawing pathways on grid-referenced maps	• draw a path from 1 feature to another on a grid-referenced map given the grid reference of each feature
			• use grid references to describe a path from 1 feature to another on a grid-referenced map

ACMMG066 Identify symmetry in the environment			
Quest: Lines of symmetry			
Learning Journey	Steps	Content	Description
Recognising and drawing lines of symmetry	1	Recognising line symmetry in the environment	• observe and describe symmetry informally in everyday objects, pictures, designs and shapes
			• identify shapes that are symmetrical and are not symmetrical by folding to test for symmetry
			• sort objects, pictures, designs and/or shapes according to whether they are symmetrical or not
			• draw a single line of symmetry on given pictures, designs and shapes
	2	Recognising line symmetry of shapes	• define the line of symmetry of a two-dimensional shape as a line across which the shape can be folded into 2 matching parts
			• identify a line of symmetry in two-dimensional shapes
			• sort two-dimensional shapes according to whether they are symmetrical or not
	3	Drawing lines of symmetry on given designs and shapes	• recognise that some designs and shapes may have more than 1 line of symmetry
			• identify and draw all lines of symmetry on designs and shapes
			• determine the total number of lines of symmetry on designs and shapes

Learning Journey	Step	Content	Description
			• determine whether or not a given line through designs and shapes is a line of symmetry

3 Statistics and Probability

3.1 Chance

ACMSP067 Conduct chance experiments, identify and describe possible outcomes and recognise variation in results			
Quest: Conducting chance experiments			
Learning Journey	Steps	Content	Description
Conducting chance experiments	1	Introducing chance experiments (with equal outcomes)	• use the term 'outcome' to describe any possible result of a chance experiment
			• predict and list all possible outcomes in a chance experiment, eg list the outcomes when 3 pegs are randomly selected from a bag containing an equal number of pegs of 2 colours
			• predict the number of times each outcome should occur in a chance experiment involving a set number of trials
	2	Conducting chance experiments (with equal outcomes)	• predict and list all possible outcomes in a chance experiment, eg list the outcomes when 3 pegs are randomly selected from a bag containing an equal number of pegs of 2 colours
			• keep a tally and graph the results of a chance experiment
			• explain any differences between expected results and actual results in a chance experiment; make statements that acknowledge 'randomness' in a situation, eg 'The spinner could stop on any colour'
	3	Introducing chance experiments (with unequal outcomes)	• use the term 'outcome' to describe any possible result of a chance experiment
			• predict and list all possible outcomes in a chance experiment, eg describe the probability of spinning red when you spin a spinner that has $\frac{1}{2}$ shaded yellow, $\frac{1}{4}$ shaded blue and $\frac{1}{4}$ shaded red
			• predict the number of times each outcome should occur in a chance experiment involving a set number of trials
	4	Conducting chance experiments (with unequal outcomes)	• predict and list all possible outcomes in a chance experiment, eg describe the probability of spinning red when you spin a spinner that has $\frac{1}{2}$ shaded yellow, $\frac{1}{4}$ shaded blue and $\frac{1}{4}$ shaded red
			• keep a tally and graph the results of a chance experiment

Learning Journey	Step	Content	Description
			• explain any differences between expected results and actual results in a chance experiment; make statements that acknowledge 'randomness' in a situation, eg 'The spinner could stop on any colour'
	5	Introducing chance situations	• predict and record all possible combinations in a chance situation, eg list all possible outfits when choosing from three different T-shirts and 2 different pairs of shorts
			• record and explain possible combinations using a list, table or diagram
			• repeat a chance experiment several times and discuss why the results vary

3.2 Data representation and interpretation

ACMSP068 Identify questions or issues for categorical variables. Identify data sources and plan methods of data collection and recording			
Quest: Data sources and collection			
Learning Journey	Steps	Content	Description
Introducing the statistical investigation process	2	Introducing the statistical investigation process (tables, lists, picture graphs or bar graphs)	• determine what data to gather in order to investigate a question of interest, eg colour, mode of transport, gender, type of animal, sport
			• collect data through questioning and record the data using tally marks
			• identify categories of data and use them to sort data, eg sort data collected on attendance by day of the week and into boys and girls present
			• represent category data in a table, list, bar graph or picture graph (one-to-one correspondence)
			• record observations and answer simple summary questions based on data collected and displayed in a list, table, picture graph, or simple bar graph
Category data	1	Posing questions related to category data	• pose questions about a matter of interest to obtain information that can be recorded in categories
			• adjust statistical questions to ensure their suitability
			• recognise that data can be collected by the user or others; identify possible sources of data collected by others, eg newspapers, government data-collection agencies, sporting agencies, environmental groups
			• pose questions based on category data recorded by others
	2	Collecting and recording category data	• predict and create a list of categories for efficient data collection in relation to a matter of interest, eg 'Which breakfast cereal is the most popular with members of our class?'
			• collect data by conducting a simple survey and create a list or table (with and without digital technology) to organise the data, eg collect data on the number of each colour of lollies in a packet
			• compare collection and recording methods

ACMSP069 Collect data, organise into categories and create displays using lists, tables, picture graphs and simple column graphs, with and without the use of digital technologies			
Quest: Collecting and organising data			
Learning Journey	Steps	Content	Description
Statistical investigations	1	Constructing and interpreting tables	• represent given or collected categorical data in tables using appropriate headings and structure
			• interpret data in tables to solve problems; answer comparative and summative questions
	2	Conducting a simple statistical investigation (tables, lists, picture graphs, bar graphs)	• determine what data to gather in order to investigate a statistical question
			• collect, record and sort data
			• represent category data in a table, list, picture graph or column graph (including many-to-one correspondence)
			• make a simple concluding statement based on data collected
Representing and interpreting data displays	1	Introducing and reading data in column graphs with one-to-one correspondence	• become familiar with the structure and layout of a basic column graph including title, labels on each axis, equal spacing
			• answer one-step and two-step questions, eg, 'How many more students like reading than art?'; identify basic similarities and differences between categories; make simple conclusions
			• recognise and remedy errors in column graphs
	2	Representing and reading data in a given column graph with one-to-one correspondence	• complete a vertical or horizontal column graph (one-to-one correspondence) ; choose the correct title for a column graph
			• answer one-step and two-step questions, eg, 'How many more students like reading than art?'; identify basic similarities and differences between categories; make simple conclusions
			• agree or disagree with simple statements made by others related to data in a column graph
	3	Representing and reading data displayed in tables or lists	• display category or numerical data using lists and tables
			• pose questions and answer one-step and two-step questions, eg 'How many more students like reading than art?'; identify basic similarities and differences between categories; make simple conclusions

Learning Journey	Step	Content	Description
	4	Representing and reading category data in a table	• represent primary or secondary data in a given table using appropriate headings and layout
			• interpret data in a table; ask and answer summative and comparative questions

ACMSP070 Interpret and compare data displays			
Quest: Data displays			
Learning Journey	Steps	Content	Description
Comparing data displays	1	Comparing basic data displays (tables, lists, picture graphs, column graphs)	• represent the same data set using more than one type of display (tables, lists, picture graphs or column graphs) and compare the displays
			• discuss the advantages and/or disadvantages of different representations of the same data
			• describe information and make conclusions about data presented in different data displays, eg 'Football is the most popular sport for students in Year 3 at our school'

Part II

Year 4

4 Number and Algebra

4.1 Number and place value

ACMNA071 Investigate and use the properties of odd and even numbers			
Quest: Properties of odd and even numbers			
Learning Journey	Steps	Content	Description
Odd and even numbers	1	Using the properties of odd and even numbers	• investigate and generalise the result of adding, subtracting and multiplying pairs of even numbers, pairs of odd numbers, or one even and one odd number, eg even + odd = odd, odd × odd = odd
			• explain why the result of a calculation is even or odd with reference to the properties of the numbers used in the calculation
			• predict whether the answer to a calculation will be even or odd by using the properties of the numbers in the calculation
			• investigate the place value of digits within odd and even numbers

ACMNA072 Recognise, represent and order numbers to at least tens of thousands			
Quest: Numbers up to 5 digits			
Learning Journey	Steps	Content	Description
Comparing and ordering numbers up to 5 digits	1	Comparing 5-digit numbers using words and symbols	• compare two 5-digit numbers using words and symbols <, =, >
	2	Ordering numbers up to and including 5 digits	• arrange numbers of up to and including 5 digits in ascending and descending order
Place value up to 5 digits	1	Reading and writing numbers up to 5 digits	• apply an understanding of place value to read numbers up to 5 digits
			• apply an understanding of place value to write numbers up to 5 digits
	2	Identifying the place value of digits in numbers up to 5 digits	• state the place value of digits in numbers of up to 5 digits
			• pose and answer questions that extend place value understanding of numbers, eg 'What happens if I rearrange the digits in the number 12 345?', 'How can I rearrange the digits to make the largest number?'
	3	Finding the number 1000 more or 1000 less than a given number	• apply an understanding of place value to find the number 1000 more or 1000 less
Using place value to partition: up to 5 digits	1	Using place value to partition 5-digit numbers	• use place value to partition numbers of up to 5 digits, eg 67 012 is 60 000 + 7000 + 10 + 2

Learning Journey	Step	Content	Description
	2	Using non-standard partitioning with 5-digit numbers	• partition numbers of up to 5 digits in non-standard forms, eg 67 000 as 50 000 + 17 000
	3	Understanding the relationship between place value positions	• recognise that in a multi-digit number a digit in 1 place represents 10 times as much as it represents in the place to its right
			• recognise that in a multi-digit number a digit in 1 place represents $\frac{1}{10}$ of what it represents in the place to its left
Rounding numbers: 5 digits	1	Rounding 5-digit numbers	• round to the nearest 10, 100, 1000 or 10 000

ACMNA073 Apply place value to partition, rearrange and regroup numbers to at least tens of thousands to assist calculations and solve problems			
Quest: Addition and subtraction strategies			
Learning Journey	Steps	Content	Description
Representing problems using a bar model	1	Representing addition problems using a bar model (within 1000)	• represent an addition problem where the result is unknown, eg 'Anna had 58 marbles. Sam gave her 27 more. How many marbles does Anna have now?'
			• represent addition problems where the change or part is unknown, eg 'Anna has 58 marbles, how many more does she need to have 73? or Anna had 53 marbles. 17 were yellow. How many were red?'
			• represent addition problems where the start is unknown, eg 'Anna had some marbles. Sam gave her 17 more. Now she has 53. How many did she have to start with?'
			• solve addition problems represented on a bar model using efficient mental strategies
	2	Representing subtraction problems using a bar model (within 1000)	• represent subtraction problems where the result is unknown, eg 'Anna had 52 marbles. She gave 17 to Sam. How many marbles does she have left?'
			• represent and solve subtraction problems where the change is unknown, eg 'Anna had 52 marbles. She gave some to Sam. Now she has 15 left. How many marbles did she give to Sam?'
			• represent and solve subtraction problems where the start is unknown, eg 'Anna gave 27 marbles to Sam. Now she has 5 marbles left. How many marbles did Anna begin with?'

Learning Journey	Step	Content	Description
			• solve subtraction problems represented on a bar model using efficient mental strategies
	3	Representing comparison problems using a bar model (within 1000)	• represent and solve comparison problems where the difference is unknown, eg 'Anna has 13 plums. Sam has 7 plums. How many more plums does Anna have?'
			• represent and solve comparison problems where the referent is unknown, eg 'Anna has 43 marbles. She has 17 more than Sam. How many marbles does Sam have?'
			• represent and solve subtraction problems where the comparison quantity is unknown, eg 'Sam has 17 marbles. Anna has 35 more marbles. How many marbles does Anna have?'
			• solve comparison problems represented on a bar model using efficient mental strategies
Add/subtract: efficient strategies	1	Choosing efficient mental addition strategies with numbers up to five digits	• apply place value and partitioning to rearrange and regroup numbers to assist with calculations, eg use rounding and compensating, bar model, jump strategies, split strategies, place value strategies or bridging strategies
			• use a range of recording methods to solve addition problems, eg number sentences, empty number line, regrouping
	2	Choosing efficient mental subtraction strategies with numbers up to five digits	• apply place value and partitioning to rearrange and regroup numbers to assist with calculations, eg use rounding and compensating, jump strategies, split strategies, place value strategies or bridging strategies
	3	Solving one-step word problems using efficient mental addition strategies with numbers up to five digits	• solve addition word problems using mental strategies
			• use a range of recording methods to solve subtraction problems, eg number sentences, empty number line, regrouping
	4	Solving word problems using efficient mental subtraction strategies with numbers up to five digits	• solve subtraction word problems using mental strategies

Learning Journey	Step	Content	Description
Addition algorithms (without regrouping)	1	Using a formal written algorithm for addition calculations up to two-digit numbers (no regrouping)	• apply algorithms to solve problems without regrouping, with the same number of places and with a different number of places
			• use estimation or reverse operation to check the reasonableness of solutions
	2	Using a formal written algorithm for addition calculations up to three-digit numbers (no regrouping)	• apply algorithms to solve problems without regrouping, with the same number of places and with a different number of places
			• use estimation or reverse operation to check the reasonableness of solutions
	3	Using a formal written algorithm for addition calculations up to four-digit numbers (no regrouping)	• apply algorithms to solve problems without regrouping, with the same number of places and with a different number of places
			• use estimation or reverse operation to check the reasonableness of solutions
	4	Using a formal written algorithm for addition calculations up to five-digit numbers (no regrouping)	• apply algorithms to solve problems without regrouping, with the same number of places and with a different number of places; include opportunities for students to write their own algorithms with digits in correct place value positions; include word problems
			• use estimation or reverse operation to check the reasonableness of solutions
Addition algorithms (with regrouping)	1	Using a formal written algorithm for addition calculations up to two-digit numbers (with regrouping)	• apply algorithms to solve problems with regrouping in 1 or more places, with the same number of places and with a different number of places
			• use estimation or reverse operation to check the reasonableness of solutions
	2	Using a formal written algorithm for addition calculations with three-digit and one-digit numbers (with regrouping)	• apply algorithms to solve problems with regrouping; include opportunities for students to write their own algorithms with digits in correct place value positions; include word problems
			• use estimation or reverse operation to check the reasonableness of solutions
		Using a formal written algorithm for addition calculations with three-digit and two-digit numbers (with regrouping)	• apply algorithms to solve problems with regrouping in 1 or more places; include opportunities for students to write their own algorithms with digits in correct place value positions; include word problems

Learning Journey	Step	Content	Description
			• use estimation or reverse operation to check the reasonableness of solutions
	3	Using a formal written algorithm for addition calculations of two three-digit numbers (with regrouping)	• apply algorithms to solve problems with regrouping in 1 or more places; include opportunities for students to write their own algorithms with digits in correct place value positions; include word problems
			• use estimation or reverse operation to check the reasonableness of solutions
		Using a formal written algorithm for addition calculations up to three-digit numbers (with regrouping)	• apply algorithms to solve problems with regrouping in 1 or more places, with the same number of places and with a different number of places; include opportunities for students to write their own algorithms with digits in correct place value positions; include word problems
			• use estimation or reverse operation to check the reasonableness of solutions
	4	Using a formal written algorithm for addition calculations up to four-digit numbers (with regrouping)	• apply algorithms to solve problems with regrouping in 1 or more places, with the same number of places and with a different number of places; include opportunities for students to write their own algorithms with digits in correct place value positions; include word problems
			• use estimation or reverse operation to check the reasonableness of solutions
	5	Using a formal written algorithm for addition calculations up to five-digit numbers (with regrouping)	• apply algorithms to solve problems with regrouping in 1 or more places, with the same number of places and with a different number of places; include opportunities for students to write their own algorithms with digits in correct place value positions; include word problems
			• use estimation or reverse operation to check the reasonableness of solutions
Addition algorithms (with/without regrouping)	1	Using a formal written algorithm for addition calculations of 3 or more addends up to two digits (with and without regrouping)	• apply algorithms with 3 or more addends with the same number of places and with a different number of places

Learning Journey	Step	Content	Description
	2	Using a formal written algorithm for addition calculations of 3 or more addends up to 3 digits (with and without regrouping)	• apply algorithms with 3 or more addends with the same number of places and with a different number of places; include number range that involves regrouping more than 1 ten or hundred; include word problems
			• use estimation to check the reasonableness of solutions
	3	Using a formal written algorithm for addition calculations of 3 or more addends up to four digits (with and without regrouping)	• apply algorithms with 3 or more addends with the same number of places and with a different number of places; include number range that involves regrouping more than 1 ten, hundred or thousand; include word problems
	4	Using a formal written algorithm for addition calculations of 3 or more addends up to 5 digits (with and without regrouping)	• apply algorithms with 3 or more addends with the same number of places and with a different number of places; include number range that involves regrouping more than 1 in one or more places; include word problems
Subtraction algorithms (without decomposing)	1	Using a formal written algorithm to record subtraction calculations involving up to two-digit numbers (without decomposing)	• apply algorithms to solve problems without trading (decomposing), with the same number of places for both numbers, with fewer places in the second number (subtrahend) and with and without 1 or more zeros in the first number (minuend); include opportunities for students to write their own algorithms with digits in correct place value positions and with the larger number first; include word problems
			• use estimation or reverse operation to check the reasonableness of solutions
	2	Using a formal written algorithm to record subtraction calculations involving up to three-digit numbers (without decomposing)	• apply algorithms to solve problems without trading (decomposing), with the same number of places for both numbers, with fewer places in the second number (subtrahend) and with and without 1 or more zeros in the first number (minuend); include opportunities for students to write their own algorithms with digits in correct place value positions and with the larger number first; include word problems
			• use estimation or reverse operation to check the reasonableness of solutions

Learning Journey	Step	Content	Description
	3	Using a formal written algorithm to record subtraction calculations involving up to four-digit numbers (without decomposing)	• apply algorithms to solve problems without trading (decomposing), with the same number of places for both numbers, with fewer places in the second number (subtrahend) and with and without 1 or more zeros in the first number (minuend); include opportunities for students to write their own algorithms with digits in correct place value positions and with the larger number first; include word problems
			• use estimation or reverse operation to check the reasonableness of solutions
	4	Using a formal written algorithm to record subtraction calculations involving up to five-digit numbers (without decomposing)	• apply algorithms to solve problems without trading (decomposing), with the same number of places for both numbers, with fewer places in the second number (subtrahend) and with and without 1 or more zeros in the first number (minuend); include opportunities for students to write their own algorithms with digits in correct place value positions and with the larger number first; include word problems
			• use estimation or reverse operation to check the reasonableness of solutions
Subtraction algorithms (with decomposing)	1	Using a formal written algorithm to record subtraction calculations involving up to two-digit numbers (with decomposing)	• apply algorithms to solve problems with trading (decomposing) in one or more places, with the same number of places for both numbers, with fewer places in the second number (subtrahend) and with and without one or more zeros in the first number (minuend); include opportunities for students to write their own algorithms with digits in correct place value positions and with the larger number first; include word problems
			• use estimation or reverse operation to check the reasonableness of solutions

Learning Journey	Step	Content	Description
	2	Using a formal written algorithm to record subtraction calculations involving up to three-digit numbers (with decomposing)	• apply algorithms to solve problems with trading (decomposing) in 1 or more places, with the same number of places for both numbers, with fewer places in the second number (subtrahend) and with and without 1 or more zeros in the first number (minuend); include opportunities for students to write their own algorithms with digits in correct place value positions and with the larger number first; include word problems
			• use estimation or reverse operation to check the reasonableness of solutions
	3	Using a formal written algorithm to record subtraction calculations involving up to four-digit numbers (with decomposing)	• apply algorithms to solve problems with trading (decomposing) in 1 or more places, with the same number of places for both numbers, with fewer places in the second number (subtrahend) and with and without 1 or more zeros in the first number (minuend); include opportunities for students to write their own algorithms with digits in correct place value positions and with the larger number first; include word problems
			• use estimation or reverse operation to check the reasonableness of solutions
	4	Using a formal written algorithm to record subtraction calculations involving up to five-digit numbers (with decomposing)	• apply algorithms to solve problems with trading (decomposing) in 1 or more places, with the same number of places for both numbers, with fewer places in the second number (subtrahend) and with and without 1 or more zeros in the first number (minuend); include opportunities for students to write their own algorithms with digits in correct place value positions and with the larger number first; include word problems
			• use estimation or reverse operation to check the reasonableness of solutions
Add/subtract: word problems	1	Solving addition and subtraction two-step problems in context (max sum 1000)	• read and interpret a word problem
			• decide which operations and strategies to use and explain why
			• solve an addition and subtraction two-step problem

ACMNA074 Investigate number sequences involving multiples of 3, 4, 6, 7, 8, and 9			
Quest: Investigating sequences with multiples			
Learning Journey	Steps	Content	Description
Investigating sequences with multiples	1	Investigating number sequences involving multiples of 3, 4, 6, 7, 8 and 9	• generate number patterns using multiples of 3, 4, 6, 7, 8 and 9
			• investigate visual number patterns on a number chart
			• find missing terms in a number sequence

ACMNA075 Recall multiplication facts up to 10 × 10 and related division facts			
Quest: Multiplication and division facts			
Learning Journey	Steps	Content	Description
Multiplication/division facts for 4	1	Recalling multiplication facts for 4	• recall the multiplication facts for 4
		Using multiplication facts for 4	• solve and create multiplication problems in context (using multiplication facts for 4), including word problems
	2	Dividing by 4	• model and describe the related multiplication and division facts for 4 using models, drawings or manipulatives, eg 4 x 3 = 12 and 12 divided by 3 = 4
			• relate division to how many (whole) times the divisor goes into the dividend
		Recalling division facts for 4	• recall the division facts for 4
	3	Using division facts for 4	• solve and create division problems in context (using multiplication facts for 4), including word problems
	4	Multiplying and dividing by 4	• recall the multiplication facts and related division facts for 4
			• solve multiplication and division problems with 4, including word problems
Multiplication/division facts up to 5	1	Multiplying by 2, 5, 3 and 4 (1 - 10)	• recall the multiplication facts for 2s, 5s, 3s and 4s
			• solve multiplication problems with 2, 5, 3 and 4, including word problems
	2	Dividing by 2, 5, 3 and 4 (1 - 10)	• recall the division facts for 2s, 5s, 3s and 4s
			• solve division problems with 2, 5, 3 and 4, including word problems
	3	Multiplying and dividing by 2, 5, 3 and 4 (1 - 10)	• recall the multiplication and division facts for 2s, 5s, 3s and 4s
			• solve multiplication and division problems with 2, 5, 3 and 4, including word problems
	4	Recalling multiplication facts to 5 x 5	• recall multiplication facts to 5 x 5

Learning Journey	Step	Content	Description
Multiplication/division facts and properties	1	Relating multiplication and division facts through fact families	• model and describe the fact families for 2, 3, 4, 5 and 10 multiplication facts, eg 3 x 4 = 12, 4 x 3 = 12, 12 divided by 3 = 4 and 12 divided by 4 equals 3
			• explain why a rectangular array can be read as a division in 2 ways by forming vertical or horizontal groups, eg 12 ÷ 3 = 4 or 12 ÷ 4 = 3
	2	Recalling multiplication facts up to 10 x 10 with automaticity	• recall facts in order
			• recall facts in random order
	3	Using the commutative law of multiplication up to 10 x 10	• use the commutative property of multiplication, eg 7 x 9 = 9 x 7
Exploring multiplication/division for 6 up to 60	1	Exploring multiplication by 6 up to 60	• use concrete materials, models, drawings, number lines/charts to skip count by 6 from zero; explore patterns of the multiplication facts for 6 on a number chart
			• relate multiplication by 6 to double multiplication by 3
	2	Recalling and using multiplication facts for 6 (up to 60)	• recall the multiplication facts for 6
			• solve multiplication problems with 6 including word problems
	3	Dividing by 6 up to 60	• model and describe the related multiplication and division facts for 6 using models, drawings or manipulatives, eg 6 x 3 = 18 and 18 divided by 3 = 6
			• relate division to how many (whole) times the divisor goes into the dividend
	4	Recalling and using division facts for 6 up to 60	• recall the division facts for 6
			• solve division problems with 6 including word problems
	5	Multiplying and dividing by 6 up to 60	• recall the multiplication facts and related division facts for 6
			• solve multiplication and division problems with 6, including word problems
Exploring multiplication/division for 7 up to 70	1	Exploring multiplication by 7 up to 70	• use concrete materials, models, drawings, number lines/charts to skip count by 7 from zero; explore patterns of the multiplication facts for 7 on a number chart
	2	Recalling and using multiplication facts for 7 (up to 70)	• recall the multiplication facts for 7
			• solve multiplication problems with 7 including word problems
	3	Dividing by 7 up to 70	• model and describe the related multiplication and division facts for 7 using models, drawings or manipulatives, eg 7 x 3 = 21 and 21 divided by 3 = 7

Learning Journey	Step	Content	Description
			• relate division to how many (whole) times the divisor goes into the dividend
	4	Recalling and using division facts for 7 up to 70	• recall the division facts for 7
			• solve division problems with 7 including word problems
	5	Multiplying and dividing by 7 up to 70	• recall the multiplication facts and related division facts for 7
			• solve multiplication and division problems with 7, including word problems
Exploring multiplication/division for 8 up to 80	1	Exploring multiplication by 8 up to 80	• use concrete materials, models, drawings, number lines/charts to skip count by 8 from zero; explore patterns of the multiplication facts for 8 on a number chart
			• relate multiplication by 8 to double multiplication by 4
	2	Recalling and using multiplication facts for 8 (up to 80)	• recall the multiplication facts for 8
			• solve multiplication problems with 8 including word problems
	3	Dividing by 8 up to 80	• model and describe the related multiplication and division facts for 8 using models, drawings or manipulatives, eg 8 x 3 = 24 and 24 divided by 3 = 8
			• relate division to how many (whole) times the divisor goes into the dividend
	4	Recalling and using division facts for 8 up to 80	• recall the division facts for 8
			• solve division problems with 8 including word problems
	5	Multiplying and dividing by 8 up to 80	• recall the multiplication facts and related division facts for 8
			• solve multiplication and division problems with 8, including word problems
Exploring multiplication/division for 9 up to 90	1	Exploring multiplication by 9 up to 90	• use concrete materials, models, drawings, number lines/charts to skip count by 9 from zero; explore patterns of the multiplication facts for 9 on a number chart
			• relate multiplication by 9 to multiplication by 10 (multiply by 10 and then subtract the extra group)
	2	Recalling and using multiplication facts for 9 (up to 90)	• recall the multiplication facts for 9
			• solve multiplication problems with 9 including word problems
	3	Dividing by 9 up to 90	• model and describe the related multiplication and division facts for 9 using models, drawings or manipulatives, eg 9 x 3 = 27 and 27 divided by 3 = 9

Learning Journey	Step	Content	Description
			• relate division to how many (whole) times the divisor goes into the dividend
	4	Recalling and using division facts for 9 up to 90	• recall the division facts for 9
			• solve division problems with 9 including word problems
	5	Multiplying and dividing by 9 up to 90	• recall the multiplication facts and related division facts for 9
			• solve multiplication and division problems with 9, including word problems

ACMNA076 Develop efficient mental and written strategies and use appropriate digital technologies for multiplication and for division where there is no remainder			
Quest: Mult and div strategies, no remainder			
Learning Journey	Steps	Content	Description
Multiplying 2-digit numbers by multiples of 100	1	Representing and using known facts to solve multiplication and division problems with multiples of 10 and 100	• represent with models/diagrams and use known facts and place value understanding to solve multiplication problems with multiples of 10 or 100, eg 3 x 6 = 18 so 3 x 600 = 1800
			• use known facts and place value understanding to solve division problems with multiples of 10 or 100, eg 18 ÷ 6 = 3 so 1800 ÷ 600 = 3
			• explain and justify the use of the strategy
	2	Representing and using known facts to multiply 2 multiples of 100	• represent with models/diagrams and use known facts and place value understanding to multiply 2 multiples of 100, eg 300 x 400 = 3 x 4 = 12 so 300 x 400 = 1200
			• know that multiplying by 100 shifts the digits 2 places to the left
	3	Representing and using known facts to multiply 2-digit numbers by 100	• represent with models/diagrams and use known facts and place value understanding to multiply 2-digit numbers by 100, eg 13 x 100 = 10 x 100 + 3 x 100
			• know that multiplying by 100 shifts the digits 2 places to the left
Dividing 3-digit numbers by 10	1	Representing and using known facts to divide 3-digit numbers by 10	• represent with models/diagrams and use known facts and place value understanding to divide 2-digit numbers by 10, eg 460 ÷10 = 46
			• know that dividing by 10 shifts the digits 1 place to the right
Multiplication strategies: 1-digit numbers	1	Representing and multiplying two 1-digit numbers using rounding and compensating	• represent with models/diagrams and use known facts to solve multiplication problems by adding on or taking off, eg 5 x 10 is 50, so 5 x 9 is 5 less, which is 45
			• explain and justify the use of the strategy

Learning Journey	Step	Content	Description
	2	Representing and multiplying two 1-digit numbers using doubling and related facts	• represent with models/diagrams and use the relationship between multiplication facts, eg the multiplication facts for 6 are double the multiplication facts for 3
			• explain and justify the use of the strategy
	3	Representing and multiplying two 1-digit numbers using repeated doubling	• represent with models/diagrams and use doubling and repeated doubling as a strategy to multiply by 2, 4 and 8, eg 7 x 8 is double 7, double again and then double again
			• explain and justify the use of the strategy
	4	Representing and multiplying two 1-digit numbers using factorising	• represent with models/diagrams and split factors, eg 5 x 8 is the same as 5 x 2 x 4, which becomes 10 x 4
			• explain and justify the use of the strategy
Using the conventions of multiplication	1	Using the conventions of multiplication number sentences	• use the term 'product' to describe the result of multiplying 2 or more numbers
			• use the equals sign to record equivalent number relationships involving multiplication, and to mean 'is the same as', rather than to mean to perform an operation
Multiples and factors up to 100	1	Introducing multiples up to 100	• find 'multiples' for a given whole number
	2	Introducing factors for numbers up to 100	• determine 'factors' for a given whole number
			• connect number relationships involving multiplication to factors of a number
Inverse facts: multiplication and division	1	Using inverse facts	• relate multiplication facts to their inverse division facts
			• relate division facts to their inverse multiplication facts
Practising multiplication strategies	1	Multiplying 3 or more single-digit numbers using the commutative and associative properties	• apply the commutative property of multiplication
			• explore and apply the associative property of multiplication, eg 2 x 3 x 5 = 2 x 5 x 3 = 10 x 3 = 30
Multiplying 2-digit numbers by a 1-digit number	1	Representing and multiplying a 2-digit number by a 1-digit number using place value understanding and the distributive law	• represent and use place value to solve a multiplication fact, eg multiplying the tens and then the units, eg 7 × 19: 7 tens + 7 nines is 70 + 63, which is 133
			• explain and justify the use of the strategy
	2	Multiplying a 2-digit number by a 1-digit number using an area model	• use area model to solve multiplication problems
			• explain and justify the use of the strategy

Learning Journey	Step	Content	Description
	3	Representing and multiplying a 2-digit number by a 1-digit number using doubling and related facts	• represent and use doubling to multiply a 2-digit and 1-digit number, eg 41 × 6 is 41 × 3, which is 123, and then double to obtain 246
			• explain and justify the use of the strategy
Multiplying 2-digit numbers using doubling	1	Representing and multiplying a 2-digit number by a 2, 4 or 8 using doubling and repeated doubling	• represent and use repeated doubling as a strategy to multiply, eg 23 × 2 is double 23, 23 × 4 is double 23 and double again, 23 × 8 is double 23, double again and double again
			• explain and justify the use of the strategy
Multiplying 2-digit numbers using factorising	1	Representing and multiplying a 2-digit number by a 1-digit number using factorising (the associative property)	• represent and use factorising (factorise the larger number), eg 18 × 4 = 9 × 2 × 4 = 9 × 8 = 72
			• explain and justify the use of the strategy
Selecting effective multiplication strategies	1	Selecting efficient strategies to solve multiplication problems	• select and use a variety of mental and informal written strategies to solve multiplication problems
			• apply the inverse relationship of multiplication and division to justify answers
			• check the answer to a word problem using digital technologies
			• record mental strategies accurately
Comparisons using the language of multiplication	1	Describing comparisons using the language of multiplication	• describe comparisons using the language of multiplication, eg 35 = 5 × 7 as 35 is 5 times as many as 7 and 7 times as many as 5
Dividing a 2-digit number by a 1-digit number	1	Dividing a 2-digit number by a 1-digit number using the inverse relationship of multiplication and division (no remainders)	• divide a 2-digit number by a 1-digit number using the inverse relationship of multiplication and division, eg 63 ÷ 9 = 7 because 7 x 9 = 63
	2	Dividing a 2-digit number by a 1-digit number using halving and repeated halving (no remainders)	• use halve to divide by 2
			• use halve, halve to divide by 4
			• use halve, halve, halve to divide by 8
	3	Dividing a 2-digit number by a 1-digit number using related facts (no remainders)	• use related facts to divide a 2-digit number by a 1-digit number, eg to divide by 5, first divide by 10 and then multiply by 2

4.2 Fractions and decimals

ACMNA077 Investigate equivalent fractions used in contexts			
Quest: Equivalent fractions			
Learning Journey	Steps	Content	Description
Investigating equivalent fractions	1	Investigating simple equivalent fractions less than 1 using concrete materials and/or models (denominators 2, 3, 4, 5, 6, 8, 10)	• use models such as number lines, fraction strips, fraction walls to identify equivalent fractions
			• use concrete materials or models to show equivalent fractions, eg folding a strip of paper
	2	Investigating equivalent fractions up to and including 1 whole using area models (denominators 2, 4 and 8; 3 and 6; 5 and 10 and 100)	• model, compare and represent the equivalence of fractions with related denominators by redividing the whole, using identical area models, fraction walls and bar models

ACMNA078 Count by quarters halves and thirds, including with mixed numerals. Locate and represent these fractions on a number line			
Quest: Counting by fractions and mixed numerals			
Learning Journey	Steps	Content	Description
Counting in halves and quarters	1	Counting up to 10 in halves and quarters (symbols used)	• count up to 10 from any starting point in halves and quarters
			• use the number line to count with halves and quarters
Counting in thirds	1	Counting in thirds on a number line up to 1	• represent fractions on a number line (in simple cases, eg identify $\frac{2}{3}$ on a number line that already shows divisions in thirds)
	2	Counting in thirds on a number line up to 3	• count in proper and improper fractions on a number line
			• identify whole number equivalence $\frac{3}{3} = 1$, $\frac{6}{3} = 2$
Mixed numerals on the number line	1	Counting and representing mixed numbers on a number line up to 3 (thirds)	• count in mixed numbers on a number line up to 3
			• locate and represent mixed numbers on a number line, including on a partially-completed number line

ACMNA079 Recognise that the place value system can be extended to tenths and hundredths. Make connections between fractions and decimal notation			
Quest: Place value to hundredths			
Learning Journey	Steps	Content	Description
Using decimal tenths	1	Introducing decimal notation	• identify decimal fractions in everyday use
			• understand that the decimal point is a mark that identifies the ones place, and indicates the change from whole numbers to parts of a whole
	2	Introducing decimal tenths	• recognise that the place value system can be extended to tenths
			• represent tenths using concrete materials and written representations

Learning Journey	Step	Content	Description
			• recognise that tenths arise from dividing an object into 10 equal parts
			• recognise that tenths arise from dividing a one-digit number or quantity by 10
			• identify decimals on a number line
			• represent decimals using models and place value equipment such as base ten and arrow cards, place value grid, hundred square
	3	Comparing and ordering decimal tenths	• compare and order tenths using >, < and =
	4	Counting in decimal tenths	• count forwards and backwards by tenths from any decimal number expressed to 1 decimal place, using concrete materials and number lines, eg use base ten materials to represent 3.7 and count forward: 3.8, 3.9, 4.0, 4.1, ...
Using decimal hundredths	1	Introducing decimal hundredths	• recognise that the place value system can be extended to tenths and hundredths
			• recognise that hundredths arise when dividing an object by 100 and dividing tenths by 10
			• state the place value of digits in decimal numbers of up to 2 decimal places
			• read decimal fractions correctly, ie 'six point one nine' rather than 'six point nineteen'
	2	Counting in decimal hundredths	• count forwards and backwards by hundredths from any decimal number expressed to 2 decimal places, using concrete materials and number lines
	3	Modelling and representing decimal fractions up to 2 decimal places	• model decimal fractions using concrete materials
			• represent decimal fractions, eg as fractions (tenths and hundredths), on number lines, using hundreds grids, in place value models and charts
	4	Comparing and ordering decimal hundredths	• compare numbers with the same number of decimal places up to 2 decimal places
		Comparing decimal fractions up to 2 decimal places	• compare numbers with a different number of decimal places up to 2 decimal places using >, < and =
	5	Connecting decimal fractions to common fractions involving hundredths	• understand the relationship between decimal fractions and common fractions involving hundredths
Partitioning decimal hundredths	1	Partitioning decimal hundredths less than 1	• use place value to partition decimals of up to 2 decimal places, eg $5.37 = 5 + \frac{3}{10} + \frac{7}{100}$

Learning Journey	Step	Content	Description
			• use place value charts and expanders to link decimal fractions to place value, eg base 10 blocks, hundreds grids
	2	Partitioning decimal hundredths more than 1	• partition decimals of up to 2 decimal places in non-standard forms, eg 5.37 = 5 + $\frac{37}{100}$
			• use place value charts and expanders to link decimal fractions to place value, eg base 10 blocks, hundreds grids
Connecting fractions and decimal notation	1	Connecting decimal fractions to common fractions involving tenths	• understand the relationship between decimal fractions and common fractions involving tenths
			• recognise and apply decimal notation to express whole numbers and tenths as decimals, eg 0.1 is the same as $\frac{1}{10}$
			• investigate equivalences using various methods, eg use a number line or a calculator to show that $\frac{1}{2}$ is the same as 0.5 and $\frac{5}{10}$
	2	Connecting decimal fractions to common fractions involving tenths and hundredths	• understand the relationship between decimal fractions and common fractions involving tenths and hundredths
			• recognise and apply decimal notation to express whole numbers, tenths and hundredths as decimals, eg 0.1 is the same as $\frac{1}{10}$
			• investigate equivalences using various methods, eg use a number line or a calculator to show that $\frac{1}{2}$ is the same as 0.5 and $\frac{5}{10}$
	3	Connecting decimal fractions to common fractions involving halves, fifths, tenths and hundredths	• understand the relationship between decimal fractions and common fractions involving halves, fifths, tenths and hundredths
	4	Connecting decimal fractions to common fractions	• understand the relationship between decimal fractions and common fractions

4.3 Money and financial mathematics

ACMNA080 Solve problems involving purchases and the calculation of change to the nearest five cents with and without digital technologies			
Quest: Solving money problems			
Learning Journey	Steps	Content	Description
Addition and subtraction money problems	1	Using decimals to represent money	• recognise that 1 cent is one-hundredth of a dollar and connect decimal notation to money values in dollars and cents
			• calculate the total value of a group of notes and coins and record this value using decimal notation and the symbol $
			• combine amounts of notes and coins to make a given amount of money in decimal notation
			• use the symbols $ and c correctly when recording amounts of money
	2	Using money: Addition and subtraction problems	• use addition and subtraction to solve a variety of problems involving purchases of two or more items, including calculating change, and record the value using a decimal point and the symbol $
			• use estimation to check the reasonableness of solutions to problems involving purchases and calculation of change

4.4 Patterns and algebra

ACMNA081 Explore and describe number patterns resulting from performing multiplication			
Quest: Exploring number patterns			
Learning Journey	Steps	Content	Description
Exploring number patterns	1	Exploring number patterns resulting from performing multiplication	• find a higher term in a number pattern resulting from performing multiplication, given the first few terms, eg determine the next term in the pattern 4, 8, 16, 32, 64, ...
			• describe how the next term in a number pattern is calculated, eg 'Each term in the pattern is double the previous term'
			• find missing terms in a number sequence

ACMNA082 Solve word problems by using number sentences involving multiplication or division where there is no remainder			
Quest: Multiplication & division word problems			
Learning Journey	Steps	Content	Description
Expressing equations as word problems	1	Expressing given one-step word problems as a multiplication or division number sentences and solving	• represent and solve multiplication and division word problems (up to 10 x 10 multiplication ad division facts) using number sentences with a symbol for the unknown, eg 'Anne spent $28 dollars on tickets to a show for her friends. If 7 friends are coming to the show, what was the cost of each ticket?'
			• discuss whether it is more appropriate to represent the problem using x or ÷ in order to calculate the solution
	2	Expressing given one-step equations as word problems	• express given addition or subtraction equations as word problems (up to 2 digit with 2-digit addition or subtraction)
			• express given multiplication or division equations as word problems (using multiplication facts up to 10 x 10)
Mult/div: solving word problems	1	Solving two-step multiplication and/or division word problems, including correspondence problems	• solve two-step word problems in context involving multiplication and division; choose the appropriate operation
	2	Solving multi-step multiplication and/or division word problems	• solve multi-step word problems involving multiplication and division
	3	Selecting efficient strategies to solve division problems	• select and use a variety of mental and informal written strategies to solve division problems
			• apply the inverse relationship of multiplication and division to justify answers
			• check the answer to a word problem using digital technologies

Learning Journey	Step	Content	Description
			• record mental strategies accurately

ACMNA083 Find unknown quantities in number sentences involving addition and subtraction and identify equivalent number sentences involving addition and subtraction			
Quest: Addition & subtraction number sentences			
Learning Journey	Steps	Content	Description
Using number sentences to find unknown quantities	1	Using inverse operations to complete addition and/or subtraction number sentences (2-digit numbers)	• complete number sentences involving addition and subtraction by calculating missing numbers, eg find the missing numbers: ? + 55 = 83, ? – 15 = 19
			• use inverse operations to complete number sentences
			• justify solutions when completing number sentences
	2	Finding missing numbers where there are addition and/or subtraction operations on both sides of the equals sign	• find the missing number in a number sentence involving operations of addition or subtraction on both sides of the equals sign, eg 8+?=6+7

5 Measurement and Geometry

5.1 Using units of measurement

ACMMG084 Use scaled instruments to measure and compare lengths, masses, capacities and temperatures			
Quest: Length, mass, capacity and temperature			
Learning Journey	Steps	Content	Description
Metric units of length	1	Selecting appropriate units of measurement: metres, centimetres, millimetres	• explore the appropriateness of units when measuring length
			• select and justify the most appropriate metric unit to measure given lengths and distances
	2	Converting between metres and centimetres (whole numbers only)	• describe 1 m as 100 cm
			• convert between metres and centimetres using whole numbers, eg 3 m is the same as 300 cm
			• record measurement equivalents in a table
			• explain the relationship between the size of a unit and the number of units needed
Length and 3D objects	1	Applying length to attributes of three-dimensional objects	• recognise the features of a three-dimensional object associated with length that can be measured
			• describe the length, height and width of a three-dimensional object
Introducing perimeter	1	Introducing perimeter	• use the term 'perimeter' to describe the total distance around a two-dimensional shape
			• estimate and measure the perimeters of two-dimensional shapes
			• describe when a perimeter measurement might be used in everyday situations
Temperature	2	Introducing thermometers	• estimate temperature using personal reference
			• use a standard thermometer to determine whether temperature is rising or falling
			• relate thermometers to the number line
			• introduce the unit of degrees to record temperatures
			• recognise and read temperatures in everyday situations, eg weather report, cooking
	3	Measuring temperature	• recognise the need for formal units to measure temperature
			• use a thermometer to measure and compare temperatures to the nearest degree Celsius

Learning Journey	Step	Content	Description
			• record temperatures to the nearest degree Celsius using the symbol for degrees (°)
			• use a digital or analogue thermometer to take and record daily temperature readings
Measuring capacity in millilitres	1	Introducing standard measurements in millilitres	• know that a standard cup is 250 mL and a standard teaspoon is 5 mL
			• recognise standard measurements in everyday contexts such as cooking
	2	Introducing formal units for volume and capacity: millilitres	• recognise the need for a formal unit smaller than the litre to measure volume and capacity
			• recognise that there are 1000 millilitres in 1 litre, ie 1000 millilitres = 1 litre
			• relate the millilitre to familiar everyday containers and familiar informal units, eg 250 mL fruit juice containers, 1 teaspoon is approximately 5 mL
	3	Reading scales with 100 millilitre markings	• read a scale where every 100 mL is marked and labelled
			• read a scale where every 100 mL is marked and half and l litre are labelled
			• read a scale where every 100 mL is marked and every other 100 mL is labelled
	4	Measuring with millilitres to the nearest 100 mL	• use the millilitre as a unit to measure volume and capacity, using a device calibrated in millilitres (read to the nearest 100mL with every 100mL or every other 100mL marked)
			• record volumes and capacities using the abbreviation for millilitres (mL)
			• estimate the capacity of a container in millilitres and check by measuring (measure to the nearest 100mL with every 100mL or every other 100mL marked)
			• compare and order the capacities of 2 or more containers measured in millilitres
Measuring mass in grams and kilograms	1	Investigating mass in packaging	• interpret information about mass on commercial packaging
			• estimate the mass of a substance in a partially-filled container/packet from the information on the label
	2	Introducing formal units for mass: the gram	• establish the need for a smaller unit of mass and introduce the gram, including that 1000 grams = 1 kilogram

Learning Journey	Step	Content	Description
			• develop a sense of the mass of standard everyday objects in grams, eg an egg is about 50 grams
			• identify everyday situations where grams are an appropriate unit for measuring the mass
			• introduce the abbreviation 'g' for recording mass in grams and record masses
			• calculate the number of grams in a whole number of kilograms
			• interpret simple fractions ($\frac{1}{4}$, $\frac{1}{2}$, ¾) of a kilogram and relate these to the number of grams
	3	Measuring in grams	• estimate mass using personal references for grams and 'guess and check'
			• measure mass in grams by using and interpreting varied scales and images of scales
			• record mass in grams using the appropriate abbreviation (g)
	4	Measuring in grams and kilograms	• estimate mass using personal references for grams and kilograms
			• choose appropriate standard units to estimate and measure (g/kg)
			• measure mass in grams and kilograms by using and interpreting varied scales
			• record mass in grams, kilograms and mixed units using the appropriate abbreviations (g), (kg), eg 5 kg and 500 g

ACMMG290 Compare objects using familiar metric units of area and volume			
Quest: Area and volume			
Learning Journey	Steps	Content	Description
Comparing area using metric units	1	Comparing and ordering rectangular areas using counting of standard metric units	• compare two areas by measuring using standard metric units
			• order three or more areas by measuring using standard metric units
			• choose the most appropriate unit cm^2 or m^2 and justify selection
Using cubic cm to measure volume	1	Using unit cubes to measure volume	• measure volumes by counting unit cubes, using cubic centimetres, cubic inches, cubic feet and improvised units
	2	Estimating and measuring volume using cubic centimetre blocks	• use the cubic centimetre as a unit to measure volumes by packing small containers with cubic-centimetre blocks and describing in terms of layers, eg '2 layers of 10 cubic-centimetre blocks'

Learning Journey	Step	Content	Description
			• construct three-dimensional objects using cubic-centimetre blocks and count the blocks to determine the volumes of the objects; devise and explain strategies for counting blocks
			• compare the volumes of 2 or more objects made from cubic-centimetre blocks by counting blocks
			• record volumes using the abbreviation for cubic centimetres (cm^3)
	3	Using cubic centimetres to measure volume	• measure the volumes of rectangular containers by packing them with cubic-centimetre blocks
			• explain the advantages and disadvantages of using cubic-centimetre blocks as a unit to measure volume
			• describe arrangements of cubic-centimetre blocks in containers in terms of layers
			• connect the layers of blocks with multiplying the dimensions

ACMMG085 Convert between units of time			
Quest: Converting units of time			
Learning Journey	Steps	Content	Description
Converting units of time	1	Converting between units of time (multiplicative conversions only)	• calculate the number of seconds in a whole number of minutes
			• calculate the number of minutes in a whole number of hours
			• calculate the number of days in a whole number of weeks
			• calculate the number of months in a whole number of years
			• solve problems involving conversion between units of time

ACMMG086 Use ‘am’ and ‘pm’ notation and solve simple time problems			
Quest: AM/PM and elapsed time			
Learning Journey	Steps	Content	Description
AM/PM and elapsed time problems	1	Using am and pm notation	• know that there are 24 hours in a day
			• recognise that midday/noon divides the day into two equal parts of 12 hours each
			• establish the need to distinguish between times in the first 12 hours of the day and the second 12 hours of the day, and introduce am and pm notation
			• know and record midday/noon as 12pm and 12:00pm, and midnight as 12am and 12:00am

Learning Journey	Step	Content	Description
			• use am and pm notation to record times in relation to midday/noon and midnight
			• read times written using am and pm notation using 'past', 'to', morning, afternoon, evening and night appropriately', eg 3:40 pm is 'twenty to four in the afternoon'
	2	Solving problems relating to elapsed time involving the four operations (to five minutes)	• use the 4 operations to solve word problems involving intervals of time including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit

5.2 Shape

ACMMG087 Compare the areas of regular and irregular shapes by informal means			
Quest: Area of regular and irregular shapes			
Learning Journey	Steps	Content	Description
Measuring & comparing regular and irregular shapes	1	Measuring areas of rectilinear figures by decomposing into rectangles and counting units	• recognise area as additive
			• decompose rectilinear figures into rectangles to find their area by tiling or using a grid overlay
	2	Estimating and comparing areas of non-rectilinear shapes using a square grid	• use a square grid to approximate and compare the areas of non-rectilinear shapes
			• compare how different placements of the grid make approximation easier or more difficult
			• find and explain the area of irregular shapes by counting squares or part squares
	3	Approximating and comparing areas of non-rectilinear shapes using a square centimetre grid	• use a square-centimetre grid to approximate and compare the areas of non-rectilinear shapes
			• compare how different placements of the grid make approximation easier or more difficult
			• find and explain the area of irregular shapes by counting squares or part squares

ACMMG088 Compare and describe two dimensional shapes that result from combining and splitting common shapes, with and without the use of digital technologies			
Quest: Composing and decomposing 2D shapes			
Learning Journey	Steps	Content	Description
Composing and decomposing 2D shapes	1	Composing and decomposing two-dimensional shapes	• create two-dimensional shapes by combining and splitting common shapes
			• follow instructions to create a common shape using a specified set of 2 or more common shapes
			• describe and/or name the shape formed by combining and splitting common shapes
			• compare the area of combined and split shapes and their components
			• investigate the range of combinations that can be used to combine or split common shapes

5.3 Location and transformation

ACMMG090 Use simple scales, legends and directions to interpret information contained in basic maps			
Quest: Scales, legends and directions			
Learning Journey	Steps	Content	Description
Using legends and cardinal compass directions	1	Using legends on maps	• establish the need for legends on maps with and without grid referencing
			• use the legend of a map to determine the feature located at a given grid reference
			• use the legend of a map to determine the grid reference for a given feature
	2	Introducing cardinal compass directions	• understand, locate and label the 4 cardinal compass directions on a compass rose: north (N), south (S), east (E) and west (W)
			• connect the 4 cardinal compass directions to features of the local area from their particular location
			• determine the direction of other cardinal compass directions when given one of the cardinal compass directions
	3	Describing locations on maps using cardinal compass directions	• recognise that north (N) is typically represented by an arrow on a map
			• use the 4 cardinal compass directions to describe the location of one feature in relation to another on a map that has an arrow representing north
	4	Drawing routes on maps using cardinal compass directions	• draw a route on a map given a sequence of directions involving cardinal directions and landmarks
			• use cardinal directions and landmarks to describe a route between 2 locations on a map
Solving measurement problems	1	Using multiplication and division to solve measurement and scaling problems (within 100)	• solve scaling problems using multiplication and division strategies, eg 'This square has sides of 5 cm. Draw a square with sides that are 3 times as long'
			• compare their own and others' methods of solution

ACMMG091 Create symmetrical patterns, pictures and shapes with and without digital technologies			
Quest: Symmetrical patterns, pictures & shapes			
Learning Journey	Steps	Content	Description
Introducing transformations	1	Introducing transformations: Slides (translations)	• describe the process of performing a 'slide' and the similarities and differences between the original shape and the shape after it has undergone a 'slide'

Learning Journey	Step	Content	Description
			• identify and describe a one-step slide of a shape using the term 'slide'
			• perform a one-step slide of a shape using physical materials and record the result without the use of digital technology
			• perform a one-step slide of a shape and record the result using digital technology
			• predict and draw the result of a one-step slide on a given shape
	2	Introducing transformations: Flips (reflections)	• describe the process of performing a 'flip' and the similarities and differences between the original shape and the shape after it has undergone a 'flip'
			• identify and describe a one-step flip of a shape using the term 'flip'
			• perform a one-step flip of a shape using physical materials and record the result without the use of digital technology
			• perform a one-step flip of a shape and record the result using digital technology
			• predict and draw the result of a one-step flip on a given shape
	3	Introducing transformations: Turns (rotations)	• describe the process of performing a 'turn' and the similarities and differences between the original shape and the shape after it has undergone a 'turn' about a centre of rotation
			• recognise and describe turns as 'clockwise' or 'anti-clockwise'
			• identify and describe one-step quarter turns, half turns and three-quarter turns of a shape using the terms 'quarter turn', 'half turn', 'three-quarter turn'
			• perform one-step quarter turns, half turns and three-quarter turns of shapes using physical materials and record the results without the use of digital technology
			• perform one-step quarter turns, half turns and three-quarter turns of a shape and perform a one-step flip of a shape, recording the results using digital technology
			• predict and draw the result of one-step quarter turns, half turns and three-quarter turns on a given shape
			• explore and describe the number of half turns and quarter turns required for a full-turn

Learning Journey	Step	Content	Description
Creating and drawing summertical designs	1	Completing symmetrical designs	• complete symmetrical designs and shapes given their line of symmetry and one half of the design or shape
Recognising tessellations	1	Recognising tessellations	• recognise and describe transformations in tessellating designs consisting of a single shape
			• create and record tessellating designs using transformations on a single shape
			• determine whether a shape will or will not tessellate

5.4 Geometric reasoning

ACMMG089 Compare angles and classify them as equal to, greater than, or less than, a right angle			
Quest: Classifying angles			
Learning Journey	Steps	Content	Description
Classifying angles	1	Classifying angles in relation to a right angle	• classify angles as 'less than a right angle', 'about the same as a right angle', 'greater than a right angle'
	2	Classifying angles as acute, right or obtuse	• identify and name angles as acute, right or obtuse
			• categorise angles as acute, right or obtuse
			• draw and create angles of a given size: acute, right, obtuse (no protractors)
	3	Classifying angles as acute, right, obtuse, straight, reflex or a revolution	• understand and describe angles greater than or equal to 180°
			• identify and name angles as acute, right, obtuse, straight, reflex and revolution
			• categorise angles as acute, right, obtuse, straight, reflex and revolution
			• draw and create angles of a given size: acute, right, obtuse, straight, reflex and revolution (no protractors)

6 Statistics and Probability

6.1 Chance

ACMSP092 Describe possible everyday events and order their chances of occurring			
Quest: Chance events			
Learning Journey	Steps	Content	Description
Describing the chance of events occurring	1	Describing the chances of everyday events occurring	• use the terms 'equally likely', 'likely' and 'unlikely' to describe the chance of everyday events occurring
			• compare the chance of familiar events occurring and describe the events as being 'more likely' or 'less likely' to occur than each other
			• order events from least likely to most likely to occur
	2	Describing the chances of events occurring in simple chance experiments	• compare the likelihood of obtaining particular outcomes in a simple chance experiment

ACMSP093 Identify everyday events where one cannot happen if the other happens			
Quest: Non-simultaneous everyday events			
Learning Journey	Steps	Content	Description
Exploring non-simultaneous everyday events	1	Exploring everyday events that cannot occur simultaneously	• identify and discuss everyday events that cannot occur at the same time

ACMSP094 Identify events where the chance of one will not be affected by the occurrence of the other			
Quest: Independent and dependent events			
Learning Journey	Steps	Content	Description
Independent and dependent events	1	Identifying events where the chances of occurring are independent of other events	• identify and discuss events where the chance of 1 event occurring will not be affected by the occurrence of the other
			• explain why subsequent events are independent
			• compare independent events with dependent events

6.2 Data representation and interpretation

ACMSP095 Select and trial methods for data collection, including survey questions and recording sheets			
Quest: Methods of data collection			
Learning Journey	Steps	Content	Description
Surveys and sorting data	1	Collecting and sorting data	• plan methods of data collection (eg, surveying or questioning, when to ask, who to ask) and efficient ways of recording data (eg, tables and tally charts); identify issues with data collection and refines the process as appropriate
			• recognise that data can come from other sources, eg governmental agencies, sports, environmental agencies
			• sort data into the correct categories; enter data into the correct cells in a table; create a table in a spreadsheet (digital recording); recognise when data has been sorted incorrectly

ACMSP096 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			
Quest: Constructing suitable data displays			
Learning Journey	Steps	Content	Description
Column graphs using many-to-one correspondence	1	Introducing column graphs with many-to-one correspondence	• determine the scale on a column graph
			• read and interpret data in a column graph with many-to-one correspondence
			• recognise and remedy errors or unsuitable scales in a column graph
	2	Representing data in column graphs using many-to-one correspondence	• represent given or collected categorical data in column graphs
			• discuss and determine a suitable scale of many-to-one correspondence to draw graphs for large data sets and state the key used
			• use grid paper to assist in drawing graphs that represent data using a scale of many-to-one correspondence
			• use data in a spreadsheet to create column graphs with appropriately labelled axes
			• mark equal spaces on axes, name and label axes, and choose appropriate titles for graphs
			• interpret data in column graph; ask and answer questions related to the data in the display; draw conclusions

Learning Journey	Step	Content	Description
Picture graphs with many-to-one correspondence	1	Introducing picture graphs with many-to-one correspondence	• interpret the key on a picture graph with many-to-one correspondence
			• read and interpret data in a picture graph with many-to-one correspondence
			• recognise and remedy errors or unsuitable scales in a picture graph
	2	Representing data in picture graphs using many-to-one correspondence	• represent given or collected categorical data in picture graphs
			• discuss and determine a suitable scale of many-to-one correspondence to draw graphs for large data sets and state the key used
			• use grid paper to assist in drawing graphs that represent data using a scale of many-to-one correspondence
			• mark equal spaces on axes, name and label axes, and choose appropriate titles for graphs
			• interpret data in a picture graph; ask and answer questions related to the data in the display; draw conclusions

ACMSP097 Evaluate the effectiveness of different displays in illustrating data features including variability			
Quest: Evaluating and comparing data displays			
Learning Journey	Steps	Content	Description
Evaluating and comparing data displays	1	Evaluating and comparing data displays	• interpret and evaluate the effectiveness of various data displays found in media and in factual texts, where displays represent data using a scale of many-to-one correspondence
			• identify and discuss misleading representations of data
			• discuss and compare features of data displays, including considering the number and appropriateness of the categories used, eg a display with only three categories (blue, red, other) for car colour is not likely to be useful
			• discuss the advantages and disadvantages of different representations of the same categorical data, eg column graphs compared to picture graphs that represent data using scales of many-to-one correspondence

Part III
Year 5

7 Number and Algebra

7.1 Number and Place Value

ACMNA098 Identify and describe factors and multiples of whole numbers and use them to solve problems			
Quest: Multiples, factors and divisibility test			
Learning Journey	Steps	Content	Description
Multiples and Factors	1	Finding factors for whole numbers up to 100	• determine all 'factors' of a given whole number up to 100
			• determine the 'highest common factor' (HCF) of 2 whole numbers
	2	Finding multiples up to 100	• determine 'multiples' of a given whole number
			• determine the 'lowest common multiple' (LCM) of 2 whole numbers
	3	Solving problems using factors and multiples	• solve problems using knowledge of factors and multiples, eg 'There are 48 people at a party. In how many ways can you set up the tables and chairs, so that each table seats the same number of people and there are no empty chairs?'
Divisibility Tests	1	Introducing divisibility tests for dividing by 2	• apply divisibility test to find multiples of 2
		Introducing divisibility tests for dividing by 5	• apply divisibility test to find multiples of 5
		Introducing divisibility tests for dividing by 10	• apply divisibility test to find multiples of 10
	2	Introducing divisibility tests for dividing by 4	• apply divisibility test to find multiples of 4
		Introducing divisibility tests for dividing by 8	• apply divisibility test to find multiples of 8
	3	Introducing divisibility tests for dividing by 3	• apply divisibility test to find multiples of 3
		Introducing divisibility tests for dividing by 6	• apply divisibility test to find multiples of 6
		Introducing divisibility tests for dividing by 9	• apply divisibility test to find multiples of 9

ACMNA099 Use estimation and rounding to check the reasonableness of answers to calculations			
Quest: Estimating and rounding			
Learning Journey	Steps	Content	Description
Checking with estimation and rounding	1	Checking accuracy of addition and subtraction calculations	• check solutions to problems by using the inverse operation
			• use estimation to check the reasonableness of answers to addition and subtraction calculations
Rounding to estimate products and quotients	1	Rounding to estimate products	• estimate products by rounding
	2	Rounding to estimate quotients	• estimate quotients using rounding

ACMNA100 Solve problems involving multiplication of large numbers by one- or two-digit numbers using efficient mental, written strategies and appropriate digital technologies			
Quest: Multiplication			
Learning Journey	Steps	Content	Description
Multiplication using multiples of 10	1	Using known facts to multiply 1-digit numbers with multiples of 1000	• use known facts and place value understanding to solve multiplication problems with multiples of 1000, eg 3 x 6 = 18 so 3 x 6000 = 18 000
	2	Using known facts to multiply 1-digit numbers with multiples of 10 000	• use known facts and place value understanding to solve multiplication problems with multiples of 1000, eg 3 x 6 = 18 so 3 x 60 000 = 180 000
Mult: rounding, compensating and partitioning	1	Multiplying 1-digit and 2-digit numbers using rounding and compensating	• use known facts to solve multiplication problems by adding on or taking off, eg 5 x 100 is 500, so 5 x 99 is 5 less, which is 495
	2	Using partitioning to double or halve any number (up to 4-digits)	• use models and diagrams to support partitioning to double or halve any number (up to 4-digits), eg 58 halved as half of 50 + half of 8, or double 58 as double 50 + double 8
	3	Using compensation to double or halve any number (up to 4-digits)	• use models and diagrams to support the use of compensation to double or halve any number (up to 4-digits), eg double 398 as double 400 and subtract 4, or half of 398 as half of 400 and subtract 1
	4	Using partitioning or compensation to double or halve any number (up to 4-digits)	• use partitioning or compensation to double or halve any number (up to 4-digits)
Mult: doubling, halving and thirding	1	Multiplying using doubling	• use the relationship between multiplication facts, eg the multiplication facts for 6 are double the multiplication facts for 3
		Multiplying by 2, 4 or 8 using repeated doubling	• use doubling as a strategy to multiply 2, eg 70 x 2 is double 70
			• use double-double as a strategy to multiply by 4, eg 70 x 4 is double-double 70 which is 280
			• use doubling as a strategy to multiply by 8, eg 70 x 8 is double-double-double 70 which is 560

Learning Journey	Step	Content	Description
	2	Using doubling and halving to solve multiplication problems with 2-digit and 1-digit numbers	• mentally adjust a multiplication problem by doubling one factor and halving the other, eg 24 x 6 as 12 x 12
	3	Using doubling and halving to solve multiplication problems with a 2-digit number and a 1 or 2-digit number	• mentally adjust a multiplication problem by doubling one factor and halving the other, eg 24 x 50 as 12 x 100
	4	Using doubling and halving or thirding and trebling to solve multiplication problems	• mentally adjust a multiplication problem using doubling and halving or thirding and trebling where appropriate, eg 18 x 3 as 6 x 9 or 24 x 6 as 12 x 12
Multiplying using the split method	1	Multiplying 3-digit numbers by 1-digit numbers using split method	• multiply the hundreds, then the tens and then the ones
	2	Multiplying 4-digit numbers by 1-digit numbers using split method	• multiply the thousands, then the hundreds, then the tens and then the ones
Multiplying by factorising	1	Multiplying by factorising (using the distributive property)	• split factors, eg 50 x 8 is the same as 50 x 2 x 4, which becomes 100 x 4
	2	Factorising to multiply a 2-digit number by a 2-digit number	• factorise to multiply a 2-digit number by a 2-digit number, eg 12 × 25 = 3 × 4 × 25 = 3 × 100 = 300
Multiplying using an area model	1	Multiplying 3-digit numbers by 1-digit numbers using an area model	• use an area model for 3-digit by 1-digit multiplication
	2	Multiplying 4-digit numbers by 1-digit numbers using an area model	• use an area model for 4-digit by 1-digit multiplication
	3	Multiplying 2-digit numbers by 2-digit numbers using an area model	• use an area model for 2-digit by 2-digit multiplication
Multiplying using formal algorithms	1	Multiplying 2-digit numbers by 1-digit numbers using the expanded algorithm	• multiply the ones, then the tens, with and without regrouping
		Multiplying 3-digit numbers by 1-digit numbers using the expanded algorithm	• multiply the ones, then the tens, then the hundreds, with and without regrouping
		Multiplying 4-digit numbers by 1-digit numbers using the expanded algorithm	• multiply the ones, then the tens, then the hundreds and then the thousands, with and without regrouping
	2	Multiplying 2-digit numbers by 1-digit numbers using the contracted algorithm	• multiply the ones, then the tens, with and without regrouping
		Multiplying 3-digit numbers by 1-digit numbers using the contracted algorithm	• multiply the ones, then the tens, then the hundreds, with and without regrouping
		Multiplying 4-digit numbers by 1-digit numbers using the contracted algorithm	• multiply the ones, then the tens, then the hundreds and then the thousands, with and without regrouping

Learning Journey	Step	Content	Description
	3	Multiplying 2-digit numbers by 2-digit numbers using the extended form of the formal algorithm	• multiply 2-digit by 2-digit numbers using extended form, with and without regrouping
		Multiplying 3-digit numbers by 2-digit numbers using the extended form of the formal algorithm	• multiply 3-digit by 2-digit numbers using extended form, with and without regrouping
Multiplication word problems	1	Solving multiplication word problems	• apply appropriate mental strategies to solve multiplication word problems
			• apply appropriate written strategies to solve multiplication word problems

ACMNA101 Solve problems involving division by a one digit number, including those that result in a remainder			
Quest: Division			
Learning Journey	Steps	Content	Description
Division using partitioning	1	Dividing a 3-digit number by a 1-digit number using partitioning	• partition a 3-digit number to divide
Extended division - no remainders or zeros	1	Dividing a 2-digit number by a 1-digit divisor using the extended algorithm, no remainders or zeros in answers	• apply the written algorithm to divide a 2-digit number by a 1-digit number, without remainders and without zeros in the answer
	2	Dividing a 3-digit number by a 1-digit divisor using the extended algorithm, no remainders or zeros in answers	• apply the written algorithm to divide a 3-digit number by a 1-digit number, without remainders and without zeros in the answer
	3	Dividing a 4-digit number by a 1-digit divisor using the extended algorithm, no remainders or zeros in answers	• apply the written algorithm to divide a 4-digit number by a 1-digit number, without remainders and without zeros in the answer
	4	Solving problems involving division of a 2-digit number by a one-digit number, with no remainders	• recognise and use different notations to indicate division
Extended division - remainders	1	Dividing a 2-digit number by a 1-digit divisor using the extended algorithm, with remainders but without zeros in answers	• apply the written algorithm to divide a 2-digit number by a 1-digit number, with remainders but without zeros in the answer
	2	Dividing a 3-digit number by a 1-digit divisor using the extended algorithm, with remainders but without zeros in answers	• apply the written algorithm to divide a 3-digit number by a 1-digit number, with remainders but without zeros in the answer
	3	Dividing a 4-digit number by a 1-digit divisor using the extended algorithm, with remainders but without zeros in answers	• apply the written algorithm to divide a 4-digit number by a 1-digit number, with remainders but without zeros in the answer
	4	Solving problems involving division of a 2-digit number by a 1-digit number, with remainders	• record remainders as fractions and decimals

Learning Journey	Step	Content	Description
Extended division - with and without remainders	1	Dividing a 2-digit number by a 1-digit divisor using the extended algorithm, with and without remainders and zeros in answers	• apply the written algorithm to divide a 2-digit number by a 1-digit number, with and without remainders and zeros in the answer
	2	Dividing a 3-digit number by a 1-digit divisor using the extended algorithm, with and without remainders and zeros in answers	• apply the written algorithm to divide a 3-digit number by a 1-digit number, with and without remainders and zeros in the answer
	3	Dividing a 4-digit number by a 1-digit divisor using the extended algorithm, with and without remainders and zeros in answers	• apply the written algorithm to divide a 4-digit number by a 1-digit number, with and without remainders and zeros in the answer
	4	Solving problems involving the division of a number with 3 or more digits by 1 digit, with no remainder	• divide the hundreds, then the tens, and then the ones
			• use the formal algorithm
Contracted division - no remainders or zeros	1	Dividing a 2-digit number by a 1-digit divisor using the contracted algorithm, no remainders or zeros in answers	• apply the written algorithm to divide a 2-digit number by a 1-digit number, without remainders and without zeros in the answer
	2	Dividing a 3-digit number by a 1-digit divisor using the contracted algorithm, no remainders or zeros in answers	• apply the written algorithm to divide a 3-digit number by a 1-digit number, without remainders and without zeros in the answer
	3	Dividing a 4-digit number by a 1-digit divisor using the contracted algorithm, no remainders or zeros in answers	• apply the written algorithm to divide a 4-digit number by a 1-digit number, without remainders and without zeros in the answer
Contracted division - no remainders	1	Dividing a 2-digit number by a 1-digit divisor using the contracted algorithm, with remainders but without zeros in answers	• apply the written algorithm to divide a 2-digit number by a 1-digit number, with remainders but without zeros in the answer
	2	Dividing a 3-digit number by a 1-digit divisor using the contracted algorithm, with remainders but without zeros in answers	• apply the written algorithm to divide a 3-digit number by a 1-digit number, with remainders but without zeros in the answer
	3	Dividing a 4-digit number by a 1-digit divisor using the contracted algorithm, with remainders but without zeros in answers	• apply the written algorithm to divide a 4-digit number by a 1-digit number, with remainders but without zeros in the answer
	4	Solving problems involving the division of a number with 3 or more digits by 1 digit, with remainders	• divide the hundreds, then the tens, and then the ones
			• use the formal algorithm
Contracted division - with and without remainders	1	Dividing a 2-digit number by a 1-digit divisor using the contracted algorithm, with and without remainders and zeros in answers	• apply the written algorithm to divide a 2-digit number by a 1-digit number, with and without remainders and zeros in the answer
	2	Dividing a 3-digit number by a 1-digit divisor using the contracted algorithm, with and without remainders and zeros in answers	• apply the written algorithm to divide a 3-digit number by a 1-digit number, with and without remainders and zeros in the answer

Learning Journey	Step	Content	Description
	3	Dividing a 4-digit number by a 1-digit divisor using the contracted algorithm, with and without remainders and zeros in answers	• apply the written algorithm to divide a 4-digit number by a 1-digit number, with and without remainders and zeros in the answer
Division word problems	1	Solving division word problems	• divide a number with 3 or more digits by a single-digit divisor

ACMNA291 Use efficient mental and written strategies and apply appropriate digital technologies to solve problems			
Quest: Addition and subtraction			
Learning Journey	Steps	Content	Description
Adding numbers of any size	1	Using a formal written algorithm for addition calculations involving numbers of any size (no regrouping)	• apply algorithms to solve problems without regrouping, with the same number of places and with a different number of places; include opportunities for students to write their own algorithms with digits in correct place value positions; include word problems
	2	Using a formal written algorithm for addition calculations involving numbers of any size (with regrouping)	• apply algorithms to solve problems with regrouping in 1 or more places, with the same number of places and with a different number of places; include opportunities for students to write their own algorithms with digits in correct place value positions; include word problems
	3	Using a formal written algorithm for addition calculations of 3 or more addends up to any size (with and without regrouping)	• apply algorithms with 3 or more addends with the same number of places and with a different number of places; include opportunities for students to write their own algorithms with digits in correct place value positions; include word problems
Subtracting numbers of any size	1	Using a formal written algorithm to record subtraction calculations involving numbers of any size (without decomposing)	• apply algorithms to solve problems without trading (decomposing), with the same number of places for both numbers, with fewer places in the second number (subtrahend) and with and without 1 or more zeros in the first number (minuend); include opportunities for students to write their own algorithms with digits in correct place value positions and with the larger number first; include word problems
			• use estimation or reverse operation to check the reasonableness of solutions

Learning Journey	Step	Content	Description
	2	Using a formal written algorithm to record subtraction calculations involving numbers of any size (with decomposing)	• apply algorithms to solve problems with trading (decomposing) in 1 or more places, with the same number of places for both numbers, with fewer places in the second number (subtrahend) and with and without 1 or more zeros in the first number (minuend); include opportunities for students to write their own algorithms with digits in correct place value positions and with the larger number first; include word problems
			• use estimation or reverse operation to check the reasonableness of solutions
	3	Using equal adjustments to subtract up to 3-digit numbers	• model and solve subtraction problems using equal adjustments
Adding and subtracting numbers of any size	1	Representing addition or subtraction problems using a bar model	• use a bar model as a tool to represent an addition or subtraction problem
	2	Applying efficient strategies for addition and subtraction calculations involving numbers of any size	• add 3 or more numbers with different numbers of digits

7.2 Fractions and decimals

ACMNA102 Compare and order common unit fractions and locate and represent them on a number line			
Quest: Comparing/ordering common unit fractions			
Learning Journey	Steps	Content	Description
Compare and order common unit fractions	1	Comparing and ordering unit fractions with different denominators using models and diagrams	• compare and order common unit fractions using models and diagrams for support
			• compare and order common fractions with different denominators (halves, thirds, quarters, fifths, sixths, sevenths, eighths)
	2	Comparing unit fractions with different denominators (denominators of 2, 3, 4, 5, 6, 8, 10, 12)	• model, compare and order common unit fractions
			• locate and represent unit fractions on a number line
			• compare the relative value of unit fractions by placing them on a number line between 0 and 1
			• compare using <,>, =

ACMNA103 Investigate strategies to solve problems involving addition and subtraction of fractions with the same denominator			
Quest: Addition and subtraction: fractions			
Learning Journey	Steps	Content	Description
Adding and subtracting proper fractions	1	Adding proper fractions with the same denominator (denominators 2, 3, 4, 5, 6, 7, 8)	• add proper fractions with the same denominator
	2	Subtracting proper fractions with the same denominator (denominators 2, 3, 4, 5, 6, 7, 8)	• subtract proper fractions with the same denominator
	3	Adding and subtracting proper fractions with the same denominator (denominators 2, 3, 4, 5, 6, 7, 8)	• add and subtract proper fractions with the same denominator
	4	Adding a whole number and a proper fraction	• add a whole number and a proper fraction
	5	Subtracting a proper fraction from a whole number	• use diagrams, and mental and written strategies, to subtract a proper fraction from any whole number including 1
Add & subtract fractions - common denominators	1	Adding mixed numerals with the same denominator	• add mixed numerals with the same denominator
	2	Subtracting mixed numerals with the same denominator	• subtract mixed numerals with the same denominator
	3	Solving word problems involving both proper fractions and mixed numerals with the same denominator	• solve word problems involving adding and subtracting fractions with the same denominator

ACMNA104 Recognise that the place value system can be extended beyond hundredths			
Quest: Place value to thousandths			
Learning Journey	Steps	Content	Description
Place value to thousandths	1	Introducing decimal thousandths	• express thousandths as decimals
			• interpret decimal notation for thousandths, eg 0.123 = $\frac{123}{1000}$
			• state the place value of digits in decimal numbers of up to 3 decimal places
	2	Partitioning decimal thousandths	• use place value to partition decimals of up to 3 decimal places
			• partition decimals of up to 3 decimal places in non-standard forms
			• partition fractions up to thousandths into decimals and fractions

ACMNA105 Compare, order and represent decimals			
Quest: Compare and order decimals			
Learning Journey	Steps	Content	Description
Compare and order decimals	1	Interpreting zeros at the end of a decimal	• understand that a zero at the end of a decimal does not change its value, eg 0.170 has the same value as 0.17
	2	Knowing common fraction and decimal equivalences	• know fraction and decimal equivalences for thirds, quarters, fifths and eighths
	3	Comparing and ordering decimal fractions of up to 3 decimal places	• place decimal numbers of up to 3 decimal places on a number line between 0 and 1
			• compare and order decimals with 3 decimal places using >, < and =
			• compare and order decimals with a different number of decimal places, up to 3 decimal places

7.3 Patterns and algebra

ACMNA107 Describe, continue and create patterns with fractions, decimals and whole numbers resulting from addition and subtraction			
Quest: Number patterns-addition and subtraction			
Learning Journey	Steps	Content	Description
Number patterns - addition and subtraction	1	Describing, continuing and creating patterns resulting from addition and subtraction including fractions	• identify, continue and create simple number patterns involving addition and subtraction including fractions
			• describe patterns using the terms 'increase' and 'decrease', eg 'The terms decrease by $\frac{1}{4}$'
			• find missing terms in a number sequence
	2	Describing, continuing and creating patterns resulting from addition and subtraction including decimals	• identify, continue and create simple number patterns involving addition and subtraction including decimals
			• describe patterns using the terms 'increase' and 'decrease', eg for the pattern 4.8, 4.1, 3.4, 2.7, ..., 'The terms decrease by 0.7'

ACMNA121 Find unknown quantities in number sentences involving multiplication and division and identify equivalent number sentences involving multiplication and division			
Quest: Number sentences-mult and div			
Learning Journey	Steps	Content	Description
Number sentences - mult and div	1	Using equivalent number sentences that involve more than 1 operation to find unknown quantities	• complete number sentences that involve more than 1 operation by calculating missing numbers, eg 5 × ? = 4 × 10, 5 × ? = 30 - 10
	2	Describing and using inverse operations to solve number sentences with whole numbers and any of the 4 operations	• identify and use inverse operations to assist with the solution of number sentences, eg 125 ÷ 5 = ? becomes ? × 5 = 125
	3	Finding the missing number in multiplication and division number sentences involving simple fractions or decimals	• complete number sentences involving multiplication and division, including those involving simple fractions or decimals, eg 7 × ? = 7.7

8 Measurement and Geometry

8.1 Using units of measurement

ACMMG108 Choose appropriate units of measurement for length, area, volume, capacity and mass			
Quest: Length, area, volume, capacity and mass			
Learning Journey	Steps	Content	Description
Comparing and ordering metric lengths	1	Introducing formal units for length: kilometres	• recognise the need for a formal unit longer than the metre for measuring distance, eg distance between known places or visible landmarks
			• recognise that there are 1000 m in 1 km, ie 1000 m = 1 km
			• describe 1 m as one thousandth of a kilometre
			• develop a personal reference for the approximate length of 1 km and half a kilometre
			• record distances using the abbreviation for kilometres (km)
	2	Comparing lengths in metres and kilometres	• compare lengths and distances using metres and kilometres with the symbols < > =
		Ordering lengths in metres and kilometres	• order lengths and distances using metres and kilometres
	3	Comparing lengths in millimetres, centimetres, metres and kilometres	• compare lengths and distances using millimetres, centimetres, metres and kilometres using symbols <, >, =
		Ordering lengths in millimetres, centimetres, metres and kilometres	• order lengths and distances using millimetres, centimetres, metres and kilometres
	4	Recording lengths using mixed units	• record lengths and distances using combinations of millimetres, centimetres, metres and kilometres
Selecting appropriate units for measuring	1	Selecting and justifying appropriate metric units to measure volume and capacity (mL and L)	• select and use appropriate units to measure the capacities of a variety of containers
			• select and use appropriate units to estimate the volumes of a variety of objects
	2	Introducing formal units for volume: cubic metres	• recognise the need for a formal unit larger than the cubic centimetre
			• construct and use the cubic metre as a unit to measure larger volumes
			• explain why volume is measured in cubic metres in certain situations, eg wood bark, soil or concrete; select and justify referents for cubic cm
			• recognise that a cubic metre can have dimensions other than a cube of side 1 metre
			• record volumes using the abbreviation for cubic metres (m3)

Learning Journey	Step	Content	Description
			• estimate the size of a cubic metre, half a cubic metre and 2 cubic metres
	3	Introducing formal units for mass: the tonne	• establish the need for formal units for very large masses and introduce tonnes, including that 1000 kg = 1 tonne
			• identify everyday situations where tonnes are an appropriate unit for measuring the mass
			• apply place value understanding to modelling, describing and recording metric units of measurement
			• introduce the abbreviation 't' for recording mass in tonnes and record masses using tonnes and kilograms, eg 1 t 750 kg
			• calculate the number of kilograms in a whole number of tonnes
			• interpret simple fractions ($\frac{1}{4}$, $\frac{1}{2}$, ¾) of a tonne and relate these to the number of kilograms
		Selecting and using the appropriate metric unit and device to measure mass	• select and use the appropriate metric unit and device to measure mass
		Solving multi-step problems involving mass	• solve a variety of problems involving mass, including same and different units of mass

ACMMG109 Calculate perimeter and area of rectangles using familiar metric units			
Quest: Perimeter and area			
Learning Journey	Steps	Content	Description
Calculating perimeter of rectangles	1	Calculating the perimeters of rectangles	• explore different methods of finding the perimeter of rectangles
	2	Calculating the side length of a rectangle given the perimeter	• find the length of 1 unknown side of a rectangle given the perimeter
			• find possible length combinations of 2 unknown sides of a rectangle given the perimeter
Calculating the area of rectangles	1	Developing a multiplicative formula for area of a rectangle using metric units	• calculate the area of a rectangle by multiplying the length and width of the rectangle
			• calculate a side length of the rectangle given its area and one other side length

ACMMG110 Compare 12- and 24-hour time systems and convert between them			
Quest: 24-hour time			
Learning Journey	Steps	Content	Description
Using 24-hour time	1	Using 24-hour notation	• convert between 24-hour time notation and 12-hour time notation
			• convert between analogue and 24-hour digital clocks

Learning Journey	Step	Content	Description
			• record 24-hour time using necessary conventions

8.2 Shape

ACMMG111 Connect three-dimensional objects with their nets and other two-dimensional representations			
Quest: Nets			
Learning Journey	Steps	Content	Description
Nets	1	Connecting three-dimensional objects with two-dimensional representations	• visualise and sketch three-dimensional objects from different views, including top, front and side views
			• reflect on their own drawing of a three-dimensional object and consider how it can be improved
			• show simple perspective in drawings by showing depth
	2	Connecting prisms and pyramids with their nets	• examine a diagram to determine whether it is or is not the net of a prism or pyramid
			• explain why a given net will not form a prism or pyramid
			• visualise and sketch nets for a given prism or pyramid
			• recognise whether a diagram is a net of a particular prism or pyramid
			• visualise and name prisms and pyramids, given diagrams of their nets
			• select the correct diagram of a net for a given prism or pyramid from a group of similar diagrams where the others are not valid nets of the object
	3	Connecting three-dimensional objects with their nets	• examine a diagram to determine whether it is or is not the net of a closed three-dimensional object
			• explain why a given net will not form a closed three-dimensional object
			• visualise and sketch nets for given three-dimensional objects
			• recognise whether a diagram is a net of a particular three-dimensional object
			• visualise and name prisms and pyramids, given diagrams of their nets
			• select the correct diagram of a net for a given three-dimensional object (include other regular polyhedrons)

8.3 Location and transformation

ACMMG113 Use a grid reference system to describe locations. Describe routes using landmarks and directional language			
Quest: Grid reference and directional language			
Learning Journey	Steps	Content	Description
Grid-referenced maps	1	Interpreting grid-referenced maps	• establish that grid referencing on maps allows for more accurate description of features/locations
			• understand the structure (letter then number, horizontal then vertical) and meaning of grid references (everything in that grid square)
			• use grid references to describe features/locations on maps
			• identify features/locations on maps given their grid reference
	2	Drawing pathways on grid-referenced maps	• draw a path from 1 feature to another on a grid-referenced map given the grid reference of each feature
			• use grid references to describe a path from 1 feature to another on a grid-referenced map
Using landmarks and directional language	1	Introducing intercardinal compass directions	• understand, locate and label the 4 intercardinal compass directions on a compass rose: north-east (NE), south-east (SE), south-west (SW) and north-west (NW)
			• connect the 4 intercardinal compass directions to features of the local area from their particular location
			• determine the direction of other cardinal and intercardinal compass directions when given one of the cardinal or intercardinal compass directions
	2	Describing locations on maps using cardinal and intercardinal compass directions	• use the cardinal and intercardinal compass directions to describe the location of one feature in relation to another on a map that has an arrow representing north
	3	Following and giving directions involving cardinal and intercardinal compass directions	• follow a sequence of 2 or more directions to find a location within a safe zone of the school
			• give a sequence of 2 or more directions for a another person to find a location within a safe zone of the school
	4	Drawing routes on maps using cardinal and intercardinal compass directions	• draw a route on a map given a sequence of directions involving cardinal and intercardinal directions, and landmarks
			• use cardinal and intercardinal directions, and landmarks, to describe a route between 2 locations on a map

ACMMG114 Describe translations, reflections and rotations of two-dimensional shapes. Identify line and rotational symmetries			
Quest: Transformations and symmetry			
Learning Journey	Steps	Content	Description
One-step transformations	1	Defining transformations: One-step translations, reflections and rotations	• define translations, reflections and rotations of shapes and describe the similarities and differences between the original shape and the transformed shape
			• identify the one-step transformation used to move a shape from 1 position to another
Symmetry	1	Drawing lines of symmetry on given designs and shapes	• recognise that some designs and shapes may have more than 1 line of symmetry
			• identify and draw all lines of symmetry on designs and shapes
			• determine the total number of lines of symmetry on designs and shapes
			• determine whether or not a given line through designs and shapes is a line of symmetry
	2	Recognising rotational symmetry in shapes and designs	• establish and define that rotational symmetry occurs when a shape looks identical to the original after being turned less than a full turn
			• determine whether or not given shapes and designs have rotational symmetry
			• sort shapes according to whether they are rotationally symmetrical or not
	3	Ordering of rotational symmetry	• define the order of rotational symmetry as the number of times the shape looks identical to the original as it rotates around the centre of symmetry
			• determine the order of rotational symmetry for given shapes and designs
			• compare order of rotational symmetry for odd and even sided regular polygons

ACMMG115 Apply the enlargement transformation to familiar two dimensional shapes and explore the properties of the resulting image compared with the original			
Quest: Enlarging 2D shapes			
Learning Journey	Steps	Content	Description
Enlarging 2D shapes	1	Enlarging 2D shapes	• enlarge a simple 2D shape using a centre of enlargement and a simple scale factor, eg 2, 3, 4, 5, 10
			• recognise the simple scale factor used in an enlargement of a 2D shape.

8.4 Geometric reasoning

ACMMG112 Estimate, measure and compare angles using degrees. Construct angles using a protractor			
Quest: Angles			
Learning Journey	Steps	Content	Description
Identifying and measuring angles	1	Measuring and estimating angles of up to 180° in degrees	• measure angles of up to 180° using a protractor
			• estimate angles of up to 180° and check by measuring
Classifying and constructing angles	1	Classifying angles by their size in degrees	• connect the term 'right angle' with 90°, 'straight angle' with 180° and 'angle of revolution' with 360°
			• establish and recall the angle size in degrees for each of the classifications: acute, obtuse and reflex
			• classify angles with a specified size in degrees as acute, right, obtuse, straight, reflex or a revolution
			• draw angles that are acute, right, obtuse, straight, reflex or a revolution using a ruler only

9 Statistics and Probability

9.1 Chance

ACMSP116 List outcomes of chance experiments involving equally likely outcomes and represent probabilities of those outcomes using fractions			
Quest: Outcomes of chance experiments			
Learning Journey	Steps	Content	Description
Outcomes of Chance Experiments	1	Investigating equally likely outcomes of chance experiments	• recognise that outcomes are described as 'equally likely' when any 1 outcome has the same chance of occurring as any other outcome
			• list all possible outcomes (table, list, tree diagram) in chance experiments where each outcome is equally likely to occur
			• use the term 'probability' to describe the numerical value that represents the likelihood of an outcome of a chance experiment
			• represent probabilities of outcomes of chance experiments using fractions
			• determine the likelihood of winning simple games by considering the number of possible outcomes
	2	Describing the chances of simple events occurring using familiar language and numeric benchmarks	• create, order, describe and explain the likelihood of simple events using the language of probability and numeric benchmarks of 0, $\frac{1}{2}$ and 1

ACMSP117 Recognise that probabilities range from 0 to 1			
Quest: Probability			
Learning Journey	Steps	Content	Description
Probabilities from 0 to 1	1	Ordering chance outcomes in a probabilities range from 0 to 1	• establish that the sum of the probabilities of the outcomes of any chance experiment is equal to 1
			• understand that the probability ranges cannot be less than 0 and greater than 1
			• order commonly used chance words on an interval from 0 ('impossible') to 1 ('certain')
			• describe events that are impossible and events that are certain as having a probability of 0 or 1 respectively
			• describe the likelihood of a variety of events as being more or less than a half (or 0.5) and order the events on an interval

9.2 Data representation and interpretation

ACMSP118 Pose questions and collect categorical or numerical data by observation or survey			
Quest: Categorical and numerical data			
Learning Journey	Steps	Content	Description
Categorical and numerical data	1	Conducting surveys to obtain category and numerical data	• pose and refine questions to construct a survey to obtain categorical and numerical data about a matter of interest
			• collect categorical and numerical data through observation or by conducting surveys
			• sort category and numerical data and display in a table
	2	Conducting a statistical investigation using discrete or continuous data	• ask and investigate statistical questions that may require sampling; demonstrate an understanding that sets of data may be samples of a larger population
			• distinguish between discrete data and continuous data
			• collect data by conducting a survey or an experiment (eg, gather and record air temperature over a two-week period) to do with themselves, their environment, issues in their school or community, or content from another subject, and record observations or measurements
			• organise discrete or continuous data and display the data in charts, tables, and graphs that have appropriate titles, labels and scales that suit the range and distribution of the data

ACMSP119 Construct displays, including column graphs, dot plots and tables, appropriate for data type, with and without the use of digital technologies			
Quest: Constructing data displays			
Learning Journey	Steps	Content	Description
Constructing data displays	1	Constructing a line graph using a scale of many-to-one correspondence	• construct a line graph using a scale of many-to-one correspondence, with and without the use of digital technologies
			• name and label the horizontal and vertical axes when constructing graphs
			• choose an appropriate title to describe the data represented in a data display
			• determine an appropriate scale of many-to-one correspondence to represent the data in a data display

Learning Journey	Step	Content	Description
			• mark equal spaces on the axes when constructing graphs, and use the scale to label the markers
			• interpret data in line graph representing primary data; ask and answer questions related to the data in the display; draw conclusions
	2	Constructing a dot plot	• represent numerical data in a dot plot, eg the number of siblings of each student in the class
			• interpret data in a dot plot; ask and answer questions related to the data in the display; draw conclusions, eg 'The graph shows that the heights of all children in the class are between 125 cm and 154 cm'

ACMSP120 Describe and interpret different data sets in context			
Quest: Describing and interpreting data sets			
Learning Journey	Steps	Content	Description
Describing and interpreting data sets	1	Interpreting primary and secondary data in a column graph with many-to-one correspondence	• describe and interpret data presented in column graphs; ask and answer questions related to data in a column graph
			• determine the total number of data values represented in column graphs
			• identify and describe relationships that can be observed in a column graph; compare column graphs with other data displays
	2	Interpreting primary and secondary data in a line graph	• interpret line graphs using the scales on the axes
			• describe and interpret data presented in line graphs
			• identify and describe relationships that can be observed in data displays
	3	Reading and interpreting data in a dot plot	• describe and interpret data in a dot plot; ask and answer questions related to the data in the display; draw conclusions, eg 'The graph shows that the heights of all children in the class are between 125 cm and 154 cm'
			• determine the total number of data values represented in dot plots
			• identify and describe relationships that can be observed in data displays, eg 'There are four times as many children in Year 5 whose favourite food is noodles compared to children whose favourite food is chicken'
			• compare dot plots to other types of displays

Learning Journey	Step	Content	Description
	4	Interpreting data and solving problems using data in tables	• describe and interpret data presented in tables, eg maximum and minimum values; total number of responses; differences between values
			• identify and describe relationships; draw conclusions and ask questions

Part IV

Year 6

10 Number and Algebra

10.1 Number and place value

ACMNA122 Identify and describe properties of prime, composite, square and triangular numbers			
Quest: Properties of numbers			
Learning Journey	Steps	Content	Description
Square and triangular numbers	1	Describing square numbers	• model square numbers and record each number group in numerical and diagrammatic form
			• explain how square numbers are created
			• explore square numbers using arrays, grid paper or digital technologies
			• recognise and explain the relationship between the name 'square' number and the way the pattern of numbers is created
	2	Describing triangular numbers	• model triangular numbers and record each number group in numerical and diagrammatic form
			• explore triangular numbers using arrays, grid paper or digital technologies
			• recognise and explain the relationship between the name 'triangular' number and the way the pattern of numbers is created
			• model triangular numbers using matchsticks
			• explain how triangular numbers are created
Prime and composite numbers	1	Introducing prime and composite numbers	• establish and define prime numbers
			• establish and define composite numbers
			• know and recall all prime numbers up to 19
	2	Identifying prime and composite numbers	• determine whether a number is prime, composite or neither
			• explain whether a whole number is prime, composite or neither by finding the number of factors, eg '13 has two factors (1 and 13) and therefore is prime', '21 has more than two factors (1, 3, 7, 21) and therefore is composite', '1 is neither prime nor composite as it has only one factor, itself'

ACMNA123 Select and apply efficient mental and written strategies and appropriate digital technologies to solve problems involving all four operations with whole numbers			
Quest: Operations with whole numbers			
Learning Journey	Steps	Content	Description
Addition and subtraction word problems	1	Solving addition word problems involving numbers of any size	• select and apply efficient mental strategies to solve word problems
			• select and apply efficient written strategies to solve word problems
			• use a calculator to solve word problems
			• interpret words that indicate the required operation
			• justify the choice of strategy for a given calculation
	2	Solving subtraction word problems involving decimals to hundredths (inclusive)	• select and apply efficient mental strategies to solve word problems
			• select and apply efficient written strategies to solve word problems
			• use a calculator to solve word problems
			• interpret words that indicate the required operation
			• justify the choice of strategy for a given calculation
	3	Solving word problems requiring both addition and subtraction involving numbers of any size	• select and apply efficient mental strategies to solve word problems
			• select and apply efficient written strategies to solve word problems
			• justify the use digital technologies to solve word problems
			• interpret words that indicate the required operation/s
			• justify the choice of strategy for a given calculation
Multiplying and dividing by multiples of 10	1	Multiplying any numbers by 10, 100, 1000 and their multiples	• use mental strategies to multiply by 10, 100, 1000 and their multiples
		Using mental strategies to multiply 1-digit and 2-digit numbers by multiples of 10 000	• use mental strategies to multiply 1-digit and 2-digit numbers by multiples of 10 000
	2	Dividing any numbers by 10, 100, 1000 and their multiples	• use mental strategies to divide by 10, 100, 1000 and their multiples
	3	Using known facts to solve multiplication and division problems with multiples of 10 and 100	• use known facts and place value understanding to solve multiplication problems with multiples of 10 or 100, eg 3 x 6 = 18 so 3 x 600 = 1800

Learning Journey	Step	Content	Description
			• use known facts and place value understanding to solve division problems with multiples of 10 or 100, eg 18 ÷ 6 = 3 so 1800 ÷ 600 = 3
			• explain and justify the use of the strategy
Selecting efficient mult/div strategies	1	Selecting efficient strategies to multiply whole numbers of up to 4 digits by 1- and 2-digit numbers	• apply mental strategies
			• apply efficient use of formal algorithms
			• use digital technologies
			• estimate solutions to problems and check to justify solutions
	2	Selecting efficient strategies to divide whole numbers of up to 4 digits by a 1-digit divisor	• apply mental strategies
			• apply efficient use of formal algorithms
			• use digital technologies
			• estimate solutions to problems and check to justify solutions
Division problems	1	Dividing using known facts	• solve division problems using known division facts and multiplicative relationships, eg 81 divided by 3 must have a quotient that is 3 times the size of 81 divided by 9 so 81 divided by 3 = 27
			• explain and justify the use of the strategy
		Dividing up to 4-digit numbers by 1-digit divisors using factorising (the distributive law)	• solve division problems by splitting factors, eg 125 ÷ 5 as (100 ÷ 5) + (25 ÷ 5)
			• explain and justify the use of the strategy
	2	Dividing up to a 4-digit number by a 2-digit divisor using the contracted algorithm, no remainders or zeroes in the answer	• apply the written algorithm to divide up to a 4-digit number by a 2-digit number
	3	Dividing up to a 4-digit number by a 2-digit divisor using the division algorithm (extended/long)	• apply the written extended (long) algorithm to divide up to a 4-digit number by a 2-digit number, with and without remainders, with and without zeros in the answer
		Dividing up to a 4-digit number by a 2-digit divisor using the contracted algorithm, with remainders but without zeros in answers	• apply the written algorithm to divide up to a 4-digit number by a 2-digit number, with remainders and without zeros in the answer
	4	Dividing up to a 4-digit number by a 2-digit divisor using the contracted algorithm, with and without remainders and zeros in answers	• apply the written algorithm to divide up to a 4-digit number by a 2-digit number, with and without remainders and zeros in the answer
Multiplication and division word problems	1	Solving word problems involving multiplication and division	• use appropriate language to compare quantities, eg 'twice as much', 'half as much'

Learning Journey	Step	Content	Description
			• use a table or similar organiser to record methods used to solve problems
	2	Introducing speed using metric units	• recognise symbols used to record speed in kilometres per hour
			• solve simple problems involving speed

ACMNA124 Investigate everyday situations that use integers. Locate and represent these numbers on a number line			
Quest: Integers			
Learning Journey	Steps	Content	Description
Investigating and interpreting integers	1	Investigating integers in context	• interpret integers in everyday contexts, eg temperature
			• count forwards and backwards with positive and negative whole numbers, including through 0 (in context)
	2	Investigating integers	• recognise the location of negative whole numbers in relation to zero and place them on a number line
			• use the term 'integers' to describe positive and negative whole numbers and zero
			• investigate negative whole numbers and the number patterns created when counting backwards on a calculator
			• recognise that negative whole numbers can result from subtraction
	3	Interpreting integers in context	• use a model to interpret intervals across zero (in context)

10.2 Fractions and decimals

ACMNA125 Compare fractions with related denominators and locate and represent them on a number line			
Quest: Fractions with related denominators			
Learning Journey	Steps	Content	Description
Working with fractions	1	Comparing and ordering proper fractions with different numerators and denominators (denominators of 2, 3, 4, 5, 6, 8, 10, 12 and 100)	• compare and order proper fractions using a benchmark fraction for support, eg half or quarter
			• record comparisons using >, < or =
			• recognise that comparisons are only valid when the 2 fractions refer to the same whole
	2	Recognising and finding equivalent simple fractions with related denominators using multiplicative thinking (denominators of 2, 3, 4, 5, 6, 8, 10, 12 and 100)	• develop mental strategies for generating equivalent fractions, such as multiplying or dividing the numerator and the denominator by the same number
			• explain or demonstrate why 2 fractions are or are not equivalent
			• apply knowledge of equivalent fractions to convert between units of measurement
	3	Using common factors to simplify proper fractions to their simplest form	• determine a common factor of the numerator and denominator of a fractions and use to find an equivalent fraction. Repeat until the fraction is reduced to its simplest form
			• write a fraction in its simplest form using the highest common factor
			• know that a fraction is reduced to its simplest form when the only common factor of the numerator and denominator is 1

ACMNA126 Solve problems involving addition and subtraction of fractions with the same or related denominators			
Quest: Adding and subtracting fractions			
Learning Journey	Steps	Content	Description
Add & subtract fractions-related denominators	1	Adding proper fractions with related denominators and answers less than 1 whole	• add proper fractions where the denominators are related
			• model and represent strategies, including using diagrams and written representations
			• use knowledge of equivalence to simplify answers when adding fractions
	2	Adding and subtracting simple proper fractions in which 1 denominator is a multiple of another (denominators 2, 3, 4, 5, 6, 7, 8, 10, 12, 100)	• add and subtract proper fractions where 1 denominator is the same as, or a multiple of, the other
			• use knowledge of equivalence to simplify answers when adding and subtracting fractions
		Adding simple fractions with related denominators	• add fractions where the denominators are related

Learning Journey	Step	Content	Description
			• use knowledge of equivalence to simplify answers when adding fractions
			• where the answer is greater than 1 convert the fraction to a mixed numeral
	3	Subtracting proper fractions with related denominators and answers less than 1 whole	• subtract proper fractions where the denominators are related
			• model and represent strategies, including using diagrams and written representations
			• use knowledge of equivalence to simplify answers when subtracting fractions
	4	Subtracting simple fractions with related denominators	• subtract fractions where the denominators are related
			• use knowledge of equivalence to simplify answers when subtracting fractions
			• where the answer is greater than 1 convert the fraction to a mixed numeral
	5	Adding and subtracting proper fractions with related denominators and answers less than 1 whole	• add and subtract proper fractions where the denominators are related
			• model and represent strategies, including using diagrams and written representations
			• use knowledge of equivalence to simplify answers when adding and subtracting fractions
Add and subtract fractions and mixed numerals	1	Adding fractions, including mixed numerals, with related denominators	• add fractions, including mixed numerals, where the denominators are related
			• convert an answer that is an improper fraction to a mixed numeral
			• use knowledge of equivalence to simplify answers when adding fractions
			• recognise that improper fractions may sometimes make calculations involving mixed numerals easier
	2	Subtracting fractions, including mixed numerals, with related denominators	• subtract fractions, including mixed numerals, where the denominators are related
			• convert an answer that is an improper fraction to a mixed numeral
			• use knowledge of equivalence to simplify answers when subtracting fractions
			• recognise that improper fractions may sometimes make calculations involving mixed numerals easier

Learning Journey	Step	Content	Description
	3	Adding and subtracting fractions including mixed numerals, with related denominators	• add and subtract fractions where the denominators are related
			• use knowledge of equivalence to simplify answers when adding and subtracting fractions
			• where the answer is greater than 1 convert the fraction to a mixed numeral
	4	Solving word problems involving fractions and mixed numerals with the related denominators	• solve word problems involving the addition and subtraction of fractions where 1 denominator is the same as, or a multiple of, the other

ACMNA127 Find a simple fraction of a quantity where the result is a whole number, with and without digital technologies			
Quest: Finding a fraction of a quantity			
Learning Journey	Steps	Content	Description
Finding a fraction of a quantity	1	Finding a simple fraction of a quantity with and without the use of digital technologies	• calculate a simple fraction of a collection/quantity, with and without the use of digital technologies
			• explain how unit fractions can be used in the calculation of simple fractions of collections/quantities, eg 'To calculate $\frac{3}{8}$ of a quantity, I found $\frac{1}{8}$ of the collection first and then multiplied by 3'
	2	Solving word problems involving non-unit fractions	• find the whole given the non-unit fraction of a set
			• solve word problems in different contexts, eg measurement
			• solve word problems involving fractions with different denominators eg $\frac{2}{5}$ of the children have blue eyes, $\frac{2}{6}$ have green eyes, if there are 30 children altogether how many children have brown eyes?

ACMNA128 Add and subtract decimals, with and without digital technologies, and use estimation and rounding to check the reasonableness of answers			
Quest: Adding and subtracting decimals			
Learning Journey	Steps	Content	Description
Adding decimals	1	Adding decimals to 2 decimal places using mental strategies	• select and apply efficient mental strategies to solve addition problems, including compensation, bridging to 1, using place value
			• estimate sums
			• record strategies using numbers, models and diagrams
			• relate decimals to fractions to aid mental strategies
			• solve word problems using mental strategies, including problems involving measurement and money

Learning Journey	Step	Content	Description
	2	Adding decimals to 3 decimal places using mental strategies	• select and apply efficient mental strategies to solve addition problems, including compensation, bridging to 1, using place value
			• record strategies using numbers, models and diagrams
			• relate decimals to fractions to aid mental strategies
			• solve word problems using mental strategies, including problems involving measurement and money
	3	Adding decimals using digital technologies	• add decimals using digital technologies
			• use estimation and rounding to check the reasonableness of answers when adding decimals
			• interpret a calculator display in the context of the problem, eg 2.6 means $2.60
			• solve word problems involving the addition of decimals, including those involving money and measurement
	4	Adding decimals to 3 decimal places using a written method	• use a standard algorithm to add decimals with the same number of decimal places
			• use a standard algorithm to add decimals with a different number of decimal places
			• use estimation and rounding to check the reasonableness of answers when adding decimals
Subtracting decimals	1	Subtracting decimals using mental strategies	• select and apply efficient mental strategies to solve subtraction problems, including compensation, bridging to 1, using place value
			• record strategies using numbers, models and diagrams
			• relate decimals to fractions to aid mental strategies
			• solve word problems using mental strategies, including problems involving measurement and money
	2	Subtracting decimals using digital technologies	• subtract decimals using digital technologies
			• use estimation and rounding to check the reasonableness of answers when subtracting decimals
			• interpret a calculator display in the context of the problem, eg 2.6 means $2.60
			• solve word problems involving the subtraction of decimals, including those involving money and measurement

Learning Journey	Step	Content	Description
	3	Subtracting decimals to 3 decimal places using written method	• use a standard algorithm to subtract decimals with the same number of decimal places
			• use a standard algorithm to subtract decimals with a different number of decimal places
			• use estimation and rounding to check the reasonableness of answers when subtracting decimals
	4	Rounding decimal hundredths	• round hundredths to the nearest whole number
			• round hundredths to the nearest tenth

ACMNA129 Multiply decimals by whole numbers and perform divisions by non-zero whole numbers where the results are terminating decimals, with and without digital technologies			
Quest: Multiplying and dividing decimals			
Learning Journey	Steps	Content	Description
Multiplying decimals	1	Multiplying decimals of up to 3 decimal places using mental strategies	• use mental strategies to multiply simple decimals by single-digit numbers, eg 3.5 x 2
			• multiply decimals of up to 3 decimal places by whole numbers of up to 2 digits, with and without the use of digital technologies, eg 'I measured 3 desks. Each desk was 1.25 m in length, so the total length is 3 × 1.25 = 3.75 m'
			• solve word problems involving the multiplication of decimals, including those involving money
			• use estimation and rounding to check the reasonableness of answers when multiplying decimals
	2	Multiplying decimals using written method	• multiply decimals up to thousandths using a standard algorithm
Dividing decimals	1	Dividing whole numbers and decimals of up to 2 decimal places using mental strategies	• divide decimals by a one-digit whole number where the result is a terminating decimal, eg 5.25 ÷ 5 = 1.05
			• solve word problems involving the division of decimals, including those involving money
			• use estimation and rounding to check the reasonableness of answers when dividing decimals
	2	Dividing decimals using written method	• divide decimals up to thousandths using a standard algorithm

ACMNA130 Multiply and divide decimals by powers of 10			
Quest: Mult/div decimals by powers of 10			
Learning Journey	Steps	Content	Description
Mult/div decimals by powers of 10	1	Multiplying decimals by 10	• use PV equipment to multiply decimals by 10
			• recognise that the digits move one place to the left
			• use zero as a place holder
	2	Dividing decimals by powers of 10	• use PV equipment to divide decimals by 10
			• recognise that the digits move one place to the right
			• use zero as a place holder

ACMNA131 Make connections between equivalent fractions, decimals and percentages			
Quest: Fractions, decimals, and percentages			
Learning Journey	Steps	Content	Description
Representing fractions, decimals and percentages	1	Introducing percentages	• recognise that the symbol % means 'percent'
			• understand that 'percent' relates to 'number of parts per one hundred'
			• write fractions with a denominator of 100 as percentages and vice versa
			• model percentages with concrete materials/ drawings, eg using 10x10 grid
			• identify real-life contexts where percentages are used
			• find a percent of a quantity as a rate per 100, eg 30% of a quantity means $\frac{30}{100}$ times the quantity
	2	Representing percentages and decimals	• write decimals (< 1) to 2 decimal places as percentages
			• model percentages and decimals using diagrams, eg number line or 100 grid
			• write decimals as percentages and vice versa
	3	Representing simple fractions as percentages	• represent simple fractions as percentages and vice versa
			• model percentages with concrete materials/ drawings, eg using 10x10 grid
		Representing common fractions as percentages	• represent common fractions as percentages and vice versa
			• model percentages with concrete materials/ drawings, eg using 10x10 grid

Learning Journey	Step	Content	Description
Fraction, decimal and percentage equivalence	1	Investigating the relationships between fractions, decimals and percentages	• investigate using concrete materials, drawings and calculators, the relationships between decimals, percentages and fractions with denominators of 2, 4, 5, 10, 20, 25, 50 and 100
			• record relationships between decimals, percentages and fractions (with denominators 2, 4, 5, 10, 20, 25, 50, 100)
			• demonstrate understanding using symbolic representation
	2	Representing common equivalent fractions, decimals and percentages	• recall the relationships between decimals, percentages and fractions with denominators of 2, 4, 5, 10, 20, 25, 50 and 100
			• recognise fractions, decimals and percentages as different representations of the same value
			• interpret and explain the use of fractions, decimals and percentages in everyday contexts
			• relate equivalence to proportion
	3	Representing equivalent fractions, decimals and percentages	• write percentages as fractions in their simplest form
			• write fractions with denominators that are factors of 100 as percentages by multiplying the numerator and denominator by a common value
			• write fractions with denominators that are not factors of 100 as percentages by writing as a decimal first, eg using short division, then x100 to write as a percentage
			• write percentages as decimals and vice versa
			• represent equivalent fractions, decimals and percentages
			• select and justify the most appropriate representation of a quantity — fraction, decimal, percentage
	4	Solving problems relating to percentage and decimal equivalence	• solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those fractions with a denominator or multiple of 10 or 25

10.3 Money and financial mathematics

ACMNA132 Investigate and calculate percentage discounts of 10%, 25% and 50% on sale items, with and without digital technologies			
Quest: Calculating percentages			
Learning Journey	Steps	Content	Description
Calculating percentages	1	Converting common fractions to percentages using mental strategies	• use mental strategies to convert fractions to percentages
	2	Converting common fractions to percentages using a calculator	• use calculator strategies to convert fractions to percentages
	3	Calculating simple percentages	• estimate 0%, 1%, 10%, 25%, 50% and 100% of an amount including examples in context (exclude discounts), explain estimation
			• model 10%, 25% and 50% of an amount
			• calculate 10%, 25% and 50% of an amount including examples in context (exclude discounts)
	4	Calculating simple percentage discounts	• investigate and calculate percentage discounts of 10%, 25% and 50% on sale items
			• estimate quantities using benchmarks of 10%, 25% and 50%
			• calculate sale price by subtracting the proportion from the original amount
			• calculate common percentages of quantities
			• choose the most appropriate equivalent form of a percentage to aid calculation
	5	Calculating simple percentages of quantities	• equate 10% to $\frac{1}{10}$, 25% to $\frac{1}{4}$ and 50% to $\frac{1}{2}$
			• use mental strategies to estimate discounts of 10%, 25% and 50%
			• calculate the sale price of an item after a discount of 10%, 25% and 50%, recording the strategy and result

10.4 Patterns and algebra

ACMNA133 Continue and create sequences involving whole numbers, fractions and decimals. Describe the rule used to create the sequence			
Quest: Number sequences			
Learning Journey	Steps	Content	Description
Continuing and creating number sequences	1	Continuing and creating sequences involving whole numbers, fractions and decimals	• describe the rule used to create the sequence
			• continue and create number patterns, with and without the use of digital technologies, using whole numbers, fractions and decimals, eg $\frac{1}{4}$, $\frac{1}{8}$, $\frac{1}{16}$, ... or 1.25, 2.5, 5 ...
			• describe how number patterns have been created and how they can be continued
			• create simple shape patterns using concrete materials
			• find missing terms in a number sequence

ACMNA134 Explore the use of brackets and order of operations to write number sentences			
Quest: Order of operations			
Learning Journey	Steps	Content	Description
Order of operations - no grouping symbols	1	Introducing order of operations involving addition and subtraction	• solve number sentences involving addition and subtraction
	2	Introducing order of operations involving multiplication and division	• solve number sentences involving multiplication and division
	3	Introducing order of operations involving all 4 operations	• solve number sentences involving all 4 operations
Order of operations using grouping symbols	1	Introducing order of operations involving grouping symbols	• explore the use of brackets and the order of operations in number sentences
			• use the term 'operations' to describe collectively the processes of addition, subtraction, multiplication and division
			• recognise that the grouping symbols () and [] are used in number sentences to indicate operations that must be performed first
			• perform calculations involving grouping symbols without the use of digital technologies
	2	Applying order of operations for mixed operations and grouping symbols	• apply the order of operations to perform calculations involving mixed operations and grouping symbols
			• investigate whether different digital technologies apply the order of operations

Learning Journey	Step	Content	Description
			• recognise when grouping symbols are not necessary
	3	Introducing order of operations involving multiple grouping symbols	• explore the use of multiple brackets and the order of operations in number sentences
			• recognise that the grouping symbols () and [] are used in number sentences to indicate operations that must be performed first
			• perform calculations involving grouping symbols without the use of digital technologies
	4	Applying order of operations to real life contexts	• investigate and establish the order of operations using real-life contexts
			• write number sentences to represent real-life situations

11 Measurement and Geometry

11.1 Using units of measurement

ACMMG135 Connect decimal representations to the metric system			
Quest: Connecting decimals to the metric system			
Learning Journey	Steps	Content	Description
Decimal notation and the metric system	1	Recording kilometres and metres using decimal notation	• record lengths and distances using decimal notation to 3 decimal places
	2	Connecting decimal representations to the metric system	• recognise the equivalence of whole-number and decimal representations of measurements of length
			• interpret decimal notation for lengths and distances involving millimetres, centimetres, metres and kilometres
Decimal representation in capacity	1	Connecting decimal representations to the metric systems (to 3 decimal places)	• recognise the equivalence of whole-number and decimal representations of measurements of capacities
			• interpret decimal notation for volumes and capacities
			• record volume and capacity using decimal notation to 3 decimal places
Decimal representation in mass	1	Understanding decimal representation of metric measurements of mass	• connect measurements of mass with their decimal representations
			• recognise the equivalence of whole number and decimal representations, eg 3 kg 250 g = 3.25 kg
			• record mass using decimal notation of up to 3 decimal places
			• refer to SI units of mass

ACMMG136 Convert between common metric units of length, mass and capacity			
Quest: Converting units of length/capacity/mass			
Learning Journey	Steps	Content	Description
Converting metric units of length	1	Converting between standard metric units of length to 1 decimal place	• understand the meaning of metric prefixes, eg kilo-, centi- and milli-
			• convert between centimetres and metres and vice versa
			• convert between centimetres and millimetres and vice versa
			• convert between metres and kilometres and vice versa
			• convert among millimetres, centimetres, metres and kilometres
			• explain and use the relationship between the size of a unit and the number of units needed to assist in determining whether multiplication or division is required when converting between units

Learning Journey	Step	Content	Description
	2	Converting between common metric units of length up to 2 decimal places	• understand the meaning of metric prefixes, eg kilo-, centi- and milli-
			• convert between metres and kilometres
			• convert between millimetres, centimetres and metres to compare lengths and distances
			• relate the multiplicative relationship between centimetres and metres, metres and kilometres
			• explain and use the relationship between the size of a unit and the number of units needed to assist in determining whether multiplication or division is required when converting between units
	3	Converting between common metric units of length up to 3 decimal places	• understand the meaning of metric prefixes, eg kilo-, centi- and milli-
			• convert between metres and kilometres
			• convert between millimetres, centimetres and metres to compare lengths and distances
			• relate the multiplicative relationship between centimetres and metres, metres and kilometres
			• explain and use the relationship between the size of a unit and the number of units needed to assist in determining whether multiplication or division is required when converting between units
Converting metric units of capacity	1	Converting between common metric units of capacity including fractions and decimals (to 2 decimal places)	• convert between millilitres and litres using fractions eg 1 and $\frac{1}{10}$ litres as 1100 mL or 3.8 l as 3800 mL
			• explain and use the relationship between the size of a unit and the number of units needed to assist in determining whether multiplication or division is required when converting between units
	2	Converting between common metric units of capacity (to 3 decimal places)	• convert between millilitres and litres
			• explain and use the relationship between the size of a unit and the number of units needed to assist in determining whether multiplication or division is required when converting between units
Converting metric units of mass	1	Converting between standard metric units of mass to 1 decimal place	• understand the meaning of metric prefixes, eg kilo-, centi-, milli-
			• convert between grams and kilograms and vice versa

Learning Journey	Step	Content	Description
			• convert between kilograms and tonnes and vice versa
			• convert among grams, kilograms and tonnes
		Converting between standard metric units of mass up to 2 decimal places	• understand the meaning of metric prefixes, eg kilo-, centi-, milli-
			• convert between grams and kilograms and vice versa
			• convert between kilograms and tonnes and vice versa
			• convert among grams, kilograms and tonnes
			• solve problems using different units of mass
		Converting between standard metric units of mass up to 3 decimal places	• understand the meaning of metric prefixes, eg kilo-, centi-, milli-
			• convert between grams and kilograms and vice versa
			• convert between kilograms and tonnes and vice versa
			• convert among grams, kilograms and tonnes
			• solve problems using different units of mass

ACMMG137 Solve problems involving the comparison of lengths and areas using appropriate units			
Quest: Length and area			
Learning Journey	Steps	Content	Description
Length problems	1	Solving one-step problems involving length	• solve a variety of one-step problems involving length and perimeter, including different units of length
			• sketch or construct a rectangle, triangle or parallelogram given the perimeter and/or area
	2	Solving two-step problems involving length	• solve a variety of two-step problems involving length and perimeter, including different units of length
Calculating the area of triangles	1	Calculating area of a right-angled triangle without a formula	• establish that the area of a right-angled triangle is half the area of a rectangle with the same base and perpendicular height
			• calculate the area of right-angled triangles using the relationship that the area is half the area of a rectangle with the same base and perpendicular height
			• calculate the area of right-angled triangles where all three side lengths are given, using the relationship that the area is half the area of a rectangle with the same base and perpendicular height

Learning Journey	Step	Content	Description
	2	Calculating area of any triangle	• establish that the area of any triangle is Area of triangle = $\frac{1}{2}$ × base × perpendicular height, including triangles in which the perpendicular height meets the base within the length of the base and also triangles in which the perpendicular height (altitude) meets the base outside the length of the base
			• calculate the area of triangles where more dimensions than are necessary are given, using the relationship that the area is half the area of a rectangle with the same base and perpendicular height
	3	Applying the formula for the area of a rectangle	• develop the formula for the area of a rectangle, A = l × w (also A = lw)
			• apply the formula for area of a rectangle to find the area of rectangles given 2 side lengths measured in the same or different units
			• apply the formula for area of a rectangle to find the area of composite rectilinear figures, such as an L-shape, U-shape
			• apply the formula to real life contexts

ACMMG138 Connect volume and capacity and their units of measurement			
Quest: Volume and capacity			
Learning Journey	Steps	Content	Description
Volume and capacity	1	Connecting volume and capacity	• select the appropriate unit to measure volume and capacity
			• demonstrate that a cube of side 10 centimetre will displace 1 litre of water
			• demonstrate, by using a medicine cup, that a cube of side 1 centimetre will displace 1 millilitres of water
			• equate 1 cubic centimetre to 1 millilitre and 1000 cubic centimetres to 1 litre
			• find the volumes of irregular solids in cubic centimetres using a displacement strategy

ACMMG139 Interpret and use timetables			
Quest: Using timetables			
Learning Journey	Steps	Content	Description
Using Timetables	1	Using timetables (12-hour and 24-hour time)	• use real-world timetables (12-hour and 24-hour time) to determine arrival time given the desired departure time, including when the departure time is not listed exactly in the timetable
			• use real-world timetables (12-hour and 24-hour time) to determine departure time given the desired arrival time, including when the arrival time is not listed exactly in the timetable
			• use real-world timetables (12-hour and 24-hour time) to determine the duration of a journey
			• solve real-world problems involving timetables

11.2 Shape

ACMMG140 Construct simple prisms and pyramids			
Quest: Constructing prisms and pyramids			
Learning Journey	Steps	Content	Description
Constructing prisms and pyramids	1	Constructing simple right prisms	• create prisms using a variety of materials, eg plasticine, paper or cardboard nets, connecting cubes
			• create skeletal models of prisms, eg using toothpicks and modelling clay or straws and tape
			• connect the edges of prisms with the construction of their skeletal models
			• construct three-dimensional models of prisms and sketch the front, side and top views
			• describe to another student how to construct or draw a prism
			• construct three-dimensional models of prisms, given drawings of different views
	2	Constructing simple pyramids	• create pyramids using a variety of materials
			• create skeletal models of pyramids
			• connect the edges of pyramids with the construction of their skeletal models
			• construct three-dimensional models of pyramids and sketch the front, side and top views
			• describe to another student how to construct or draw a pyramid
			• construct three-dimensional models of pyramids, given drawings of different views

11.3 Geometric reasoning

ACMMG141 Investigate, with and without digital technologies, angles on a straight line, angles at a point and vertically opposite angles. Use results to find unknown angles			
Quest: Angle properties			
Learning Journey	Steps	Content	Description
Adjacent and vertically opposite angles	1	Introducing adjacent angles	• define adjacent angles as angles that share a common arm and a common vertex and recognise the larger angle created
			• recognise adjacent angles as additive and calculate the size of an unknown angle given the whole and its other parts and find the size of the whole given the size of the parts
	2	Exploring adjacent angles that form a right angle	• explore the relationship between angles that form a right angle
			• calculate an unknown angle within a right angle given the other parts
	3	Exploring adjacent angles that form a straight angle	• explore the relationship between angles that form a straight angle
			• calculate an unknown angle within a straight angle given the other parts
	4	Exploring adjacent angles that form an angle of revolution	• explore the relationship between angles that form an angle of revolution
			• calculate an unknown angle within an angle of revolution given the other parts
	5	Exploring vertically opposite angles	• explore the relationship between angles formed when 2 straight lines intersect and identify these as 'vertically opposite angles'
			• use the equality of vertically opposite angles to find the size of unknown angles in diagrams
			• use the equality of vertically opposite angles to find the size of unknown angles represented by variables in diagrams

11.4 Location and transformation

ACMMG142 Investigate combinations of translations, reflections and rotations, with and without the use of digital technologies			
Quest: Rigid transformations			
Learning Journey	Steps	Content	Description
Rigid transformations	1	Creating patterns that result from rotating shapes	• extend and create repeating patterns that result from rotations, through investigation using a variety of tools, eg pattern blocks, dynamic geometry software, geoboards, dot paper
			• describe the pattern
			• predict the next term/s in the pattern
	2	Creating patterns that result from translations	• extend and create repeating patterns that result from translations through investigation using a variety of tools, eg pattern blocks, dynamic geometry software, dot paper
			• describe the pattern
			• predict the next term/s in the pattern
	3	Identifying combinations of transformations	• identify combinations of up to 3 transformations used to move a shape from 1 position to another
			• perform combinations of up to 3 transformations to move a shape from 1 position to another without the use of digital technology
			• perform combinations of up to 3 transformations to move a shape from 1 position to another using digital technology
			• explore the equivalence of one-step transformations and combinations of transformations used to move a shape from 1 position to another

ACMMG143 Introduce the Cartesian coordinate system using all four quadrants			
Quest: The Cartesian plane			
Learning Journey	Steps	Content	Description
Locating points on the Cartesian plane	1	Locating points on the Cartesian plane	• plot and label points, given coordinates, in all 4 quadrants of the number plane
			• identify and label each quadrant on a number plane
			• plot a sequence of coordinates to create a picture
			• identify and record the coordinates of given points in all 4 quadrants of the number plane

Learning Journey	Step	Content	Description
			• recognise that the order of coordinates is important when locating points on the number plane, eg (2, 3) is a location different from (3, 2)

12 Statistics and Probability

12.1 Chance

ACMSP144 Describe probabilities using fractions, decimals and percentages			
Quest: Probability:Fraction, Decimal or Percent			
Learning Journey	Steps	Content	Description
Probability as a Fraction, Decimal or Percent	1	Describing probability of a single event using fractions, decimals and percentages	• list the outcomes for chance experiments where the outcomes are not equally likely to occur and assign experimental probabilities to the outcomes using fractions
			• use knowledge of equivalent fractions, decimals and percentages to assign probabilities to the likelihood of outcomes within concrete examples
			• explain real-life events in the context of probabilities
			• use the terminology 'theoretical probability' and/ or 'relative frequency' as the value given by the formula: number of times named outcome(s) did happen / total number of trials

ACMSP145 Conduct chance experiments with both small and large numbers of trials using appropriate digital technologies			
Quest: Chance Experiments			
Learning Journey	Steps	Content	Description
Chance Experiments	1	Using digital technologies to conduct chance experiments	• assign expected probabilities to outcomes in chance experiments with random generators, including digital simulators, and compare the expected probabilities with the observed probabilities after both small and large numbers of trials
			• determine and discuss the differences between the expected probabilities and the observed probabilities after both small and large numbers of trials
			• explain what happens to the observed probabilities as the number of trials increases
	2	Making generalisations from chance samples	• use sample results to make predictions about a larger sample
			• discuss whether a prediction about a larger sample from the results of a sub-sample would be the same if a different sub-sample was used

ACMSP146 Compare observed frequencies across experiments with expected frequencies			
Quest: Frequency/Fairness in Chance Experiments			
Learning Journey	Steps	Content	Description
Frequency/Fairness in Chance Experiments	1	Comparing observed frequencies with expected frequencies in chance experiments	• use the term 'frequency' to describe the number of times a particular outcome occurs in a chance experiment
			• distinguish between the 'frequency' of an outcome and the 'probability' of an outcome in a chance experiment
			• record and compare the expected frequencies of outcomes of chance experiments with observed frequencies, including where the outcomes are not equally likely
			• explain why observed frequencies of outcomes in chance experiments may differ from expected frequencies
			• recognise that some random generators have outcomes that are not equally likely and discuss the effect on expected outcomes
	2	Exploring fair and unfair chance experiments	• discuss the 'fairness' of simple games involving chance
			• design a spinner or label a dice so that a particular outcome is more likely than another and discuss the fairness of the outcomes
			• list all possible outcomes using tables, lists and tree diagrams (with or without digital technology) where outcomes are not equally likely to occur
			• record results of chance experiments using appropriate methods, eg tally chart, line plot, bar graph

12.2 Data representation and interpretation

ACMSP147 Interpret and compare a range of data displays, including side-by-side column graphs for two categorical variables			
Quest: Interpreting/representing/comparing data			
Learning Journey	Steps	Content	Description
Two-way tables	1	Introducing and interpreting bivariate data and two-way tables	• interpret data presented in two-way tables that represent two categorical variables
			• ask and answer comparative and relational questions related to data in a two-way table
	2	Representing bivariate data in a two-way table	• create a two-way table to organise data involving 2 categorical variables
			• ask and answer comparative and relational questions related to data in a two-way table
Side-by-side column graphs	1	Introducing and interpreting side-by-side column graphs	• interpret side-by-side column graphs for 2 categorical variables, eg favourite television show of students in Year 1 compared to that of students in Year 6
			• ask and answer comparative and relational questions related to data in a side-by-side column graph
	2	Representing bivariate data in a side-by-side column graph	• construct a side by side column graph for two categorical variables eg favourite television show of students in Year 1 compared to that of students in Year 6
			• ask and answer comparative and relational questions related to data in a side by side column graph
Comparing & selecting bivariate data displays	1	Comparing different displays of the same data set	• interpret and compare different displays of the same data set to determine the most appropriate display for the data set
			• compare the effectiveness of different student-created data displays
			• discuss the advantages and disadvantages of different representations of the same data
			• explain which display is the most appropriate for interpretation of a particular data set
			• compare representations of the same data set in a side-by-side column graph and in a two-way table
	2	Selecting appropriate data displays	• select an appropriate type of graph to represent a set of data
			• graph data using technology, and justify the choice of graph from types of graphs already studied

ACMSP148 Interpret secondary data presented in digital media and elsewhere			
Quest: Interpreting & evaluating secondary data			
Learning Journey	Steps	Content	Description
Interpreting & evaluating secondary data	1	Interpreting discrete and continuous secondary data	• differentiate between first-hand and second-hand data
			• read, interpret, and draw conclusions from secondary data presented in charts, tables, and graphs (including broken-line graphs)
	2	Interpreting secondary data	• interpret data representations found in digital media and in factual texts
			• interpret tables and graphs from the media and online sources
			• identify and describe conclusions that can be drawn from a particular representation of data
	3	Evaluating data collection for bias and misleading information	• identify sources of possible bias in representations of data in the media by discussing various influences on data collection and representation, eg who created or paid for the data collection, whether the representation is part of an advertisement
			• determine, through investigation, how well a set of data represents a population, on the basis of the method that was used to collect the data (Sample problem: Would the results of a survey of primary students about their favourite television shows represent the favourite shows of students in the entire school? Why or why not?).
			• discuss the messages that those who created a particular data representation might have wanted to convey
	4	Evaluating data displays for bias and misleading information	• critically evaluate data representations found in digital media and related claims
			• identify misleading representations of data in the media, eg broken axes, graphics that are not drawn to scale
			• explain how different scales used on graphs can influence conclusions drawn from the data
			• demonstrate, through investigation, an understanding of how data from charts, tables, and graphs can be used to make inferences and convincing arguments (eg, describe examples found in newspapers and magazines)

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